



International Invention Innovation Competition in Canada  
**iCAN-TORONTO, CANADA**

**iCAN 2021 "THE 6TH EDITION"**

# **CATALOGUE**

**WELCOME MESSAGES  
EVENT INFORMATION  
LIST OF EXHIBITS**

**TORONTO  
CANADA**

**iCAN 2021  
THE 6TH EDITION**

**70  
COUNTRIES**



# TISIAs

## TORONTO INTERNATIONAL SOCIETY OF INNOVATION & ADVANCED SKILLS

Toronto International Society of Innovation & Advanced Skills (TISIAs) was established in 2013 to build a global hub in Toronto, Canada to provide a variety of services and opportunities for both local and overseas inventors, innovators, students and researchers to promote their inventions and products in the world market. TISIAs is globally active as the delegation of Canada participating in numerous international invention exhibitions, competitions and conferences organized by its partners around the world. TISIAs majorly promotes its Canadian and American members' inventions and products to world exhibitions and conferences as well as some other international members' creative ideas to success in commercialization and branding.



**TISIAs PARTICIPATED IN 85 INTERNATIONAL EVENTS IN 22 DIFFERENT COUNTRIES**



**ANNUAL EVENT ORGANIZED IN TORONTO, CANADA**



**TORONTO  
CANADA**



International Invention Innovation Competition in Canada  
ICAN - TORONTO, CANADA

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**iCAN VI 2021**



International Invention Innovation Competition in Canada  
**iCAN-TORONTO, CANADA**

# **WELCOME TO iCAN 2021 THE 6<sup>TH</sup> ANNUAL EDITION**

THE 6<sup>TH</sup> INTERNATIONAL INVENTION INNOVATION COMPETITION IN CANADA, iCAN 2021

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## MOONSUK CHANG / The Organizer



An exciting greetings to all inventors and innovators who are taking part in iCAN 2021 "The 6<sup>th</sup> Edition" from around the world. This is the second year that we are organizing the event without being able to see one another face to face in Toronto, Canada. However, in this day and age where COVID-19 is still taking over many things in our lives, I believe that this is the real opportunity for inventors to stand tall in the face of the world. At first when the virus spread across the Earth, many hopes became subtle and our prediction for the future was uncertain. But the fact is, 2020 proved to us that the passion and desire to invent, to create, to be better were never lost but rather shown so much growth, grace, thus the ultimate power of inventors.

iCAN 2020 was a great realization that truly proved how unstoppable inventors were against all impossible. We figured out many solutions to maintain our lifestyle. I think this was a great new discovery where we found many new ways to work together even more efficiently from afar. We know that when COVID-19 eventually fades away, the methods that we practiced during the last 2 years will still be in effect to our usefulness and advantage. The versatility of how we work can lead us to an enriched prosperity in all aspects of life and culture. I express my sincere appreciation and much respect to everyone at iCAN 2021 and hope you will all enjoy the fruits harvested from our annual event proudly organized by TISIAs.

**MOONSUK CHANG** 

*Chairman & Chief Exhibition Officer*

**Toronto International Society of Innovation & Advanced Skills (TISIAs)**

International Invention Innovation Competition in Canada, iCAN Organizing Committee



## BOB HUYBRECHTS / Co-Chairman of the Jury

Hello inventors around the world! Welcome wishes from Canada.

We're all looking forward to this year's iCAN, which as you may know started off in Toronto 6 years ago. For those who do not know me, my name is Bob Huybrechts and I am the founder and president of the Inventors Circle. It is the world's first inventors co-operative, as a non-profit organization that was started in 2003...yes that is 18 years ago!

Sadly, for all of us, the year 2020 was a social write-off and we could not meet any longer in person. I so admire Moonsuk for so smoothly switching the iCAN online with such resolve to keep his vision alive! Following suit and not to be outdone, last March Inventors Circle went on-line as well, with Zoom Conferences each two weeks.

Even now we are still going through an uneasy period of time, where fear and confusion seems to rule, but we may just have a unique opportunity here:

- 1) the world's economy is largely dependent on innovation, because without it there is no real progress...
- 2) it's just a small percentage of people who are inventive...
- 3) and here we are talking, competing and celebrating together!!

Moons keeps inspiring all of us, because we used to meet up in iCAN Toronto with inventors from 50 different countries and now we are able to reach right across the entire globe and boost innovation worldwide! Everyone, welcome to iCAN and hope to see you in Canada in near future!



**BOB HUYBRECHTS** 

*Founder & President*

**Innovation Initiative Co-operative Inc. "The Inventors Circle"**

Co-Chairman of the Jury at iCAN (2016 ~ present)



## HOWARD A. LIM / Co-Chairman of the Jury



It has been an honor to serve iCAN for now for the 6th year as a speaker, judge, and co-chair. I'd like would to acknowledge and thank Moonsuk, along with the organizing committee members for producing the 6th anniversary of the 2021 International Invention Innovation Competition event. Thank you inventors for participating. Thank you iCAN for providing the platform for all of us to come together and to share our dreams.

We are the only species that can use our imagination to innovate and shape our reality into every day experiences. Each product we use, and interact with is a unique inventor's expression that connects us from our hearts, intellect and soul.

You, the risk-taking inventors, shape and inspire the world we all live in. You are the creators that unveil the future. You play a crucial role shaping societies, cultures and the world. iCAN fuels simple napkin ideas into inspiring reality.

On behalf of iCAN, I'd like to leave you with a final thought in the words of Albert Einstein, "Imagination is more important than knowledge." To each and every one participating, congratulations. You are one of the few courageous souls that seek and strive for greatness, all while making a difference in other people's lives. Inventors, "Welcome to iCAN 2021!"

**HOWARD A. LIM** 

President

HOW Creative

Co-Chairman of the Jury at iCAN (2016 ~ present)



## ALIREZA RASTEGAR / President of IFIA

Society has always been impacted by technology. Each invention has affected how people relate to one another and how cultures have expanded or ended. Technology impacts how cities grow, where people live, and who owns what. Technologies are the reason that people are more social, and that teaching and learning are changing.

Therefore the International Federation of Inventors' Associations (IFIA) whose aim has been to promote the culture of invention and innovation for more than half-century highly supports the creation of an international platform where the world inventors get together, exchange innovative knowledge, and display the fruits of their mind.

In order to this approach, IFIA offers its unconditional support to the 6th International Invention Innovation competition in Canada (iCAN 2021) for its underlying concept of disseminating the culture of invention and innovation nationally and internationally which is in parallel with IFIA's mission. Due to Coronavirus (COVID-19) pandemic that is still affecting worldwide, most IFIA events including iCAN 2021 will be held online because we believe that the invention and innovation will not stop under any circumstances, rather it can help mankind in times of crisis.

IFIA members, inventors and innovators from all over the world are highly encouraged to join iCAN 2021 which is taking place virtual and online on 28 August in Toronto, Canada. I hope all participants will enjoy this great event.



**ALIREZA RASTEGAR** 

President

International Federation of Inventors' Associations (IFIA)

Silicon Valley International Invention Festival, SVIIF in USA



## MANLI HSIEH / President of WIIPA



Respected guests, delegates, my dear friends, and organizers of iCAN 2021, my warmest greetings to everyone! Today marks Toronto International Society of Innovation and Advanced Skills (TISIAS) successful years in hosting international exhibition during pandemic constraints.

First of all, I'd like to acknowledge the Representatives of international organizations and the media present in today's event. It gives me great pleasure to see a better and stronger iCAN team under the leadership of Moonsuk. I'd also like to take this opportunity to commend all WIIPA members and cooperation partners for your active participation and support to every WIIPA events whether onsite or online.

It only proves that the WIIPA family remains strong and united in our efforts to champion our cause in introducing new ideas in the advancing technology of our times.

In closing, I want to congratulate everyone in your contribution for this creative exhibition and in making iCAN 2021 a huge success. And I'm looking forward to seeing you all in KIDE Taiwan this year!

**MANLI HSIEH**   
*President*  
**World Invention Intellectual Property Associations (WIIPA)**  
Kaohsiung International Invention & Design EXPO, KIDE in Taiwan



## MIKE MCFARTHING / Vice-President of the Jury

Greetings, to all our inventor community globally! Fond wishes from Toronto, Canada.

It's iCAN Awards time again, one of my favorite events annually, and this is already our 6th year! Hoping it will be one of the best editions ever. My name is Mike McFarthing, and I am the Director of Education for the Innovation Initiative Co-op, "The Inventors Circle".


The Inventors Circle is a long running and dynamic inventors co-operative, as a non-profit that helps local and international inventors promote their big ideas. We recently, shifted from in person meetings to online. As such we have the capability of having inventors from around the world attend as well.



At this year's iCAN 2021 "The Finals" online, I will be speaking about, 'How to promote yourself and your Big idea in Canada'. So let's all get ready to share our innovations, promote inventing and gain exposure of our big idea at the iCAN Awards.

And as a final message I think we all can agree on, Thanks Moonsuk Chang for all your ongoing hard work inspiring us, and sustaining this important annual event in Toronto, Canada for our global inventor community.

I sincerely look forward to the event this year and congratulations to all creative minds around the world for their excellent achievements and outstanding efforts dedicated on iCAN 2021 platform.  
"Thank you for your Ideas, Time and Efforts."

**MIKE MCFARTHING**   
*Director of Education*  
**Innovation Initiative Co-operative Inc. "The Inventors Circle"**  
iCAN Jury Vice-President & The Master of Ceremonies (2016 ~ present)



innovatorscircle.org



innovation initiative  
A non-profit forum supporting innovative business

## PROF. DR. ANDREI VICTOR SANDU / Vice-President of the Jury



On behalf of the national Romanian delegation at iCAN 2021, I wholeheartedly congratulate TISIAS and iCAN Team for the great effort in organizing the most important invention show in North America. It is a huge step forward for the innovation community considering the pandemic situation. I am sure that this year's 6th annual iCAN will break any barriers and obstacles and come out of the tunnel as the most successful version ever!

The Romanian Inventors Forum is a professional association with the purpose to support, stimulate, develop and valorize the scientifically, technically and artistically creativity of individuals or institutions from Romania and abroad. In this respect, we highly support Toronto

International Society of Innovation and Advanced Skills (TISIAS) and its privileged annual event, iCAN as the main partner and colleague from Romania.

I am happy to continue my great relationship with the organizer, Moonsuk CHANG and wish that iCAN will continuously become one of the best international events available for inventors worldwide and to become the spotlighted platform for worldwide commercialization of inventions and inventors success.

### ANDREI VICTOR SANDU

President

Romanian Inventors Forum (FIR)

European Exhibition of Creativity and Innovation, EUROINVENT



## JUHA STARCK / iCAN 2021 Committee Member

Dear iCAN 2021 Organizers, Dear Inventors and Innovators,

On behalf of Office Beat Oy, inventors of the Seat Guard -Microbreaks, the simplest solution to avoid sitting too much, I would like to congratulate you on TISIAS, for the successful organizing of the 6th edition of iCAN. I am honored to have received an invitation to join the iCAN 2021 committee.

I hope that the inventions and innovations presented will meet with the wide interest of recipients, will obtain a high jury rating and achieve market success. The difficult COVID-19 times we are currently experiencing make everyone realize in a unique way how important the role in the modern world is for scientists, inventors, and innovators who, thanks to their knowledge and inventiveness, can help and rescue, fulfilling the hopes placed in them by millions of people.



We hope that scientific discoveries, innovations, including those presented at iCAN 2021 Online, will bring in this particularly challenging reality the hope of a quick return to normality - both in the social and economic dimension, and will protect us in the future from similar experiences.

I wish all participants good health, satisfaction and recognition for their work and a significant contribution to social and economic progress and development.

Enjoy the online show and best wishes from Finland.

### JUHA STARCK

President & CEO

Office Beat Oy, Finland

Co-Inventor of Seat Guard – Microbreaks



## RONALD DOCIE SR. / JURY & KEYNOTE SPEAKER



CONGRATULATIONS iCAN 2021 participants for taking a BIG step to help make a better World!!!

YOU are SPECIAL! YOU are part of the choice few who are willing to surpass the potential for criticism, surpass the notion of failure, and face the potential for OPPORTUNITY squarely in the face, and exclaim, "I'M HERE!!!", with all your GREATNESS!

CONGRATS also to the iCAN organizers and volunteers for making all this be a reality; a testament that dreams CAN become reality, and being the LEADERS YOU ARE!!!

During this year's iCAN 2021 "The Finals", I will be speaking about a very interesting topic: "How to Find a Manufacturer to Pay You Cash or Royalties for Your Idea / Invention" as one of the keynote speakers.

I sincerely hope that you will enjoy it and benefit from watching my presentation.

**RONALD DOCIE SR.** 

*President*

**Docie Development LLC**

**Keynote Speaker & Jury Member of iCAN 2021**



## WINFRIED STURM / iCAN 2021 Committee Member & Jury

First a hearty welcome in my duty as Youth-Representative of German Invention Association (KIT-DEV) to all inventors, friends and participants of iCAN 2021 "The 6th Edition".

My exceptionally congratulation is focused on Mr. Moonsuk Chang as the organizer and Chairman/Chief Exhibition Officer of Toronto International Society of Innovation & Advanced Skills (TISIAS). I'm happy to support the 6th International Invention Innovation Competition in Toronto/Canada as a worldwide outstanding invention fair.

In my function as International STEM-Ambassador and IFIA-Youth-Network-Manager (International Federation Inventor's Associations) I see my special commitment to motivate young inventors for Science, Technology, Engineering and Mathematics.



My especially goals are to strengthen creativity and to open their minds for peaceful cooperation worldwide. The aim is to stimulate innovation among youth also to sharpen their communication skills in order to find the right way to realize an idea to an innovative invention.

The special focus is to build bridges between worldwide nations and their youth to overcome barriers of different cultures, education and religious because we have only one planet. We have to share our world in a peaceful life to overcome the worldwide challenges. Therefore we need inventors with creative ideas and innovative inventions.

Inventors, welcome to iCAN 2021 "The 6th Edition" – Toronto, Canada!

**WINFRIED STURM** 

*Youth-Representative*

**German Invention Association (KIT-DEV)**

**International STEM-Ambassador / IFIA Youth Network Manager**



**DEUTSCHER  
ERFINDERVERBAND e.V.**



## VICTOR BAUTISTA DÍAZ / iCAN 2021 Committee Member



Dear all participants, organizers, members of the Committee and International Delegations: congratulations to all of you for being present in iCAN 2021, despite the undesirable circumstances the entire world is suffering. I would like to thank Mr. Moonsuk Chang for his friendly and warm reception towards my presentation. Thank you very much, Mr. Chang, and thanks very much to all of you.

In the same way, I would like to congratulate all inventors around the world for their passion and heroic efforts and initiative. Creation is a special characteristic of the human being. Creation has allowed us to reach the current state of our civilization. From my point of view, the invention could be done by an expert team, but creation itself, I mean, the first original idea, is born in a single mind. Again, I wish to warmly congratulate all of you. Thank you very much.

### VICTOR BAUTISTA DÍAZ

*Retired Chemist from Argentina*  
**Chemical-Technical Private Researcher**  
Keynote Speaker & Jury Member of iCAN 2021



## RADWAN CHOUAIB / Delegation of Lebanon

The National Association for Science and Research (NASR), is proud to participate in the 6th International Invention Innovation Competition in Canada, iCan 2021, taking place online by the end of August. This participation comes as a result of cooperation between Toronto International Society of Innovation & Advanced Skills (TISIAS) and NASR. The cooperation started with the Beirut International Innovation Show, BIIS 2021, which organized by NASR took place online last April.

Hereby, I would like to congratulate TISIAS achievement and dedication to the purpose and mission of promoting international creativity and innovation worldwide. I appreciate your contributions and efforts during the last years, and I wish you to get numerous successful events like this in the future.



### RADWAN CHOUAIB

*President*  
**National Association for Science and Research (NASR) – Lebanon**  
Beirut International Innovation Show, BIIS



## DR. YOSHIRO NAKAMATS / iCAN 2021 Committee Member



I, “The Father of Invention”, the chairman of International Invention & Innovation Institute and World Genius Convention (WGC) congratulate the 6th Anniversary of iCAN in Toronto, Canada.

I sincerely wish you all the best and success. The creation is the parent of progress. The person who invents is a genius. My hope is that the progress you engender will benefit all people for centuries in a world that is free, prosperous and at peace.

We are welcome geniuses from Canada and all over the world to the 36th World Genius Convention in Tokyo, Japan. Let’s invent the world together! Welcome to iCAN 2021 to all geniuses around the world!

### YOSHIRO NAKAMATS

*Chairman*  
**International Invention & Innovation Institute (IIII) – Japan**  
World Genius Convention, WGC



## DR. M. FERNANDO GUZMÁN MUÑOZ / TISIAS PARTNER



CONGRATULATIONS !!!!!

Dear Participants, we celebrate your decision to participate at iCAN2021, you are part of a whole new generation, ready to change our world, with your enthusiasm, creativity, ability and leadership, also thanks to the iCAN organizers who did not let be defeat by pandemic and managed to carry out this great event of science and innovation.

You are a different generation a better generation, you are those who decided to face and overcome the pandemic, those who did not stop their dreams and are ready for the world after COVID-19. Give your best and enjoy the event. Cheers from SOLACYT – MEXICO!

**FERNANDO GUZMÁN MUÑOZ** 

CEO

Latin America Society for Science and Technology (SOLACYT)  
Sociedad Latinoamericana de Ciencia y Tecnología – MEXICO



## MA. CHAT DONNA V. OFILAS / iCAN Committee Member

The Manila Young Inventors Association congratulates the Toronto International Society of Innovation and Advanced Skills (TISIAS), the organizing team of iCAN, for creating innovations, opening doors, and fostering new ideas. We also convey our heartfelt gratitude and admiration for your contribution to the growth and advancement of the culture of invention and creativity throughout the world. With your leadership, iCAN has always been the greatest invention show. Your passion and commitment to support inventors and innovators on a global scale are evident in every edition of iCAN. To the iCAN participants, continue to conquer the world with your incredible ideas. Through your endeavors, you may be the answer to issues and encourage others to achieve the best. Our deepest admiration and thanks go to TISIAS and all those who contributed to the success of the 6th edition of iCAN. It's been always delightful to have the opportunity to be a help to the success of iCAN and TISIAS. We always look forward to more "iCANIC" years.



**MA. CHAT DONNA V. OFILAS** 

Secretary-General

Manila Young Inventors Association (MYIA)  
Master Teacher I at Ramon Magsaysay High School



## OMAR BILONASHVILI / Delegation of Georgia



The Inventors Club of Georgia congratulates the 6th annual International Invention Innovation Competition in Canada, iCAN 2021 organizers and team (especially to Mr. Moonsuk Chang) and to all participants in this amazing expo held in Toronto, Canada on August 28, 2021.

We are thankful for the opportunity to be part of your great event and hope it will be another step forward to success, piece and cooperation between peoples of the world challenging covid 19 troubles. With great respect,

**OMAR BILONASHVILI** 

Founder & CEO

Inventors Club of Georgia  
IFIA Full Member



## HOSSEIN VAEZI ASHTIANI / Delegation of I.R. IRAN

On behalf of the First Institute Researchers and Inventors in I.R.IRAN (FIRI), I would like to extend my sincere congratulations to the Toronto International Society of Innovation & Advanced Skills (TISIAS) for the 6th year's successful implementation of the International Invention Innovation Competition in Canada - iCAN and wish you further progress and prosperity.



This year is the 6th edition of iCAN and the crossing from this year is accompanied with the best wishes for the organization committee of iCAN to gain more success and a higher position in the years to come.

It's worth mentioning that the cooperation between TISIAS and FIRI dates back to 2016 in first edition of iCAN, when for the first time a group of Iranian inventors took part in the event. The bilateral collaboration continued since the Iranian inventors gained successful results in that year and iCAN was professionally organized.

Finally, it is a big pleasure for us to continue our collaboration with TISIAS and we will actively take part in the event to showcase our country's creative achievements.

Inventors, welcome to iCAN 2021 and we wish all of you have a successful outcome during the event.

### HOSSEIN VAEZI ASHTIANI

*President*

**First Institute Researchers and Inventors in I.R. IRAN (FIRI)**

**IFIA Exco Member & Treasurer**



## PROF. DR. MICHAŁ SZOTA / Delegation of Poland



On behalf of Association of Polish Inventors and Rationalizers (SPWiR), I would like to take this opportunity and extend our congratulation to the Toronto International Society of Innovation & Advanced Skills (TISIAS) for activity in the field of invention and innovation as well as the successful organizing The International Invention Innovation Competition in Canada iCAN for 6 consecutive years.

iCAN is the premier event of Canada for worldwide inventors which has shown continuous growth and improvement since its first edition in 2016.

This exhibition gives the opportunity to promising inventors and innovators to share creative ideas among one another and provide an excellent exposure of innovation and technological advancements in various sectors.

I am sure that all inventors from all over the world will be delighted to attend the event due to exceptional chance to display their innovative ideas and connect with technology seekers.

Due to Coronavirus (COVID-19) pandemic that is still affecting the worldwide, the most of events still is held online. But I believe that the invention and innovation will not stop under any circumstances, rather it can help mankind in times of crisis.

I hope all participants will enjoy this great event.

### MICHAŁ SZOTA

*President*

**Association of Polish Inventors and Rationalizers (SPWiR)**

**IFIA Vice-President & Director**



## ZOLTÁN NAGY / Delegation of Hungary

Dear iCAN 2021 Organizer Colleagues!

It gives me great pleasure to have me and my association join this event for the 2nd time since last year! Congratulations to the iCAN 2021 participants for their efforts, the organizer and the team for the 6th annual release.

The Idea Club 13 Association is celebrating its 25th anniversary this year. On this occasion, I respectfully greet all the inventors of the world, I wish everyone good health and good luck.



**ZOLTÁN NAGY** 

*President*

**Idea Club 13 Association**

**Ötlet Club 13 Egyesület – Hungary**



## ERRICHA INSAN PRATISI / Delegation of Indonesia



Hi, let me first introduce myself. I am Erricha Insan Pratisi from Indonesian Invention and Innovation Promotion Association (INNOPA). First of all, I would to congratulate the TISIAS Organization, especially Mr. Moonsuk Chang for successfully holding the 6th edition of iCAN in 2021. Every year, INNOPA always participate in iCAN and sending Indonesian teams to this event. iCAN has become one of our most important and favorite International invention exhibitions.

I would like also to congratulate all of the iCAN participants for being able to compete in this prestigious event. Hopefully all of the invention brought to iCAN will be useful to the human needs, especially to solve many problems that happened right now.

The last, pl allow me to invite you to our event "Indonesia Inventors Day" that will be held on 26-29 November 2021 in Bali, Indonesia.

**ERRICHA INSAN PRATISI** 

*President*

**Indonesian Invention & Innovation Promotion Association (INNOPA)**

**Organizer of the Indonesia Inventors Day, IID**



## DR. BUGS TAN / iCAN 2021 Committee Member

Amidst the uncertainty and the madness created by the Covid-19 pandemic, human continue to find ways to survive. That's the key important natural ability of the human species. Children need to go to school, business need to run, place of worship need to opened and life need to go on. I am pleased to see the Toronto International Society of Innovation and Advanced Skill (TISIAS) has yet again triumph this year to organize the 6th iCAN 2021 International Invention competition. This is another huge milestone that demonstrate nothing can stop us from inventing new technology for a better world. Congratulation TISIAS for such a courage and living up to your responsibilities when the community of inventors worldwide needed you most. Well done!!



**BUGS TAN** 

*President*

**ViTroX Academy**

**Keynote Speaker of iCAN 2021**



## BARBARA HALLER / Delegation of Poland



It is an honor to be the part of this special event. On behalf of Eurobusiness-Haller - Polish delegate but also an organizer of International Invention and Innovation Show INTARG®, I would like to congratulate TISIAS their successful organization of iCAN, despite the ongoing pandemic.

The whole world is still struggling with coronavirus, that has influenced each aspect of economic and social life. The difficulties we are experience make everyone realize the importance of science and innovators.

We believe that innovative solution presented at iCAN 2021 will bring the promise of normality - both in the social and economic dimension. I wish all participants health, satisfaction and recognition for their work and a significant contribution to global development.

**BARBARA HALLER DE HALLENBURG-ILLG** 

*President*

**EUROBUSINESS-HALLER**

**Organizer of the International Invention and Innovation Show, INTARG**



## PROF. DR. AUGUSTIN SEMENESCU / iCAN 2021 Jury

Dear iCAN 2021 participants, organizer & team,

Congratulations to all the contestants who participated in the iCAN 2021 edition of the International Invention Innovation Competition in Toronto, Canada.

iCAN 2021 was organized at a very high level despite the difficult time of the pandemic and I am very happy with the sheer number of participants (608) from 61 countries engaged in creating a better future through sustainable innovation. The highest record number of contestants joined iCAN in this edition.

Being an inventor is hard, and being an inventor in developing countries is even more challenging and I hope this experience helps you stay concerned and motivated to address problems on sustainability by providing new ideas, products, and services that reduce the exploitation of natural resources and benefit humanity and you should remember that we are here with our inventions to create a better world.

I would like to thank all the participants for their enthusiastic participation as well as all the people that backed them with support. You all made iCAN 2021 more interesting and we hope you gained valuable experience and life skills.

A grateful and special thanks to the CEO Moonsuk CHANG for the high level, and professional service. Dear friends and colleagues, keep up the good work and remember: you never know who you are inspiring!

"Because We Can"



**AUGUSTIN SEMENESCU** 

*Professor Habilitated Doctor*

**University POLITEHNICA of Bucharest – Romania**

**Associate Member of Academy of Romanian Scientists**



## DANNY LAI PAK KEONG / Delegation of Macao

As we know that the Covid 19 strain affected all over the world, I do hope this will be over very soon. This pandemic has kept us from meeting each other for almost 2 years already, hope to meet you all very soon.

On behalf of Macao Innovation & Invention Association (MiiA), I would like to express my appreciation to Toronto International Society of Innovation & Advanced Skills for the great deal of efforts, they have devoted to organize the 6th International Invention Innovation Competition in Canada, iCAN 2021. To persevere this well-established culture of innovation for 6 consecutive years.

iCAN is truly one of the biggest North America fairs to be held in Canada, a region of large and civilized Canada dedicated to bring inventors and entrepreneurs together and facilitate marketing, licensing and manufacturing of the products.

Now entering its 6th year, I believe that iCAN has really set the tone for its foundation and a strong base in Canada for global exchange and networking opportunities for a diversity of professionals, students, researchers and scientists to share ideas and make progressive improvements for their creative works.

Finally, I would like to thank the MOONSUK CHANG the Chairman for inviting Macao to participate in this wonderful event.



### DANNY LAI PAK KEONG

President

Macao Innovation and Invention Association (MIIA)

Vice-President of WIIPA



## DR. SO SOKUNTHEARY / Delegation of Cambodia



On behalf of Norton University, Cambodia, I would like to congratulate on your 6th anniversary of the 2021 International Invention Innovation Competition in Canada iCAN which organized by Toronto International Society of Innovation & Advanced Skills (TISIAS).

TISIAS is known across the globe for supporting students, inventors, innovators, entrepreneurs, and researchers to promote creative ideas and innovative projects through making numerous participations in international invention exhibitions, conferences, and other relevant events.

I am very grateful to the TISIAS for their work and for demonstrating the continued support and create such an annual event like the 6th iCAN 2021.

I have recognized the effort of the International Invention Innovation Competition in Canada, iCAN, since 2016 when they organized a new opportunity for the world inventor through their overseas invention shows for international delegation to participate.

As the representative of Cambodia, I would like to congratulate the organizers for hosting this great event, and I look forward to supporting the event as a Cambodian participant. Best wishes to all the competitors and for a successful iCAN 2021.

### SO SOKUNTHEARY

Professor

Norton University – Cambodia

Representative Delegate of iCAN 2021



## DR. CATHERINE DEMETRIADES / iCAN 2021 Committee Member



Congratulations to my fellow Inventors for winning the 2021 iCAN Awards.

This world belongs to those who have the power to change it. You hold in your hands the awards, the decision of many knowledgeable and distinguished people of science from iCAN Canada who judged your arduous journey as being worthy of recognition.

To be an Inventor is to mimic the Creator. We are all but mere tools for the divine. Knowing your souls' mission is a blessing that comes to the few that have learned how their Mind Meets their Spirit.

Your True Inventors Life has only just begun. It's time to use all that energy and power that got you here to make sure the world knows about it and uses it for the good of mankind. For you didn't get this far, just to get this far. There is always more. Don't leave your dreams on the shelf. Go out into the world and bring it forth, after all, if iCAN believes in you so will the rest of the world.

Congratulations you just got a Date with Destiny. Stay Inspired and always. Stay in the Matrix.

– Catatrix in the Matrix

### CATHERINE DEMETRIADES

Founder & CEO  
CXAI Technologies  
Keynote Speaker of iCAN 2021



## YEVHEN KUDRAIVETS / Delegation of Ukraine

On behalf of the UNESCO Center Junior Academy of Sciences of Ukraine (JASU), I am honoured to express sincere congratulations to the Toronto International Society of Innovation & Advanced Skills on the occasion of the 6th anniversary of the international competition in Canada, iCAN!

We believe that participation in such a prestigious competition gives all young inventors an incredible opportunity to share their inventions and ideas with the world.

To get new experience, to promote and discuss it with professional experts and like-minded people, to meet other innovators, and create something impressive.

We think that this event contributes to the development of some powerful ideas and shows their value to the world. Being part of such a global community is like a gold chance for everyone who invents, designs, and tries to solve actual-earth problems.

We appreciate all the opportunities TISIAS creates for the future generation. JASU wishes you to achieve new heights and any inspiration to continue this global mission through the years.

You help others to make this world convenient, innovative, and without restrictions.



### YEVHEN KUDRAIVETS

Deputy Director for Strategic Project Management & Int'l Affairs  
Junior Academy of Sciences of Ukraine (JASU) – UNESCO  
Director of Executive Committee MILSET Worldwide



## DR. PHAN QUOC NGUYEN / Delegation of Vietnam



We are very excited about the 6th Anniversary of ICAN and have been always supporting International Invention Innovation Competition in Canada (ICAN) during many consecutive years, even under the hard pandemic situation.

On behalf of Institute for Invention and Innovation, Vietnam (SANVIC), we would like to express my sincere thanks to Toronto International Society of Innovation and Advanced Skills (TISIAS) for the great efforts to organize the 6th Anniversary of ICAN, which has been really one extraordinary event held in Toronto by both USA and Canada to promote invention and innovation activities of nearly 50 countries in the world under World Invention Intellectual Property Associations-WIIPA's umbrella during six consecutive years.

TISIAS has been extended more and more and has really become one of the biggest invention and innovation exhibition in the North American, which brings inventors and startups a good chance in presenting new technical solutions, in doing their marketing of their inventions, in licensing of patents and in cooperating to manufacture products. With the support of WIIPA, SANVIC and other partners all over the world, TISIAS plays a significant role in the success of WIIPA.

**PHAN QUOC NGUYEN** 🇻🇳

*President*

**Institute for Invention and Innovation, Vietnam (SANVIC)**

**WIIPA Director of Public Relations / iCAN 2021 Jury Member**

**SANVIC**

## DR. WAGDY & DR. VICTORIA / iCAN 2021 Jury Members

It is a pleasure to congratulate and salute the creative iCAN team. They were very keen to maintain the lead and carry the day in a field characterized by the spirit of fierce and violent competition.

The iCAN team was able to draw strength and determination from the team spirit to overcome obstacles and frustration barriers imposed on the entire world by the COVID-19 pandemic. They also made good use of good planning and mastery of study to find alternatives and solutions that keep the wheel of work and activity running.

They took advantage of the rapid and wide development of social media and its tools and gadgets to reach inventors and innovators all over the world, turning to them when they could not move to iCAN headquarters in Toronto.

We wish iCAN team continuous progress, permanent success and successful spread all over the world, achieving their dreams and implementing their plans and programs, and taking the hand of inventors and innovators, both young and old, to see their inventions and innovations realized and produced worldwide.

Sincere congratulations on such a successful well-organized iCAN 2021, and see you in successful upcoming editions. God willing.



**VICTORIA RAMZY HABIB ATTIA & WAGDY RIZK GHALI RIZK** 🇸🇦

*Invention Education Specialists*

**iCAN Organizing Committee (2016 ~ present)**

**iCAN Jury Members (2016 ~ present)**





## GENERAL INFORMATION

### TITLE OF EVENT

The 6th International Invention Innovation Competition in Canada, iCAN 2021

### DATE

iCAN 2021 *"The Preliminaries"* | January 15 – July 15  
iCAN 2021 *"The Finals"* | August 28

### SPECIAL REMARKS

iCAN 2021 is conducted online for the long-distance mode participants without a physical gathering.

### ORGANIZED BY

Toronto International Society of Innovation & Advanced Skills (TISIAS)

### SUPPORTED BY

Innovation Initiative Co-operative Inc. "The Inventors Circle"  
International Federation of Inventors' Associations (IFIA)  
World Invention Intellectual Property Associations (WIIPA)

### PARTNERS, DELEGATIONS & CONTRIBUTORS

Accent on Skills Consulting – Canada  
AHA2RICH – Canada  
Apostolic Vicariate of Calapan Parochial Schools, Diocesan Education Office  
Arabian Invention and Innovation Company (AIIC)  
Association of Polish Inventors and Rationalizers (SPWiR)  
Association of Thai Innovation and Invention Promotion (ATIP)  
Bright Inventors Association – France  
CANADA"IN" Student Exchange Agency – Korea/Canada  
Citizen Innovation – Singapore  
CMA Choi Cheung Kok Secondary School  
CXAI Technologies  
Częstochowa University of Technology  
Docie Development, LLC  
EUROBUSINESS-HALLER – Poland  
Education University of Hong Kong  
Egyptian Council of Creativity Innovation & Protection of Information (ECCIP)  
First Institute of Canadian Inventors (FICI)  
First Institute of Researchers and Inventors in I.R Iran (FIRI)  
German Invention Association (KIT-DEV)  
Hong Kong Student Invention Patent Program (HKSIP)  
HOW Creative – USA  
imMaker Education – Hong Kong  
Indonesian Invention and Innovation Promotion Association (INNOPA)  
Institute for the Promotion of Invention & Innovation (SANVIC) – Vietnam  
International American University (IAU) – USA  
International Invention & Design Leader Awards (IIDLA) – Korea/Canada  
International Invention & Innovation Institute (IIII) – Japan  
INVENTARIUM SCIENCE – SRD Security, Research & Development – Portugal  
Inventors Club of Georgia  
Inventors College Organization (ICO) – Canada  
John III Sobieski Secondary School – Poland  
Junior Academy of Sciences of Ukraine (JASU) – UNESCO  
Korea Invention Academy (KiA)  
Korea Invention News (KINEWS)  
Korea University Invention Association (KUIA)  
Latin America Society for Science and Technology (SOLACYT)  
"Lucian Blaga" University of Sibiu – Romania  
Lodz University of Technology – Poland  
Macao Innovation and Invention Association (MIIA)  
Manila Young Inventors Association (MYIA) – Philippines  
National Association for Science and Research (NASR) – Lebanon  
Norton University – Cambodia

OFEED – Morocco  
 Office Beat Oy – Finland  
 Ötlet Club 13 Egyesület – Hungary  
 Patent Invention Magazine – Italy  
 Romanian Association for Alternative Technologies Sibiu (A.R.T.A. - SIBIU)  
 Romanian Inventors Forum (FIR)  
 Shun Tak Fraternal Association – Yung Yao College – Hong Kong  
 Sri Lanka Inventors Commission (SLIC)  
 Taiwan Invention Intellectual Property Association (TIIPA)  
 Turkish Inventors Association (TÜMMİAD)  
 Turkish Inventors and Innovators Network (TIIN)  
 Uncle Bugs Inventor Academy – Malaysia  
 Union of Arabian Academics (TUOAA)  
 Universiti Sains Malaysia (USM)  
 University POLITEHNICA of Bucharest – Romania  
 Visions in Green – Canada  
 ViTrox Academy – Malaysia  
 World Genius Convention (WGC) – Japan  
 Yahya Kemal College (YKC) – Macedonia

## INTERNATIONAL JURY

<b>Bob Huybrechts</b> The Inventors' Circle (CANADA) / Co-Chairman	<b>Howard A. Lim</b> HOW Creative (USA) / Co-Chairman
<b>Mike McFarthing</b> The Inventors' Circle / Vice-Chairman of the Jury	<b>Andrei Victor Sandu</b> Romanian Inventors Forum / Vice-Chairman of the Jury
<b>Ronald Docie Sr</b> Docie Development, LLC – Ohio State, USA	<b>Victor Bautista Díaz</b> Chemist & Researcher of Buenos Aires, Argentina
<b>Winfried Sturm</b> German Invention Association (KIT-DEV)	<b>Guy Langvardt</b> International American University (IAU)
<b>Michał Szota</b> Association of Polish Inventors and Rationalizers (SPWiR)	<b>Adam Rylski</b> Lodz University of Technology – Poland
<b>Fernando Maldonado Lopes</b> INVENTARIUM SCIENCE – Portugal	<b>Zoltán Nagy</b> Idea Club 13 Association – Hungary
<b>Otto Schmidt</b> Accent on Skills Consulting / Inventors College Organization	<b>Raymond Lawson</b> The Inventors' Circle
<b>Masoud Shafaghi</b> Int'l Federation of Inventors' Associations (IFIA)	<b>Babak Khodaparast</b> The First Institute of Canadian Inventors (FICI)
<b>Danny Pak Keong Lai</b> Macao Innovation & Invention Association (MiiA)	<b>Bugs Tan</b> Uncle Bugs Inventor Academy & ViTrox Academy
<b>Victoria Ramzy Habib Attia</b> Invention Education Specialist	<b>Wagdy Rizk Ghali Rizk</b> Invention Education Specialist
<b>Hok Ming Kwan</b> The Education University of Hong Kong	<b>Phan Quoc Nguyen</b> Institute for Promotion of Invention & Innovation (SANVIC)
<b>Mihail Aurel Titu</b> Lucian Blaga University of Sibiu	<b>Augustin Semencescu</b> University Politehnica of Bucharest
<b>Majid El Bouzazaoui</b> OFEED – Morocco	<b>Radwan Chouaib</b> National Association for Science and Research (NASR)
<b>Juhyeong Kil</b> International Invention & Design Leader Awards (IIDLA)	<b>Ilgar Boz</b> Invention Exchange Specialist
<b>Gihan Farahat</b> Egyptian Council of Creativity Innovation Protection (ECCIP)	<b>Lucian Seiciu</b> University POLITEHNICA of Bucharest
<b>Jerzy Maduzia</b> John III Sobieski Secondary School	<b>Mohd Salman Abu Mansor</b> Universiti Sains Malaysia (USM)
<b>Angelita Elliott</b> Visions in Green – Canada	<b>Amedeo Pozzebon</b> The Inventors' Circle / Deo Innovations
<b>Mithona Luy</b> Norton University – Cambodia	<b>Ma. Chat Donna V. Ofilas</b> Manila Young Inventors Association (MYIA)
<b>Lau Sai Chong</b> Hong Kong Student Invention Patent Program	<b>Unchalee Sanguanpong</b> Association of Thai Innovation & Invention Promotion (ATIP)

## ABOUT iCAN 2021 “THE 6<sup>TH</sup> ANNUAL EDITION”

iCAN is the premier event of Canada for worldwide inventors which has shown continuous growth and improvement since its first edition in 2016 through 2017–2019, and to last year’s 5th Anniversary in 2020 marking the event’s highest record for the total number of participants and collaborating organizations. The past 5 editions of iCAN from 2016–2020 featured participants from over 81 different countries of the world continents: North, South and Central Americas, Europe, Asia, the Middle East, Africa and Oceania which redefined the event as the true global stage for worldwide inventors in Toronto, Canada.

This year, the **6th annual International Invention Innovation Competition in Canada, iCAN 2021** is being held online and it is our honour to once again invite you to join us and share ideas, make an impact, and be awarded for your outstanding creativity and innovation that Canada wants to see from you.

iCAN 2021 features favourable online programs: invention competition, educational keynote speakers’ presentations, the Finals Movie, the Catalogue and the iCAN Awards. Inventors, innovators, students, professors, researchers, scientists, designers, entrepreneurs, and anyone with spectacular ideas in any industries and invention categories are eligible to apply to iCAN 2021 and participate in all programs of the event and enjoy many benefits of participation.

## THE PRELIMINARIES

iCAN 2021 “*The Preliminaries*” was open for a 6-month period of time from January 15 – July 15 where applicants registered to the competition by submitting their application forms by email. The Preliminaries served as the selection process for Gold, Silver and Bronze Medal Award Winners based on the jury’s screen evaluation of the text/visual contents that the applicants have provided in their application forms to express their projects. The applicants were then proceeded to the Finals as Finalists. Proceeding to the Finals is an optional choice upon their decision to progress further in the competition.

## THE FINALS

iCAN 2021 “*The Finals*” is the advanced phase of the Preliminaries as the final stage of the competition where the Finalists are required to present their projects’ video presentations for an additional opportunity for the jury’s evaluation, thus an additional opportunity to win the iCAN 2021 “The Finals” Awards.

The Finals is a privileged stage that is exclusively offered for those who have passed the competition Preliminaries stage of the event. All Finalists who decide to proceed to the Finals can enjoy the benefits of the programs offered below. This year’s iCAN 2021 “The Finals” will be progressed virtually through content uploads of the following items online on August 28<sup>th</sup>:

### iCAN 2021 “THE FINALS” ONLINE PROGRAMS

August 28<sup>th</sup> @ 10:00AM (EST) – Toronto, Canada on [www.tisias.org/ican-finals2021](http://www.tisias.org/ican-finals2021)

CONTENT UPLOAD I	iCAN 2021 “The Finals” Award Winners Announcement
CONTENT UPLOAD II	iCAN 2021 Keynote Speakers’ Educational Presentations
CONTENT UPLOAD III	iCAN 2021 “The Finals” Movie Showcase
CONTENT UPLOAD IV	iCAN 2021 Official Catalogue Online

## AWARDS

\* iCAN 2021 “The 6<sup>th</sup> Edition” features nomination of the following awards for the Finalists \*

### iCAN 2021 “The Finals”

GRAND PRIZE		SEMI-GRAND PRIZE	
TOP 10 BEST INVENTION AWARDS		TOP 20 BEST INVENTION AWARDS	
BEST YOUNG INVENTOR AWARDS		BEST WOMAN INVENTOR AWARDS	
BEST INVENTION VIDEO AWARDS		BEST INVENTION DESIGN AWARDS	
ORGANIZER’S CHOICE AWARDS		JURY’S CHOICE AWARDS	
TISIAS SPECIAL AWARDS		INTERNATIONAL SPECIAL AWARDS	
ACHIEVEMENT AWARDS	AWARD OF EXCELLENCE	APPRECIATION AWARDS	

### iCAN 2021 “The Preliminaries”

GOLD MEDAL AWARDS	SILVER MEDAL AWARDS	BRONZE MEDAL AWARDS
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## LIST OF EXHIBITS

*70 Countries in Participation for iCAN 2021 "The 6<sup>th</sup> Edition"*

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## ALGERIA

<b>DZ-01</b>	<b>NAME(S)</b>	Fayçal chettah
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	Remote control	
<p>This device wirelessly controls whatever we want to control with an unlimited distance. To give an example, suppose my car was stolen from me. I can stop it no matter how far it is. Through a simple phone that does not have internet. Another example, I can use my device in the field of agriculture where he operates the water pump and waters the fields regularly....etc.. It has many uses.</p>		

## ARGENTINA

<b>AR-01</b>	<b>NAME(S)</b>	Víctor Bautista Díaz
<b>ORGANIZATION</b>	Retired private chemist	
<b>TITLE OF ENTRY</b>	<b>Organic amendments for soils containing humic substances and humic-like products derived from animal slaughter, organic agroindustrial residues and household waste</b>	
<p>Chemical transformation of by-products derived from animal slaughter, organic agroindustrial residues and household waste (organic garbage) for the preparation of organic amendments for soils containing humic acids and humic-like substances. This chemical conversion is operated according to the following steps: • Hydrolysis and oxidation in diluted nitric acid solution. • Separation of the liquid phase: preparation of organic fertilizers. • Heating of the solid product obtained through dilute potassium hydroxide (preferred concentration: 1M). • Further reaction with hydrogen peroxide. • Colloidal grinding of the end-product of the reaction. • Optionally, the method also makes it possible to obtain organic fertilizers applicable by foliar or soil administration.</p>		

## ARMENIA

<b>AM-01</b>	<b>NAME(S)</b>	Boris Aghaian Moghadam
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>Multi Power Heating System(MPHS)</b>	
<p>MPHS is a result of 10 years of work and experiments. It's built based on the standards of fan coil with the difference that it doesn't have a powerhouse central system. So, it lowers energy loss and consumption tremendously, it works with electricity which is considered a clean energy source, and due to its unique design, it has a true COP of 3 and higher with the recent versions. We have also done some experiments using the same system in fresh produce drying machines and successfully decreased the energy use and time (by 1/8) and increased the quality. It is also very suitable to connect to solar systems since it gives the possibility to cut the amount of PV panels to 1/3 of the amount, which is the project I'm currently working on. So all its features together make the device a more efficient and environmentally friendly system.</p>		

## AUSTRALIA

<b>AU-01</b>	<b>NAME(S)</b>	INV. VALIANT YUK YUEN LEUNG
<b>ORGANIZATION</b>	SYNERGISTIC TRAFFIC CONSULTANCY PTY. LTD.	
<b>TITLE OF ENTRY</b>	<b>SYNERGISTIC RECONFIGURABLE TRAFFIC INTERSECTION</b>	
<p>SYNERGISTIC RECONFIGURABLE TRAFFIC INTERSECTION targets the worldwide congested urban traffic cross/star intersections with intersecting roads comprising with 4 and 5 lanes or more. Existed road spaces are rearranged synergistically with centrally located reconfigurable lane/s. By reducing the time-costly red traffic-light phase/s without losing any function, the congested volume will then be reduced proportionally. The flexibility of the centrally located reconfigurable lane/s will meet the dominant needs at any-time easily from any starting point to any destination. Independent bicycle flows are integrated harmoniously without disturbances to the system by providing a novel receiving bicycle lane and right hook-turn bicycle waiting islands.</p>		

## BRUNEI

<b>BN-01</b>	<b>NAME(S)</b>	ALEX YIP CHEE SIANG / JEFFREY YONG TZYY SHANN
<b>ORGANIZATION</b>	CHAINEXT ENGINEERING SERVICE AND SUPPLY SDN BHD	
<b>TITLE OF ENTRY</b>	<b>SIMCOM Wellhead Hydraulic Control System</b>	
<p>For SIMCOM-Wellhead Hydraulic Control System which can be used during 'black start-up' of wellheads where instrument air or gas supply is not available. Current system is not able to do that. By incorporating a hand operated pump and a manual override three-ways valve for 'black start-up' this SIMCOM is of great convenience to operators. Compact and quality functional product. Ease of maintenance compare to current system in terms of the needs of a lubricator. Stainless Steel components are extensively used throughout and ease of dismantling piping connections during maintenance.</p>		

## BULGARIA

<b>BG-01</b>	<b>NAME(S)</b>	<b>Milazim Tahirukaj / Andriana Surleva</b>
<b>ORGANIZATION</b>	University of Chemical Technology and Metallurgy, Bulgaria Kosovo Forensic Agency, R Kosovo	
<b>TITLE OF ENTRY</b>	<b>Development and validation of SEM-EDS method for analysis of gunshot residues</b>	
<p>This project is aimed at developing a Kosovo National database for elemental analysis of ammunition and identification of origin of gunshot residue (GSR) for forensic application. To achieve the aim, it is necessary to optimize and validate a method for identification of GSR characteristic particles commonly encountered in real cases in R Kosovo. The effect of operating parameters of SEM/EDS is thoroughly studied to obtain accurate and reliable GSR identification and elemental composition data. The optimized method is validated according to ASTM 1588-08 and is found to be fit-to-purpose. The advantages are: reproducibility for 0.5 µm particles 8% RSD; sensitivity - 95% and bias -5 %, any false positive detected, the number of false negatives is 3- 7 and true positives : 96 - 100. The validated method is applied for identification of GSR particles in 550 samples from 144 cases. The rate of positive results is 14 %.</p>		

## CAMBODIA

<b>KH-01</b>	<b>NAME(S)</b>	<b>Dr. So Sokuntheary / Mr. Chuop Sopheap / Miss. Khat Sorina / Miss. Rey Sunday / Miss. Oum Sreypich</b>
<b>ORGANIZATION</b>	Norton University	
<b>TITLE OF ENTRY</b>	<b>Fascinating Khmer Dishes system</b>	
<p>To begin with, every buildings in Phnom Penh city on present day has growth a remarkable rate. National parks, hotels, schools, hospitals, houses, phones, transportation, or even restaurants have included classic-modern concept to their buildings. Nevertheless, Some parts of blocks in the city still remain French architectural structures that have never been remove from its spot for years. Therefore, a concept pops up to create a "Tablet ordering system" which would be an innovative update idea to the old French building with a brand new modern system toward today's technology.</p>		

<b>KH-02</b>	<b>NAME(S)</b>	<b>Mr. Kanan Torn / Mr. Mesa Samneang / Ms. Heng Sovanmonynuth</b>
<b>ORGANIZATION</b>	Norton University	
<b>TITLE OF ENTRY</b>	<b>NU Power Strip</b>	
<p>NU Power Strip is an embedded system that allows users especially older and disabled people who can use their voice to control the fan to turn on or off in Khmer voice command based on Google Speech to Text API via Arduino UNO Microcontroller to automatically convert voice or text to control the fan. In order to do that, we will create a NU Power Strip app controller with the ability to translate voice and text that command by the users. In particular, we want to have more research on embedded system in Industry 4.0, so that the quality of our students will never be lost compare to international students.</p>		

<b>KH-03</b>	<b>NAME(S)</b>	<b>Ms. Heng Sovanmonynuth / Mr. Sam Bandithviphou / Mr. Phalinhour Sorn / Mr. Manuth Sorn</b>
<b>ORGANIZATION</b>	Norton University	
<b>TITLE OF ENTRY</b>	<b>NU Smart Attendance</b>	
<p>Smart Attendance is an AI attendance system that allows users get attendance more convenient and save time by using the face recognition algorithms to recognize the detail information of the users and check the attendance for them automatically based on passing by the camera. In order to do that, we will create a Smart Attendance controller system integrate with Microsoft excel with the automatically get the attendant of the users. In particular, we want to have more research on AI technology in Industry 4.0, so that the quality of our students will never be lost compare to international students.</p>		

<b>KH-04</b>	<b>NAME(S)</b>	<b>Mrs. So Sokuntheary / Mr. Chuop Sopheap / Mr. Lov ThaiLeng / Mr. Chiv VongHong / Mr. Kong SovanaRith</b>
<b>ORGANIZATION</b>	Norton University	
<b>TITLE OF ENTRY</b>	<b>The Memorable of French Colonial in Cambodia</b>	
<p>Phnom Penh has plenty of colonial-era buildings. Old building will stay last longer longer. However, if we do not renew, it will suffer. We observe that About 40% of old French colonial architecture is being demolished, to make way for modern high-rises. This has seriously affected the architectural, historical and cultural values of capital. So we should renovated the old France colonial building to become a community place for cyclo that can attach the tourism to visit and feel back to the Cambodia historical</p>		

## CAMEROON

<b>CM-01</b>	<b>NAME(S)</b>	<b>EWANE SPORAH EPEDE</b>
<b>ORGANIZATION</b>	SUSTAINABLE AGRO FOOD ECONOMICS (SAFE CAMEROON)	
<b>TITLE OF ENTRY</b>	<b>PLANTAIN TRANSFORMATION</b>	
<p>The purpose of this project is to transform plantain into flour for better preservation and for easy consumption by all age groups. The main objective is to transform plantain into flour for better conservation and easy consumption by all age groups besides, to reduce unemployment and to boost the economy of our nation.</p>		

<b>CM-02</b>	<b>NAME(S)</b>	<b>WAM ELVIS MBIUGEH</b>
<b>ORGANIZATION</b>	HOLY CENTER FOR RESEARCH AND PRACTICAL SCIENCES (HCRPS)	
<b>TITLE OF ENTRY</b>	<b>FOOD ELECTRONIC PROCESSING DRYER</b>	
<p>FOOD ELECTRONIC PROCESSING DRYER, unlike, other dryers and dehydrators is a contribution in the scientific community which is purely African; in that it is made out of Local Materials such as; Metal, fire bricks, wood, electronic components and a chemical solution which is used for the construction of the internal walls and the finishing of "the thermal amplifier". The creation uses electrical energy either from a cell, a generator, solar plant, hydro power which is changed into thermal energy with the help of a catalyst (drying, baking, cooking, frying) that is used for excellent preservation of agricultural products like Cocoa, coffee, vegetables, livestock, etc. what is premium to this concept is that the cost of running the invention is cheaper.</p>		

<b>CM-03</b>	<b>NAME(S)</b>	<b>MBUH RAPHAEL MBUH / EMMANUEL NJUMA MBEH</b>
<b>ORGANIZATION</b>	FIRST MODERN AGRO. TOOLS COMMON INITIATIVE GROUP (FI.MO.AT.C.I.G)	
<b>TITLE OF ENTRY</b>	<b>STEAM ELECTRIC GENERATOR</b>	
<p>The steam electric generator produces a jet of steam at high pressure through which mechanical energy is converted to electrical energy. The steam electric generator is made up of a furnace, a coil of capillary tube inside the furnace. Coal or biomass such as sugar cane chaff or oil palm chaff is ignited to burn and produce heat energy. The heat energy converts water inside a tank in the furnace to steam. The steam builds pressure inside the capillary tubes and when the pressure valve is opened the steam spins an impulse turbine which drives a generator producing electricity.</p>		

## CANADA

<b>CA-01</b>	<b>NAME(S)</b>	<b>Stephen Po Ming Cheng</b>
<b>ORGANIZATION</b>	SC Innovation	
<b>TITLE OF ENTRY</b>	<b>Critical Thinking Type Inventions and Innovations</b>	
<p>Inventions are the creation of new products or methods which are patentable. Innovations are the creation of new concepts which can help people better understanding of nature. Four principle methodologies have led to the inventions and innovations in the past: (1) exploration; (2) mathematical calculation; (3) the application of a technology or knowledge; and (4) critical thinking. Most inventions and innovations can be distinguished on the bases of one or more of these four methodologies. Today, I am going to give you two examples of my own, one critical thinking type invention and one critical thinking type innovation.</p>		

<b>CA-02</b>	<b>NAME(S)</b>	<b>Chad Wanless / David Palachik</b>
<b>ORGANIZATION</b>	TCU Communications (div. Terranova Defense)	
<b>TITLE OF ENTRY</b>	<b>Quantum Resilient Encryption</b>	
<p>TCU is an collaboration of CEWS and Terranova Defense to provide a non- algorithmic but secure encryption layer that is undecipherable even by a quantum computer. The present day big prime number cyber encryption are becoming and will continue to become more vulnerable to brute force attacks using the computing power of Quantum computers. TCU's Quantum Resilient Encryption use a special series for digital handshakes that ensure trust in a zero trust cyber environment.</p>		

<b>CA-03</b>	<b>NAME(S)</b>	<b>Raymond E. Tong</b>
<b>ORGANIZATION</b>	ASR Consultants Limited	
<b>TITLE OF ENTRY</b>	<b>AIR PRESSURE EQUALIZING SYSTEM</b>	
<p>The AIR PRESSURE EQUALIZING SYSTEM employs air-porous baffles that are temporarily "loaded" upon intermediary structures mounted on vehicles, and freight containers moving through air. The assembly of air-porous baffles are located at short distances beyond the external surfaces of moving bodies. The baffles are in frictional contact with flowing high velocity, low air pressure air molecules and generate destructive interference air turbulences. Destructive interference air turbulences absorb energy from higher velocity air molecules flowing over the baffles external surfaces causing these air molecules to slow down and contract in volume. This reduces the volume and number of zones containing low air pressure partial vacuums, thereby causing zones containing different air pressures to become more equalized with each other and this process reduces "air resistance".</p>		

<b>CA-04</b>	<b>NAME(S)</b>	<b>Esmael Mohammadi / Tarnaz Chamani / Amir Mohammadi / Alireza Rajabnejad / Sarah Heidt</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>Design, Control and Prototyping, Active Assistive Exoskeletal Robot for Rehabilitation of Upper Limb</b>	
<p>Due to the increasing number of people suffering from physical disabilities in the upper limb region, developing an assistive wearable robot seemed crucial. These disabilities are most common in elderly people or those who are suffering from spinal injury or stroke. Herein this project a wearable assistive robot for rehabilitation of the upper limb has been developed. The mechanism has 9 DoFs, Portable and the novel controller is applied for the robot. Our conductive research showed that the proposed assistive robot was successful in tracking the patients' desired trajectory while maintaining the client's comfort.</p>		

<b>CA-05</b>	<b>NAME(S)</b>	<b>Summy chi sum PUN</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>Eco-Friendly Smart Clean Toilet Board</b>	
<p>Currently, most smart clean toilet boards require skilled workers to install, involving the power and water supplies. Also, there is a continuous use of electricity, which is not eco-friendly.  Features of this Invention: 1. No installation of power supply / 2. No installation involving the water pipes  3. Can be used for medical purposes / 4. Adjustable water temperature / 5. Switch between Manual Pneumatic Mode and Chargeable Battery Power Mode</p>		

<b>CA-06</b>	<b>NAME(S)</b>	<b>PARAMASEELAN VITHURSHAN</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>ANTIMICROBIAL MACHINE</b>	
<p>DEVELOP A MACHINE TO DESTROY ALL TYPES OF MICROORGANISMS BASED ON THEIR POWER LEVEL USING ELECTRICITY AND ELECTROMAGNETIC WAVES. DESTROYING AND STOPPING THE ACTION OF MICROORGANISMS BASED ON THE DIFFERENT IN ENERGY LEVELS OF EACH ATOM AND THE STRENGTH OF THE BONDS BETWEEN THEM AND THE AMOUNT OF ELECTRON STICKING.</p>		

<b>CA-07</b>	<b>NAME(S)</b>	<b>Milad Feyzi / Merat Feyzi / Mohammad Reza Feazi / Mani Feyzi</b>
<b>ORGANIZATION</b>	E-CRACK TECHNOLOGIES INC.	
<b>TITLE OF ENTRY</b>	<b>Ecrack</b>	
<p>Ecrack offers software and composite solutions for crack detection and repair. Ecrack's software is an AI-based solution that detects concrete cracks and classifies them according to their crack type. The software can be downloaded and installed on various devices with built-in cameras such as drones, UGVs, and smartphones. Ecrack's artificial intelligence will first detect and identify crack types and recommend the most suitable concrete filler for repair. The company offers three types of self-healing nanocomposites that are each specialized for different types of cracks. These nanocomposites are also highly resistant to weather and temperature changes and have self-healing capabilities. This reduces the need for future maintenance operations as they have the capabilities to repair themselves over extended periods of time using special types of self-healing material.</p>		

<b>CA-08</b>	<b>NAME(S)</b>	<b>Omid Reza Momenzadeh / Azadeh Moosavi Shirazi / Mahtab Malekpour Khazari / Arash Mobasherfar</b>
<b>ORGANIZATION</b>	Extrength Technologies Inc.	
<b>TITLE OF ENTRY</b>	<b>Extrength</b>	
<p>Extrength is a new-generation decompression belt that is equipped with artificial intelligence (AI) and internet of things (IoT) technology to alleviate back pain in the most convenient and efficient way. AI and IoT technology aggregates data regarding the patient's conditions and administers a user-tailored treatment. Data can be further analyzed by the patients themselves, chiropractors, physicians, and orthopedic doctors. Extrength also has an electromyography biofeedback sensor (EMG) that is capable of assessing muscle conditions and locating the areas of pain. Extrength is not only aimed at treating conditions, but also relieving and alleviating pain through transcutaneous electrical nerve stimulation (TENS).</p>		

<b>CA-09</b>	<b>NAME(S)</b>	<b>Glen Hammond</b>
<b>ORGANIZATION</b>	Hotrock Innovations Inc.	
<b>TITLE OF ENTRY</b>	<b>MULTIFUNCTIONAL GRIDDLE/INDIRECT COOKER &amp; COOKING RACK</b>	
<p>This creative cooking device is an improvement to current griddles, indirect cooker and cooking rack devices known to the cooking industry and more specifically the outdoor cooking industry. More specifically it is a combination of all three while allowing for more versatile and creative ways of cooking foods on barbecues and open camp fires. It can also be used as a warming device to keep food warm and or a cooling rack. Commercial and industrial applications are another area of use for this device in the cooking industry.</p>		



## CHAD

<b>TD-01</b>	<b>NAME(S)</b>	<b>OSMAN MOHAMED OSMAN MOHAMAD</b>
<b>ORGANIZATION</b>	MEDICAL STUDENT AT UNIVERSITY OF ELIMAM ELMAHADI	
<b>TITLE OF ENTRY</b>	<b>Comprehensive Smart Waste Disposal System (CSWDS)</b>	
It is a home electronic device that takes care of a kidney patient, examining kidney functions with high accuracy, easy way, simple time, providing advice to the patient, monitoring his condition continuously, and reporting in the event of an emergency.		

## CHILE

<b>CL-01</b>	<b>NAME(S)</b>	<b>CARLOS RODRIGO RUZ CAMPOS</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>ELLIPTICAL URBAN BICYCLE</b>	
Elliptical urban bicycle, safe, comfortable, and easy maneuverability, with speed system variation can be used by children and adults of all the ages due to his safe mechanism and simple design.		

## CHINA

<b>CN-01</b>	<b>NAME(S)</b>	<b>Jinfeng Gao / Ting-Cheng Chang / Yu Zhang / Haitao Wu / Yuxiang Zhu</b>
<b>ORGANIZATION</b>	School of Information Engineering, Huanghai University, China	
<b>TITLE OF ENTRY</b>	<b>An Intelligent Emotional Assessment System</b>	
This product is designed as a wearable product for emotion perception, which can help people better understand their "self" by detecting stress, fatigue, and emotions based on the gender and age of the person being tested. Once a mood detector can detect emotions more accurately, it can be used as an assistant to help people get more visual data about their feelings in school, work, and healthcare. Emotion detection is suitable for understanding one's psychological state and helps to promote further innovation in other fields of application, such as education, medical treatment, caregiving, and business.		

<b>CN-02</b>	<b>NAME(S)</b>	<b>Shanghai Mengsheng Biological Technology Co., Ltd.</b>
<b>ORGANIZATION</b>	Shanghai Mengsheng Biological Technology Co., Ltd.	
<b>TITLE OF ENTRY</b>	<b>Collagen Enzyme Drink (Tropical Fruit Flavor)</b>	
Containing a variety of high-quality proteins, the Collagen Enzyme Drink(Tropical Fruit Flavor) features 2 fermenting and the Synergene metabolism-boosting formula, which can promote fat burning and body shaping while boosting the growth of Parabacteroides goldsteinii in the intestinal tract to increase metabolism for weight loss. This product is also infused with extracts from plants that grow in extreme environments to give cells rich nourishment. To conclude, the product is a functional health drink specially designed for slimming and skin nourishment.		

<b>CN-03</b>	<b>NAME(S)</b>	<b>Tupperware (China) Co., Ltd.</b>
<b>ORGANIZATION</b>	Tupperware (China) Co., Ltd.	
<b>TITLE OF ENTRY</b>	<b>COLLAGEN PEPTIDE BIRD'S NEST FLAVOR DRINK</b>	
Tupperware's COLLAGEN PEPTIDE BIRD'S NEST FLAVOR DRINK contains dual collagen peptides sourced from Japan and Norway and elastin peptides patented in Japan. The 3 types of peptides have been clinically proven to reduce melanin in the body by 20%, increase the skin's moisture by 34.77%, reduce skin photodamage, and increase collagen secretion by 56.7%, and the above values are significantly different from those of the control group. Moreover, the DRINK is infused with Peony flower Extract, which has been proven in experiments to reduce transepidermal water loss and reduce wrinkles by 11.4%, lily extract that regulates sebum secretion and brightens the skin, the golden bird's nest with epidermal growth factors, and Haematococcus pluvialis and glutathione with high antioxidant activity to improve wrinkles, fine lines, dryness and firmness.		

<b>CN-04</b>	<b>NAME(S)</b>	<b>Zhejiang Gichancy Cosmetics Co., Ltd.</b>
<b>ORGANIZATION</b>	Zhejiang Gichancy Cosmetics Co., Ltd.	
<b>TITLE OF ENTRY</b>	<b>Gichancy Fermented Berry Fruit Compound Drink</b>	
Gichancy Fermented Berry Fruit Compound Drink features the proprietary Golden Formula, which can promote the growth of Parabacteroides goldsteinii in the intestinal tract by 4 times to help lose weight and maintain slimmness healthily and improve the intestinal environment while accelerating the discharge of body waste, which helps reduce waist circumference. Besides, the Drink is infused with the fat-burning extract of a variety of berries sourced from places across the world to boost the fat burning capabilities of the body, reduce central visceral fat, increase metabolism, and reduce fat accumulation.		

<b>CN-05</b>	<b>NAME(S)</b>	<b>Phoenix(KunYu Li) / Ethel(ZiYan Zhang) / Toby(ZhenTao Ma) / Floriane(RuoYun Fang) / Kaiserling(Xin Chen) / Alyssa(JinRui Yu)</b>
<b>ORGANIZATION</b>		Chengdu Foreign Languages School
<b>TITLE OF ENTRY</b>		<b>Multi-functional pressure ulcer rehabilitation system</b>
<p>A mattress with a multi-layer structure including a headrest and a cadre which has multiple airbags, and multiple airbags are stitched together into a single unit to form a mattress. There is no communication between one airbag and another, and each airbag is equipped with an air pipe. Valve can be provided on each air pipe, or the main air pipe contains valve. The air pipe is connected with the charging motor, which can then achieve charging and deflating. Each airbag is also equipped with a pressure sensor that can detect the pressure in the corresponding position to avoid the danger of excessive airbag pressure.</p>		

<b>CN-06</b>	<b>NAME(S)</b>	<b>Successmore Being Public Company Limited</b>
<b>ORGANIZATION</b>		Successmore Being Public Company Limited
<b>TITLE OF ENTRY</b>		<b>S.O.D More Dietary Supplement Product (Nutrinal Brand)</b>
<p>This product features extracts of 125 kinds of fruits and vegetables and is fermented for 180 days through special fermentation technology to achieve high SOD and ORAC values and high antioxidant activity. The 125 kinds of fruits and vegetables are in 5 different colors; each color of them contains different phytochemicals, which have different health benefits on the organs of the body. This product contains 7,800 μmol of ORAC per 15ml, which is higher than the antioxidant value of the recommended amount of fruits and vegetables per day. The powerful anti-oxidant effect helps the body improve immunity and protects cells from oxidative damage. It is suitable for consumption by the whole family.</p>		

## CROATIA

<b>HR-01</b>	<b>NAME(S)</b>	<b>Stipan Orčić</b>
<b>ORGANIZATION</b>		N/A
<b>TITLE OF ENTRY</b>		<b>COLD THERAPY MASSAGER</b>
<p>The Cold therapy Massager is a stand-alone device with its own energy source, refrigeration compressor and chambers with refrigerant material. It is intended to for reduce swelling, high body temperatures, stings and bites of insect. It is also effective for relieving pain that can be relieved with cold compresses. According to the size of the therapy site, the size and shape of the cooling chamber is selected. Cooling chambers can be of various shapes and sizes, with a flat or anatomically shaped therapeutic surface. The device is portable and can be used on trips, excursions, hiking, sports games, etc. As such, the device is applicable in places where devices for cooling linings or freezing water and creating ice are not available. The massager is an additional alternative to medical aids for cold therapy. <b>Patent N° P20192327A, Republic of Croatia State Intellectual Property Office</b></p>		

<b>HR-02</b>	<b>NAME(S)</b>	<b>Stipan Orčić</b>
<b>ORGANIZATION</b>		N/A
<b>TITLE OF ENTRY</b>		<b>Energy Processor</b>
<p>Energy that is radiated through space in high-energy particles, as well as those particles that reach the earth, is used by the Energy Processor as a source for electricity production. It is equipped with two antennas with cosmic particle catchers: with positive and negative electric charge. The collected particles accumulate in the thrusters and create cumulative energy that directs them to two separate terminals with energy plates in which the particle breaking processes take place. The energy released in the terminals, created during particle breaking, pushes the initiated electricity into a rectifier that generates electricity. The electricity thus formed becomes usable and applicable to consumers who connect to the device. The power processor would have its application in space flights as well. In the higher layers of the atmosphere and in near and far areas of space, cosmic radiation is more active and stronger, which makes the device more productive. It would be installed in spacecraft, probes or mobile vehicles sent to explore various planets. The device would produce electricity that would be used to power the parent spacecraft. <b>Patent N° P20201059A Republic of Croatia State Intellectual Property Office</b></p>		

## CYPRUS

<b>CY-01</b>	<b>NAME(S)</b>	<b>Dr. Catherine Demetriades</b>
<b>ORGANIZATION</b>		N/A
<b>TITLE OF ENTRY</b>		<b>CXAI Technology</b>
<p>CXAI Technology is the first Actual Intelligence technology in the world. It extracts the information within the human Influential Matrix and decodes both recent and genetic subconscious thought and emotional patterns from Quanta. It can read complex computational thought patterns both recent and genetic memory and even dissect conglomerate masses unreadable by humans. This will uncover mysteries of science and medicine such as in Coma, Sleep, Anesthesia. New Born Babies will now have a reading of their subconscious genetic memory. The list goes on for the vast amount of biological sciences CXAI Technology can be implemented as it compliments new portals of Science. It will also offer a new era in Quantum Artificial Intelligence and Augmented Reality. Animals also benefit from this new Science and will soon have a voice and we will understand the internal world of all living things individually as well as a collective consciousness of humans, animals and nature. Studies are being made with Trees, Plants and other forms of Nature. CXAI Technology was created to understand the intelligence of all living things within them and amongst them. Human, Animal and Nature Consciousness is the new era of Actual Intelligence.</p>		

## EGYPT

<b>EG-01</b>	<b>NAME(S)</b>	<b>Eslam Hamada Lotfy Mohamed</b>
<b>ORGANIZATION</b>	ESELA	
<b>TITLE OF ENTRY</b>	<b>ESELA</b>	
<p>This research aims at settling the technology of electric transport in all countries of the world. Contrary to what Tesla did (electric cars for the rich only). So we designed an electric transport vehicle (ESELA) that runs on the ground, on the rails and in the sea. This is a product of the design of rubber-coated frames from steel-mediated hex terminals. As a result of the inverse relationship between pressure and surface area, the brass is designed to float over water (to eliminate traffic congestion problem).</p>		

<b>EG-02</b>	<b>NAME(S)</b>	<b>Dr. Fadi Ibrahim Ahmed</b>
<b>ORGANIZATION</b>	Saad Ibn Rabiaa School, Kuwait	
<b>TITLE OF ENTRY</b>	<b>Novel inhibitor for covid-19 by nanotechnology and UV system for safe schools, hospitals, transportations and closed areas.</b>	
<p>The antiviral activity of seven different carbon quantum dots (CQDs) with Azaphthalocyanin (Az-Pcs) for the treatment of human coronavirus infections was used through robot spreading system. Az-Pcs used to adsorb UV light and concentrate it to CQDs to avoid destruction of tissue and cells by high energy. The first generation Az- Pcs-CQDs antiviral with nanostructures showed a concentration-dependent virus inactivation with an expected estimated EC50 of 50±8 µg mL<sup>-1</sup>. The underlying mechanism of action of these Az-Pcs-CQDs could be due to interaction of the functional groups of the CQDs with COVID-19 entry receptors; surprisingly, an equally large inhibition activity was observed at the viral replication step. Az-Pcs with boronic acid derivatives have been proposed as low toxicity agents for inhibiting the entry various viruses. The underlying mechanism of action of these CQDs was revealed to be the CQDs interaction with the COVID-19 S-protein. The antiviral activity of Az-Pcs-CQDs with different Zn nanosize need to be evaluated on Huh-7 cell monolayers infected with COVID-19.</p>		

<b>EG-03</b>	<b>NAME(S)</b>	<b>Mohamed Hassany Atta Abubakr</b>
<b>ORGANIZATION</b>	Al-Azhar University	
<b>TITLE OF ENTRY</b>	<b>Crutch to help the blind</b>	
<p>A crutch to help the blind consists of sensors through which any obstacle in front of the blind or a slope in front of it is identified. The elderly were taken into account and a rostat was made in a form to control the intensity of vibration. They are desirable and when there is water on the ground, it gives a signal warning it not to slide, and the crutch is collapsible despite the wires that pass through it and it can be charged.</p>		

<b>EG-04</b>	<b>NAME(S)</b>	<b>MANAR GAMAL RABIE ALY</b>
<b>ORGANIZATION</b>	The Union of Arab Academics	
<b>TITLE OF ENTRY</b>	<b>Study on electrospinning to fabrication nanofiber and its performance in blood filtration</b>	
<p>In the circumstances faced by Egypt, Egypt faced many problems such as the problem of dialysis. Is that dialysis takes 6 hours throughout the week and increasingly by the patient, the patient blood pressure and sugar is different from a patient virus is different from the normal patient where some scientists proved that patient when washed in the first time be toxicity in growing the second time therefore does not cause the first time any benefit the patient keeps washing three times a week to purify toxins in his body by a few gavbetali not use patient only effort, fatigue and suffering.</p>		

<b>EG-05</b>	<b>NAME(S)</b>	<b>Abdullah Bahaa Al-Din Atallah / Elsayed Osman</b>
<b>ORGANIZATION</b>	Exploration Center for Science and Technology in Sohag	
<b>TITLE OF ENTRY</b>	<b>Hallockville Points For treating otitis media</b>	
<p>Description of the research to treat the problem of otitis media, the virus that causes inflammation must first be eliminated and the infection treated itself. The disease is characterized by infecting a person with the herpes virus and viruses that cause influenza, and acute inflammation occurs that is difficult to treat with regular medicines. Great for killing the viruses that cause inflammation, as there is a substance Urgiol acetylcholine in cloves, which is an anti-inflammatory and strong analgesic substance, which makes the treatment with them together is the most appropriate and were extracted from both the haloc plant and the clove in the form of ear drops.</p>		

<b>EG-06</b>	<b>NAME(S)</b>	<b>Abrar Mohamed abdel Ghani</b>
<b>ORGANIZATION</b>	Maadi STEM school	
<b>TITLE OF ENTRY</b>	<b>Water Sensor</b>	
<p>Farming is one of the most important functions that must be proven in the technological Renaissance to improve the quality of crops, improve irrigation methods to provide water by determining the specific amount of water that soil needs, and improve farming methods to make it easier for the farmer to see the land on his own without the farmer having to irrigate his own land. Today we're going to design an integrated system of irrigating the land, farming.</p>		

<b>EG-07</b>	<b>NAME(S)</b>	<b>Asmaa Qubaisi Khalef Allah Ali Osman</b>
<b>ORGANIZATION</b>	Exploration center for science and technology in sohag	
<b>TITLE OF ENTRY</b>	<b>National cream for psoriasis cat</b>	
<p>Hair psoriasis treatment. Hair psoriasis may cause incontinence to many sufferers and it may make some feel embarrassed, and hair psoriasis is one of the stubborn types that do not respond to medications easily for several reasons. This cream will be used to permanently eliminate psoriasis because it is not just a pain reliever, it completely eliminates the disease at its root.</p>		

<b>EG-08</b>	<b>NAME(S)</b>	<b>Suhaila Mohamed Elmetwaly Elmetwaly</b>
<b>ORGANIZATION</b>	Alexandria faculty of medicine	
<b>TITLE OF ENTRY</b>	<b>Bone lightweight structural system</b>	
<p>Where concrete or steel can collapse under a weight of ton, a bone can resist collapsing under much more weight. It's due to the shape of the bone which resists collapsing under intense tension and compression. The idea is to design a bone-shaped concrete to be hollow and curved as a bio-mimicry for bone resistance. By using this shape, we can use only 70% of the currently used amount of concrete to lift the same weight efficiently, with less lb. of carbon annual emission. And due to its light weight, it's resistant to earthquakes of strength of 6 Richter.</p>		

<b>EG-09</b>	<b>NAME(S)</b>	<b>Mahmoud Ibrahim kamel Mahmoud Mohamed</b>
<b>ORGANIZATION</b>	Exploration Center for Science and Technology in Sohag	
<b>TITLE OF ENTRY</b>	<b>Bag to detect the type of meat and its suitability</b>	
<p>The increase in meat prices made a number of butchers slaughter donkeys instead of cows as well as rotten meat for cheap prices, so I used chemical evidence to differentiate between the three meats The chemical evidence is a white bag found on it from the outside and filter from the inside a material revealing the type of meat, since if we use the detector bag about the type of three meat, We find that, first, if we put the healthy meat inside the bag, the color does not change, it remains violet, secondly/ if we put the meat expired, the color of the tape changes from the violet color To light red, thirdly/ If we put donkey meat inside the bag, the color changes from violet to green.</p>		

<b>EG-10</b>	<b>NAME(S)</b>	<b>Abanoub Hani Naguib</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>Cancer destroyer</b>	
<p>Laboratory experiments were conducted to measure the efficiency of the extract for this experiment, where it showed statistically significant differences in treatment in the previous stage of background G1 and the cells standing in the G1 stage without entering the cell cycle again, which makes the ability of this extract to destroy carcinogenic cells of type PC3.</p>		

<b>EG-11</b>	<b>NAME(S)</b>	<b>Abanoub Iskander Rizk Iskander</b>
<b>ORGANIZATION</b>	Sohag Military Mechanical Secondary School	
<b>TITLE OF ENTRY</b>	<b>Natural cream for vitiligo</b>	
<p>Vitiligo is a genetic disease that gives the skin a bad appearance and makes the sufferer in a bad psychological state, and his medications in the case of the regulator do not achieve successful results for registration, the cells that participate in the production of melanin pigment are responsible for the production of skin color and the cell damage that occurs in the production of melanin pigment and the appearance of white spots We suppose that when the skin is treated with substances that have the ability to activate cells to produce melanin and resist its proliferation, the skin can return to its normal state.</p>		

<b>EG-12</b>	<b>NAME(S)</b>	<b>Mohand Mostafa Abdelfattah Mohmed Ramdan / Zeyad Hisham El-Sayed Metwaly</b>
<b>ORGANIZATION</b>	Sharkya STEM School	
<b>TITLE OF ENTRY</b>	<b>Computational Investigation of Lotus-inspired Horizontal-Axis Wind Turbine Blade</b>	
<p>In the firm belief that the world needs green, renewable, and more efficient energy resources, we are concerned with developing a new design for horizontal-axis wind-turbine blades. Nelumbo nucifera was the motive for the present design of a three-blade wind turbine. Nelumbo Nucifera flower has an aerodynamically appropriate structure, which qualifies the flower to be the nature inspiration for the present research. A computational fluid dynamics simulation was applied to ensure the ability and eligibility of the proposed solution and estimate the real world's results. The experimental findings demonstrated performance enhancement by 31.7% compared to NACA 2412 airfoil.</p>		

<b>EG-13</b>	<b>NAME(S)</b>	<b>Ahmed Mohamed Galal Mohamed</b>
<b>ORGANIZATION</b>	EL-Nahda experimental school	
<b>TITLE OF ENTRY</b>	<b>TFC – The Future Car</b>	
<p>An electric car generates a large part of its energy by flowing compressed wind inside it and harnessing it to generate energy by passing it over the wind turbines. the wind turbines are located inside the compressed air path from a large area to a smaller area (nozzle). It influences by a force that pushes it to enter the specified path, in this project this force is considered the speed of the car.</p>		

<b>EG-14</b>	<b>NAME(S)</b>	<b>Dr. Zaky Abd EILatif Zaky Abdellatif</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>Simply manual winch for handicap, paralyzed &amp; special needs for all uses</b>	
<p>The innovation was designed from the theory of levers of 1st class: First class levers have the fulcrum between the force and the load, and have a mechanical benefit when the force arm is greater than an load arm, innovation has the advantage of moving easy inside the house with carrying the patient to use bathroom, shower or any other needs. The winch carries a weight above 100 kg.</p>		

<b>EG-15</b>	<b>NAME(S)</b>	<b>Omar Mnfy</b>
<b>ORGANIZATION</b>	Alexandria STEM School	
<b>TITLE OF ENTRY</b>	<b>Recycling Turbine</b>	
<p>The world suffers from a lot of problems that prevent the roads from developing. Energy catastrophes threat many countries. Alternative energy is a possible solution to this. The harmful effect on the environment and the living organisms on the earth, so the solution required is to increase the use of alternative energy. The use of alternative energy is being developed across the globe. Generating electricity has many ways. Maybe from the wind, solar energy or hydroelectric energy.</p>		

<b>EG-16</b>	<b>NAME(S)</b>	<b>Dr. Naema Elgendy</b>
<b>ORGANIZATION</b>	EAEA	
<b>TITLE OF ENTRY</b>	<b>Hygienically Polymer for Medical Application</b>	
<p>Hygienically polymer for medical applications; can use for burns, wounds and gangrene. Safe and stops itching and pain, easy for use and low cost and economic. It has a high medical and economic value and achieves a very high investment return for its safety, ease of use and economy.</p>		

## FINLAND

<b>FI-01</b>	<b>NAME(S)</b>	<b>Juha Starck / Rose-Marie Backström</b>
<b>ORGANIZATION</b>	Office Beat Oy	
<b>TITLE OF ENTRY</b>	<b>Seat Guard -Microbreaks</b>	
<p>Seat Guard, Designed for your health. Well-being innovation Seat Guard-Microbreaks. The Simplest Solution To Avoid Sitting Too Much. Seat Guard-microbreaks is a new health innovation to prevent excessive sitting. Seat Guard is a technical intelligent device, that united with the Interstuhl seat cushion makes the perfect combination for healthy sitting on any surface. Place the device into the Seat Guard pocket. The cushion has a non-slip bottom that increases the seat comfort. It is machine washable up to 30°C and this quality cushion is produced in an environmentally friendly way.</p>		

<b>FI-02</b>	<b>NAME(S)</b>	<b>Juha Starck</b>
<b>ORGANIZATION</b>	Office Beat Oy	
<b>TITLE OF ENTRY</b>	<b>Oxygen Pin</b>	
<p>Oxygen is the lifeblood of charcoal/briquette grills, and although there are openings for oxygen in the bottom and lid of the grill, the grilles ignite too often unevenly and slowly. Fireproof steel pipe with evenly spaced holes on the sides and ends with closed steel net to prevent the charcoal from entering inside the pipe. The Oxygen Pin is placed vertically on the bottom of the grill at the air intake of the grill before adding charcoals. The Oxygen Pin helps ensure air intake inside, under, and over the charcoal/briquette pile. The Oxygen Pin makes the grill fire faster and more efficiently. At the same time, the number of ignition times and liquids is reduced as the charcoal/briquette receives oxygen more efficiently. The Oxygen-Pin brings the barbecue a sense of both success and eco-making! The functionality of Oxygen-Pin has been tested with a prototype and the results are clear, the grill ignites better, more efficiently, and requires fewer re-ignition times as well as even less charcoal. The power of the charcoal also lasts longer and the charcoal burns better, which means that less charcoal waste is generated and the cleaning time of the grill is reduced. Oxygen Pin turns the charcoal grill knobs to the southeast!</p>		

## FRANCE

<b>FR-01</b>	<b>NAME(S)</b>	<b>Dr. Majed ALAZZAWI</b>
<b>ORGANIZATION</b>	Bright Inventors Association	
<b>TITLE OF ENTRY</b>	<b>Alginate Impressions Preserver (AIP)</b>	
<p>A new dental device to be used by dentists, dental students and dental labs. It preserves the Alginate dental impressions while they are being delivered to the dental technician. This device achieved the ideal preservation condition according to the experiments done, as it contained: - A humidity sensor connected in series with a thermal coil. - Moisturized cotton put on a metallic plate which is heated by the coil, in order to produce water vapor. - A thermal bag of steriopoor to contain the water vapor. - A small water tank for the continuous irrigation. • This device is easy to use. It just needs to be plugged into electricity to start working, and within 2 minutes, it will produce water vapor that is suitable to preserve the Alginate impressions. • It is also very cheap, and all its constituents are available.</p>		

## GEORGIA

<b>GE-01</b>	<b>NAME(S)</b>	<b>Tamta Bilonashvili</b>
<b>ORGANIZATION</b>	Inventors Club of Georgia	
<b>TITLE OF ENTRY</b>	<b>Package for roasted sunflower seeds and other similar products</b>	
<p>In any country there is widely popular to use (eat) roasted sunflower seeds, especially at the social places like stadiums, parks etc. Unfortunately there is real problem environment pollution with shell (husk) which is thrown mostly in the streets (part of not cultural behavior). We offer to enjoy roasted seeds with comfortable package with additional "pocket " to put shells (husk) and recycle.</p>		

## GERMANY

<b>DE-01</b>	<b>NAME(S)</b>	<b>HAG-Youth-DEV-KIT-Invention-Team</b>
<b>ORGANIZATION</b>	Faust-Gymnasium / DEV-KIT-Initiative	
<b>TITLE OF ENTRY</b>	<b>Third Hand System (THS)</b>	
<p>"Third Hand System (THS)" is an innovative PC-communication-assistance for specific forms of functional disability (e.g. autism), caused by neural blockades of manual movement, usually associated with speechlessness. "THS" was developed with the aim to realize an open hardware- and software-concept for approaching an adaptation to the individual disability characteristics. The detection of arm-force-signals can be recorded by electronic conversion components, consisting of strain-gauge-balancer-system (SGBS) and analog-digital-converter-module. "THS" combined a comfortable and smooth vertical dynamic-system for controlled arm movement. The guided "writing-arm" is simply inserted into a specially customized and padded arm-holding system. The return check of the arm-holding-system to the base position "NN" (about 5 cm above PC keyboard) is realized by the electronic controlled SGBS component. The arm-force is measured by SGBS and controlled by infrared distance sensor signal. Upon detection of movement-disturbance a fast arm-moving is triggered about 30 cm above the keyboard with smooth motion back to the starting position "NN".</p>		

## HONG KONG

<b>HK-01</b>	<b>NAME(S)</b>	<b>Cai Gen / Chung Shing Hei / Fung Tin Yau / Kwong Ming Hin / Woo Chi Lok Garyson</b>
<b>ORGANIZATION</b>	King's College	
<b>TITLE OF ENTRY</b>	<b>Cherishing Older People System</b>	
<p>There is an increasing number of lonely elders, whose old age brings increased susceptibility to health complications, and that paired with the social isolation experienced during the worldwide pandemic will further the adverse impact of kodokushi (lonely death) on the society. In light of this ominous threat, we are presenting the COP System, which makes use of the COP watch and COP app to monitor the health and emotions of the elderly and strengthen their connections with the society, and thus provide adequate medical care and regulate their moods, so as to alleviate the critical situation of kodokushi.</p>		

<b>HK-02</b>	<b>NAME(S)</b>	<b>BUT CARRIE / FONG ALYSSA ZI YING / CHIU ELISE / WONG SIAN / CHOI HAYLEY HIU YI</b>
<b>ORGANIZATION</b>	St Paul's Primary Catholic School	
<b>TITLE OF ENTRY</b>	<b>Air Fan - Deployable shield for aircraft cabin</b>	
<p>Our new design for the post-Covid-19 aircraft cabin interiors features a deployable shield between each seat acting as individual seat foldable partitions. A foldable shield attached to the armrest between each seat would extend when the passenger put down the armrest to create separation for additional protection. Antimicrobial materials and finishes are used to make the shield. Our objective is to re-design how aircraft cabins making the environment safer for passengers and crew attempting to create some social distance between passengers on planes without losing seating capacity.</p>		

<b>HK-03</b>	<b>NAME(S)</b>	<b>TSANG Shing Sing</b>
<b>ORGANIZATION</b>	CMA Choi Cheung Kok Secondary School	
<b>TITLE OF ENTRY</b>	<b>Universal Mirror</b>	
<p>Under the threaten of con-vid 19, the use of electrical HD cam or visualizer for online teaching or meeting become the new habit. However, the cost of an electrical visualizer could be cost for more than 150 USD. The invention could turn a laptop/ Chromebook with front cam into a visualizer in a second with multi-function.</p>		

<b>HK-04</b>	<b>NAME(S)</b>	<b>LIU Sai / DU Yuwei / LEE Hau Him / ZHU Yihao / TSO Chi Yan</b>
<b>ORGANIZATION</b>	City University of Hong Kong	
<b>TITLE OF ENTRY</b>	<b>An intelligent and thermally-responsive window (ITRW) for indoor thermal management and energy-saving in buildings</b>	
<p>Windows play a crucial part in built environment. Herein, an intelligent and thermally-responsive window is invented as a novel solution to smartly control the solar gain in buildings and thus moderate the indoor thermal environment. The window is transparent in cold weather, allowing solar radiation to pass through and provide warmth, but is opaque in hot weather, blocking the solar radiation to prevent the room from overheating. Notably, the invention can regulate the indoor air temperature by over 4 °C and save around 7% of energy consumption in buildings, aiding in the development of energy-efficient and sustainable buildings.</p>		

<b>HK-05</b>	<b>NAME(S)</b>	<b>LAU Ching Hei</b>
<b>ORGANIZATION</b>	Tung Wah College	
<b>TITLE OF ENTRY</b>	<b>Syringe Collector</b>	
<p>The name of my invention is "Syringe Collector". I am a student nurse. At work, I found that some diabetic patients were given injections at home and discarded the used syringes casually, causing pollution and easy infection of others. So, I designed this small instrument for home used or for elder diabetic patients' convalescent in the care and attention homes to collect discarded syringes.</p>		

<b>HK-06</b>	<b>NAME(S)</b>	<b>LAU Chun Hei</b>
<b>ORGANIZATION</b>	Caritas Institute of Higher Education	
<b>TITLE OF ENTRY</b>	<b>Safety Window</b>	
<p>Safety Window is a new design. It is safe, easy-operated and can prevent children from dropping off from it. The design and operation are simple. First unlock and push the window grill outward. When it is fully opened, the area inside creates an Equilateral triangle. It stops infant's head to past through the window. A protective plastic also prevents users' fingers get trapped by window gap.</p>		

<b>HK-07</b>	<b>NAME(S)</b>	<b>Leung Hoi Hin / Leung Cho Wai / Cheung Yuk Wing / Huang Lok Shu</b>
<b>ORGANIZATION</b>	Shun Tak Fraternal Association Yung Yau College	
<b>TITLE OF ENTRY</b>	<b>Schoolbag Check</b>	
<p>Through RFID technology and mobile phone applications, students can check whether the books they need for the day have been packaged through their mobile phones, so that they can prepare for class books. Carrying a schoolbag can avoid losing a lot of books, and you don't have to carry a heavy schoolbag every day. The user can check the contents of the schoolbag and check what needs to be used at any time through the mobile phone application, without having to open the schoolbag specially. Users can also check the contents of the schoolbag and check what items need to be used at any time through the mobile app, without having to open the schoolbag specially.</p>		

<b>HK-08</b>	<b>NAME(S)</b>	<b>Chan Ying Yik / Leung Wang Sum / Ngan Tak Shing / Yau Siu In</b>
<b>ORGANIZATION</b>	Shun Tak Fraternal Association Yung Yau College	
<b>TITLE OF ENTRY</b>	<b>Intelligent traffic identification and control system</b>	
<p>As the traffic problems/accident, including misidentification of traffic light signals in complicated crossroads by drivers and pedestrians/drivers need to wait for long time than usual at road sections, are becoming serious in recent years (<i>in Hong Kong context</i>), thus more serious threat may be posed to both drivers and pedestrians. However, our team has done some research and figured out the current "smart traffic control" alike systems seem having room of improvement in addressing to the problem above, so our team decided to invent a new system.</p>		

<b>HK-09</b>	<b>NAME(S)</b>	<b>Kwok Yee Kan, Celia / Kwok Yee Ki, Cassidy / Ng Ethan / Wong Cheuk Nam, Andrew</b>
<b>ORGANIZATION</b>	Shun Tak Fraternal Association Yung Yau College	
<b>TITLE OF ENTRY</b>	<b>STAD</b>	
<p>A system keeps people away from traffic accidents by checking the drivers' brain waves (including emotion, attention and fatigueness). We found that drivers' bad mental states cause many traffic accidents. So we invented the STAD system. The system can know drivers' mental state by their brain wave. When drivers' mental state is bad, an alarm will ring to wake them up or tell them to calm down. If the user is a bus driver, their mental state will be sent to a cloud system called ThingSpeak which shows to the company.</p>		

<b>HK-10</b>	<b>NAME(S)</b>	<b>Yang Yuen Ting / Tse Yee Lam / Chuang Kam Yuk / Lee Pui Yan</b>
<b>ORGANIZATION</b>	Lai King Catholic Secondary School	
<b>TITLE OF ENTRY</b>	<b>Trendy Toilet</b>	
<p>The problems of toilets usually come from hygiene and smell. In medicine, one can understand the health of human body by distinguishing shapes and colors of stool. To address these issues, we use machine learning to identify shapes and colors of poop based on medical classification methods of stool. A cloud database tracks faeces data as medical records and provides health advice to users. We use ultraviolet light to kill bacteria on toilet seat, and an air pump under toilet seat to take away bad smell. An adjustable pedal is also applied to help people of different heights to excrete.</p>		

<b>HK-11</b>	<b>NAME(S)</b>	<b>Dahua Shou / Jintu Fan / Wei Xin</b>
<b>ORGANIZATION</b>	The Hong Kong Polytechnic University	
<b>TITLE OF ENTRY</b>	<b>Sweatextile: A Sweatable Textile for High Comfort and Protection / Nature Inspired Fabric for Unidirectional Liquid Transport</b>	
<p>The Sweatextile mimics the perspiration action of human skin – quickly and directionally moving and dissipating excessive sweat outwards in terms of water droplets, to protect you from sweat accumulation and external liquids such as rain and contaminated water, while keeping you dry, comfortable, and performing at best. The Sweatextile, a promise of outstanding thermal and moisture comfort, has a wide arrange of consumers such as outdoor enthusiasts, by enhancing personal thermoregulation and saving energy from sweat management. In particular, the Sweatextile is highly desired by the professionals who are often highly active, including athletes, medical personnel, construction workers, firefighters, and soldiers.</p>		

<b>HK-12</b>	<b>NAME(S)</b>	<b>Tsai Ching Man / Chim Ching Hei / Po Hiu Tung / Wong Tze Ching</b>
<b>ORGANIZATION</b>	Christian and Missionary Alliance Sun Kei Secondary School	
<b>TITLE OF ENTRY</b>	<b>Octo-Bus : Barrier free Travelling (BUS) System for Visually Impaired person based on ibeacon Positioning &amp; Real Time Database</b>	
<p>There are mainly 3 functions of Octo-BUS, including helping the visually impaired find the right route of bus, get on the bus, get off the bus at the correct destination. Visually impaired person only need to input the bus route they want, when the bus approaching their current bus stop, they will be informed by the app to get on and get off. For the bus driver's app, the location and destination of visually impaired will be shown automatically. A notification will be sent to the bus driver when the bus arrives at the visually impairer's location and destination.</p>		

<b>HK-13</b>	<b>NAME(S)</b>	<b>Lau Yuk Hang, Uan / Hon Ki Ching / Po Hiu Tung</b>
<b>ORGANIZATION</b>	Christian and Missionary Alliance Sun Kei Secondary School	
<b>TITLE OF ENTRY</b>	<b>Beidou Navigation Rescuing System</b>	
<p>In the past fifteen years, an average of 300,000 fires have broken out in China each year, with more than 1,500 deaths each year, and the economic loss has been as high as billions. Fire safety is an important guarantee for the development of the national economy and society, also related to the foundation and safety interests of the whole society. Therefore, this is a good opportunity for the project "Beidou Navigation Rescuing System" by using Beidou Navigation Satellite Positioning System and 5G indoor positioning technologies to rescue the people trapped in the fire.</p>		

<b>HK-14</b>	<b>NAME(S)</b>	<b>Lee Cheuk Lok / Tsang Sung Tak / Wong Tze Ching / Lu Hiu Tung</b>
<b>ORGANIZATION</b>	Christian and Missionary Alliance Sun Kei Secondary School	
<b>TITLE OF ENTRY</b>	<b>Marine Guard: A Monitoring System by Using AI Image Detection &amp; Submarine to Recognize</b>	
<p>Marine pollution severely damaged habitat harms marine life and in the end, affects humans through the food chain. To resolve this problem, we invented AI Marine Guard, an online reporting abandoned gear system and a robotic submarine with a smart buoy. We found out that the major garbage that are killing marine livings are fishing nets, abandoned by human activities. Due to the large quantities of these dispersed wastes, we designed an underwater drone to identify the locations of the pollutants and then our AI analyses the data to recognise pollutant types.</p>		

<b>HK-15</b>	<b>NAME(S)</b>	<b>Dr Song Yanjie / Dr Lai Yiu-chi / Dr Alpha Ling Man-ho / Mr Wu Kaiyi / Dr Walter Ng Wing-shui / Prof Hiroaki Ogata</b>
<b>ORGANIZATION</b>	The Education University of Hong Kong	
<b>TITLE OF ENTRY</b>	<b>VocabGO – An Augmented Reality English Vocabulary Learning App</b>	
<p>VocabGO is a fun and interactive mobile application designed for students to learn English vocabulary with augmented reality (AR) technology. Users will be able to scan different objects in real life on the app, and learn the meaning and pronunciation of that word instantly. The app contains several learning modes and encourages users to practise and expand their English vocabulary through gamified in-app activities. The app also assists teachers in pedagogical decision-making, as it allows them to track, analyse and evaluate student's digital learning trails.</p>		



<b>HK-16</b>	<b>NAME(S)</b>	<b>Dr Hung Keung</b>
<b>ORGANIZATION</b>	The Education University of Hong Kong	
<b>TITLE OF ENTRY</b>	<b>Audio-Tactile Chinese Characters: Bringing Multisensory &amp; Novel Learning Experience to the Visually Impaired</b>	
<p>"Audio-Tactile Chinese Characters" is a multi-sensory learning kit developed specially for people with visual impairment. It consists of several 3D character models representing Chinese radicals, with tactile and audible components to enhance the overall learning experience. Learners will be able to understand the structural formation of Chinese characters and appreciate the beauty of traditional Chinese calligraphy through feeling, touching, and hearing. With the aid of technology, this invention attempts to break visual and social barriers by providing educational supports to people with special needs. It also fosters social inclusion and equity in education.</p>		

<b>HK-17</b>	<b>NAME(S)</b>	<b>Prof Jim Chi-yung / Prof John Lee Chi-kin / Dr Alice Chow Sin-yin / Other members of the TALE project team from EdUHK</b>
<b>ORGANIZATION</b>	The Education University of Hong Kong	
<b>TITLE OF ENTRY</b>	<b>Tree Assessment for Life Education (TALE) Project</b>	
<p>Integrating life education and Visual Tree Assessment (VTA) into a mobile application named "Tree Portal", this invention is a technology-assisted educational tool intending to equip citizens with botanical and ecological knowledge, and raise environmental awareness on urban trees preservation. The app introduces the VTA technique by providing a systematic framework of 100 visible symptoms of tree-growth issues, depicted graphically. Users are then trained to assess trees' health with the VTA technique. Well integrated with life education activities at schools, this invention cultivates users' appreciation of life and the intimate connection with nature through an environmental perspective of life education.</p>		

<b>HK-18</b>	<b>NAME(S)</b>	<b>Prof Kevin Chung Kien-hoa / Dr Ian Lam Chun-bun</b>
<b>ORGANIZATION</b>	The Education University of Hong Kong	
<b>TITLE OF ENTRY</b>	<b>The Chinese Inventory of Children's Socioemotional Competence (CICSEC)</b>	
<p>The Chinese Inventory of Children's Socioemotional Competence (CICSEC) is an evidence-based assessment system to quickly evaluate children's level of socioemotional competence from four perspectives: 1) Cognitive control, 2) Emotion expressivity, 3) Empathy and prosocial behaviours, and 4) Emotion regulation. The 30-item inventory is also culturally responsive, and can accurately reflect socioemotional competencies of children from Chinese societies within minutes.</p>		

<b>HK-19</b>	<b>NAME(S)</b>	<b>Dr Pansy Tam Po-chi</b>
<b>ORGANIZATION</b>	The Education University of Hong Kong	
<b>TITLE OF ENTRY</b>	<b>Dramaflow – Ideas Generation Dices for Planning Process Drama Lessons</b>	
<p>Dramaflow is a toolkit with design strategies to assist teachers in developing compelling Process Drama (PD) lessons for the preschool curriculum in early childhood education. Since most PD class activities rely highly on picture book storytelling, the idea generation dices encourage teachers to break out from the confined narratives and look for innovative ways to retell a story. As a creativity boosting game, it helps teachers overcome creative blocks and stimulate active exploration and imagination of PD class activities to achieve teaching objectives.</p>		

<b>HK-20</b>	<b>NAME(S)</b>	<b>LIU MINGXIN / KWAN CHIU MING / NGAN KA PUI</b>
<b>ORGANIZATION</b>	King's College	
<b>TITLE OF ENTRY</b>	<b>A Practical Alginate-based Synthetic Differentially Permeable Membrane System for Metal Ions Separation</b>	
<p>Toxic metal ions, such as cadmium(II) and lead(II) are commonly found polluting the environment owing to various industrial processes, hence inducing adverse negative health effects. However, the current treatment methods are time-consuming, ineffective, and expensive. Alginate is an inexpensive biopolymer that forms a layer upon contact with divalent ions. We discovered that different ions have different affinities towards alginate with differing concentration of alginate and calcium ions. Therefore, we invented a differentially permeable membrane system, which allows effective metal ions separation. In addition, a model is made, kitted with sensors and pumps for water flow control and sample purity test.</p>		

## HUNGARY

<b>HU-01</b>	<b>NAME(S)</b>	<b>Beri Imre / Dr. Jávorkáné Király Zsuzsanna</b>
<b>ORGANIZATION</b>	Ötlet Club 13 Egyesület Hódmezővásárhely, Hungary	
<b>TITLE OF ENTRY</b>	<b>Energy saving heating appliance</b>	
<p>Electrical equipment uses the energy input with a loss. This appliance exceeds the efficiency of heat pumps. The device converts the input electricity into thermal energy with an efficiency of 530-550% after several conversions. After the conversions, we could still take 50% of the electricity input from the device without greatly increasing the energy input. It operates both from electrical network, wind power plant and solar power plant.</p>		

<b>HU-02</b>	<b>NAME(S)</b>	<b>Kálmán Tamás</b>
<b>ORGANIZATION</b>	Ötlet Club 13 Egyesület Hódmezővásárhely, Hungary	
<b>TITLE OF ENTRY</b>	<b>Centrikal products family</b>	
<p>Some food supplements of CENTRIKAL products' family are to be used internally and others externally. The base of the CENTRIKAL medicinal drink of preventive nature are the extraction of medicinal plants, that of organic matters, and also the medicinal alkaloids, antigens and lymphocytes. The special maturation of the extracted medicinal plants results in the medicinal materials. CENTRIKAL-products are recommended to be taken internally in cure-like way. Recommended cure: two – three times per day – in accordance with the prescriptions on the ticket. No side-effects of these artefacts are known.</p>		

<b>HU-03</b>	<b>NAME(S)</b>	<b>Ursinyi János</b>
<b>ORGANIZATION</b>	Ötlet Club 13 Egyesület Hódmezővásárhely, Hungary	
<b>TITLE OF ENTRY</b>	<b>Atkinson motor</b>	
<p>The motor of the best efficiency, which is also capable of operating with the Atkinson-Miller cycle: Its simple structure and operation principle ensure the following: high performance, low specific fuel consumption, less CO<sub>2</sub> emission. The large flow cross-section ensures a fast "charge" replacement even in the case of small pressure difference. The replacement of the "charge" is implemented completely from waste energy. The piston does not participate in the suction of the charge and in the removal of the combustion product! The turbo unit is unique: the energy of the outflowing combustion product accelerates, compresses the air in the charging pass, then – after the termination of the pressure – it creates vacuum in the cylinder. The combustion product leaves the cylinder very quickly upon the impact of suction following the opening of the valve, and it is replaced by fresh air. The extent of filling defines the quantity of fuel that may be burnt within the cylinder! When we fill up the cylinder only partially / this may be regulated with the position of the valve and the charging pressure/, it operates according to an Atkinson-Miller cycle.</p>		

## INDIA

<b>IN-01</b>	<b>NAME(S)</b>	<b>Aryan Singh</b>
<b>ORGANIZATION</b>	SR. Public.sr.sec. School	
<b>TITLE OF ENTRY</b>	<b>AGRoBoT – 2.0</b>	
<p>The paper aims on the design, development and the fabrication of the robot which can dig the soil, put the seeds, leveler to close the mud and sprayer to spray water, these whole systems of the robot works with the battery and the solar power. More than 40% of the population in the world chooses agriculture as the primary occupation, in recent years the development of the autonomous vehicles in the agriculture has experienced increased interest.</p>		

<b>IN-02</b>	<b>NAME(S)</b>	<b>Dr. Gaurang S Patkar</b>
<b>ORGANIZATION</b>	Don Bosco College of Engineering, Goa, India	
<b>TITLE OF ENTRY</b>	<b>Buttery Pea flower Petal Wine and its method of Production</b>	
<p>The invention relates to Buttery Pea flower petal wine and method of producing the same. The quality wine can be made only from quality raw materials. The Buttery Pea flower Petal Wine is prepared from the right quality of flowers of Clitoria ternatea (Darwin pea). Buttery Pea flower petal wines are exotic wines, and can be consumed by vegetarian and non- vegetarian people. These wines are considered good to be consumed with food items particularly Spicy food, Dark Chocolate and Curries. It has many health benefits too.</p>		

<b>IN-03</b>	<b>NAME(S)</b>	<b>Aryan Siddiqui</b>
<b>ORGANIZATION</b>	British School Muscat	
<b>TITLE OF ENTRY</b>	<b>No One Will Sleep Hungry (NOSH)</b>	
<p>Born out of the pandemic, NOSH pledges to tackle widespread food insecurity in disadvantaged communities in India. We have developed two apps to make it easier to distribute food to the impoverished communities who have been severely affected by the pandemic. Clean food which hasn't been used at a restaurant can be smoothly sent to NGOs through our app, who can then deliver this food to those in need. We have collaborated with many governmental organisations to help as many individuals as possible. We look to expand our reach overseas and positively impact the global community.</p>		

<b>IN-04</b>	<b>NAME(S)</b>	<b>Kaustubh Srivastava</b>
<b>ORGANIZATION</b>	NewGen IEDC, GLA University, Mathura, Uttar Pradesh, India	
<b>TITLE OF ENTRY</b>	<b>ASSWAN Water Purifier</b>	
<p>Asswan water purifier is an advance distillation-based water purification system which can pure nearly all sort of impure water into pure form. The major advantage Asswan upholds is that it can eliminates all sorts of notified problems associated with existing purifiers when dealing with high TDS values, water wastage (constraints in nearly all the metropolitan cities in the world). Despite of the distillation process involved in our system we have managed to purify water using low energy consumption which has made it possible to withstand on solar power making it the most economical way of water purification.</p>		

<b>IN-05</b>	<b>NAME(S)</b>	<b>Mrs. CHINNU MARY GEORGE</b>
<b>ORGANIZATION</b>	MIDDLESEX UNIVERSITY, DUBAI	
<b>TITLE OF ENTRY</b>	<b>Leaf Therapy excellence Prognostication using Machine Learning</b>	
Machine learning is a subset of the artificial Intelligence. The domain of machine learning intends to understand the data and then fit it into a model. Machine learning has wide range of applications in the Business, airline industry, health and Safety industry and many Scientifics sectors. This research focusses with regards to the health and safety even during the pandemic COVID-19. As per early science the leaves and barks of the trees are of much medical importance. we have examined the Mexican mint along with Ponderosa lemon therapy prediction excellence using machine learning algorithms.		

<b>IN-06</b>	<b>NAME(S)</b>	<b>FRANKLIN CHARLES</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>24VOLT ELECTROMAGNETIC FIELD BIKE</b>	
IN MY INVENTION I HAVE USED TWO MAGNETS INSTEAD OF USING BATTERIES TO GENERATE CURRENT. MY INVENTION IS TESLA E BIKE WHICH RUNS ON ELECTROMAGNETIC FIELD.		

## INDONESIA

<b>ID-01</b>	<b>NAME(S)</b>	<b>Dr. Laksmi Prima Santi, MSi / Prof (R) Ir. Didiek Hadjar Goenadi, MSc, PhD</b>
<b>ORGANIZATION</b>	Indonesian Research Institute for Biotechnology and Bioindustry, PT Riset Perkebunan Nusantara	
<b>TITLE OF ENTRY</b>	<b>BIOSILAC FERTILIZER AS THE NEW EMERGING NUTRIENT SUPPLY TO ACHIEVE PREMIUM CROP GROWTH AND YIELD</b>	
The functional fertilizer of local mineral silica-based materials has a potential market in agriculture, horticulture, and plantation crops that widespread throughout tropical countries, including Indonesia, especially in sub-optimal lands such as swampland, sandy soil, sulphate, and dry land. A newly developed water-soluble silica enriched with Si-solubilizing microbe formula (BioSilAc) has been shown very effective on oil palm plantation, paddy, maize, sugarcane, black -soybean, and potatoes under drought stress and water deficit. BioSilAc application combined with a reduced dosage of conventional fertilizers up to 25-50% was able to increase production of oil palm 12.1%, paddy 35%, maize 20%, sugarcane 19.4%, black soybean 26%, potatoes 50% and water use efficiency improved up to 50%.		

<b>ID-02</b>	<b>NAME(S)</b>	<b>Aulia Salwa Alfaina / Muhammad Mufaiduddin / Luh Ayu Nanamy KES / Adelia Pangesti / Nur Indah Meyrianawati / Haidar Yusuf Affandy / Dr. Rifky Ismail, S.T, M.T / dr. Hari Peni Julianti, Sp.KFR, M.Kes</b>
<b>ORGANIZATION</b>	Faculty of Medicine, Diponegoro University	
<b>TITLE OF ENTRY</b>	<b>The Effects of Exoskeleton Robotic Hand on the Muscle Strength in Stroke Patients</b>	
Upper limb weakness is the most disability caused by stroke. It makes movement restrictions. The exoskeleton robotic hand is a developing technology that involve in stroke rehabilitation therapy. This research aim to assess the effectiveness of muscle strength outcomes were obtained better in robotic therapy than conventional therapy. A quasi-experimental study with two groups pre and post-test design carried out using consecutive sampling among outpatient stroke patients in Diponegoro National Hospital (RSND) and William Booth Hospital (RSWB), Semarang. Patients in the robotic group (RG) (n=8) received a total of 16 sessions for eight weeks. Each session consists of 30 passive and ten active-weighted elbow flexion-extension with the exoskeleton robotic hand. Meanwhile, the control group (CG) (n=8) received the equivalent training of conventional therapy. The muscle strength as the primary outcome was measured by Manual Muscle Testing (MMT) and handheld dynamometer. A significant improvement was shown for the MMT score (RG: p=0.014, CG: p=0.034). There were a significant handheld dynamometer score improvements on muscle strength for elbow flexor and extensor in RG (p = 0.008 and p = 0.005 consecutively) and in CG (p=0.036 and p=0.008 consecutively) . The exoskeleton robotic hand training was as effective as conventional training for improving muscle strength in stoke patients.		

<b>ID-03</b>	<b>NAME(S)</b>	<b>Hesam Adin Atashi / Felicia Agatha</b>
<b>ORGANIZATION</b>	Medicine student, Tehran Medical Islamic Azad University, Tehran, Iran / Senior high school student, Tzu Chi Secondary School PIK, DKI Jakarta, Indonesia	
<b>TITLE OF ENTRY</b>	<b>AI-powered portable device for screening, diagnosis, and treatment of COVID-19 disease</b>	
Since COVID-19 became a life-threatening pandemic, many hospitals run at a full capacity. Appropriate medical attention is lacking as healthcare workers are exhausted. The current PCR test is expensive and in the poorer, more secluded areas, it is hardly accessible. We patented a compact AI-powered device with 3 high-technology features: 1- Rapid automatic screening test with machine learning ability, 2- Intelligent follow-up for at-home patients, 3- Highly effective oxygen therapy treatment for hospital-admitted patients or at-home patients, which solves the issues mentioned above, as well as reducing treatment costs, irreversible complications, and the burden of healthcare institutions.		

<b>ID-04</b>	<b>NAME(S)</b>	<b>Saffanah Fajar Kurniawan / Herlin Sri Wahyuni</b>
<b>ORGANIZATION</b>	University of Brawijaya	
<b>TITLE OF ENTRY</b>	<b>MY.UMKM APPLICATION IN ENCOURAGING MSME'S TO IMPROVE THE ECONOMY IN THE MIDDLE OF COVID-19 PANDEMIC</b>	
<p>Since the outbreak of COVID-19 in Indonesia and other countries, this has caused enormous losses in several sectors around the world, including Indonesia, one of which has the most impact on the economy, especially Micro, Small and Medium Enterprises (MSMEs). This is caused by the limited activities of the community in carrying out production. According to the Expert Staff of the Minister of Finance for Macroeconomics and International Finance, according to a survey by the Asian Development Bank, 48.6 percent of MSMEs were temporarily closed due to the pandemic, this also happened in other countries such as Laos 61 percent and Thailand 41 percent. Based on data from the Central Statistics Agency, as many as 500 thousand MSMEs went bankrupt out of a total of 64 million. This is due to 40 to 80 percent of their turnover dropping, in addition to financing problems and losses borne by the MSME group reaching Rp. 1.584 trillion, of which the poor increased by 0.97 percent. From these problems the author initiated an innovation in the form of an Android mobile application, namely MY.UMKM is a platform for providing MSMEs that can grow and improve a sustainable creative economy for MSME business actors in Indonesia.</p>		

<b>ID-05</b>	<b>NAME(S)</b>	<b>Fadhilillah Isaac Kartika / Philip Purwoko Adi Panuntun / Avina Norma Malikhah / Christopher William Purnomo / Royan Gagas Pradana / Rafli Yuda Pamungkas / Paramasari Dirgahayu, dr. PhD</b>
<b>ORGANIZATION</b>	Universitas Sebelas Maret	
<b>TITLE OF ENTRY</b>	<b>DOVI (Detection Object of Virus Interaction)</b>	
<p>COVID-19 has been declared a pandemic on an international scale by WHO on March 11, 2020. DOVI is an alternative solution to deal with the COVID-19 problems. DOVI is an android application capable of detecting a user's smartphone and integrating it for the purposes of preventing the spread of COVID-19. DOVI give users benefits to open the application to view density map, user status, and contact history. DOVI is concerned about safety and privacy of users. DOVI has certain limit such us the internet dependency. DOVI provide information to people in order to prevent COVID-19 spread.</p>		

## IRAN

<b>IR-01</b>	<b>NAME(S)</b>	<b>Mina Nasiri / Hamed Ahari / Seyed Amirali Anvar / Anousheh Sharifan / Shapour Kakoolaki</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Production of Rosmarinus Officinalis L Nanoemulsion Using Emulsion Phase Inversion Method</b>	
<p>This invention is suitable for use in nanotechnology and can act as a preservative or a suitable carrier for antibacterial materials and prevent damage to these antibacterial materials by nanoemulsions in various industries, especially the food industry.</p>		

<b>IR-02</b>	<b>NAME(S)</b>	<b>Hediyeh Hojaji</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Smart door lock on IOT platform</b>	
<p>Sometimes we forget to lock any kind of doors and our key. This device is a smart lock using internet to connect with cellphones and smart watches, so prevents theft.</p>		

<b>IR-03</b>	<b>NAME(S)</b>	<b>Yasan Hajigholizadeh / Alireza Arabi / Seyed Alireza Soleimani / Hiran Lotfimanesh</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>The bottom part of the elderly health walking stick that used for the people who fall down or had changes in the vital signs is like an origami structure</b>	
<p>The fact of Falling down on a daily basis and sudden changes in vital signs are two dangers things that elder people face while traveling outside the home. In this plan, we try to improve this concern by examining and explaining these two issues. With the aim of not being misplaced, the base of the cane is assembled with the pattern of origami.</p>		

<b>IR-04</b>	<b>NAME(S)</b>	<b>Ali Hashemi Katehsari</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Letter pronunciation correction system with the help of bending sensor</b>	
<p>People who were once hearing-healthy and pronounced the letters correctly and they can no longer hear for whatever reason. Hence, they forget the correct pronunciation of words over time. With the help of the bending sensor and the Arduino board and related programming, we can design a system that helps these people speak and pronounce letters correctly as before.</p>		

<b>IR-05</b>	<b>NAME(S)</b>	<b>Hooman Edraki / Mahan Edraki / Kasra Ahmadniay Bousari</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Muscle memory rehabilitation glove based on bending fingers</b>	
The device challenges the neuron system of clients' hand by giving them specific trainings, which may be tracked and examined back by the glove itself. If the movements matched the given pattern, it may also be given higher amount of score as well as a report to the users' doctor.		

<b>IR-06</b>	<b>NAME(S)</b>	<b>Ilia Sheykhmohammadi</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Portable solar air conditioner</b>	
This solar cooler consists of solar panels that stick to the window of your home. It places these screens on the window, receives the necessary energy and helps you in situations where the air is too hot. The important difference between this air conditioner and other air conditioners is that you can remove the piece that the air conditioner has and put it in your bag.		

<b>IR-07</b>	<b>NAME(S)</b>	<b>Nika Ahdifard</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Special device for preventing spinal complications</b>	
My device is only to inform about these three complications (Scoliosis-kyphosis) and not for treatment. This device is located between two shoulders and is extremely light and consists of plastic and adhesive they are compatible with human skin. My invention comes with an app, and when you put this device on your body, the app installed on your phone is activated, then you specify your gender / time and current status.		

<b>IR-08</b>	<b>NAME(S)</b>	<b>Kian Pouraslani</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Dentistry light</b>	
A small light with a foundation that sticks to the teeth while dentist is working. It is a flexible light and it can be directed in any direction. Its foundation sticks to the tooth and brings light inside of the mouth. It is light and it barely can be felt by patients. Makes it much easier for dentists and other physicians and reduces medical error.		

<b>IR-09</b>	<b>NAME(S)</b>	<b>Larisa yousefi</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Multifunctional bandage for blood clotting, pain relief and wound disinfection</b>	
This invention is like spider web and made of hydrogel and is drawn on the wound site and at the same time absorbs the blood and by using the rings around it, substances such as disinfectant, analgesic, blood coagulant can be inserted into the wound separately. In addition, infections can be treated by using another ring. This invention can hold the wound tightly by apply pressure to the wound and preventing it from opening. It creates sterility and numbs the area around the wound. This multifunctional band can be used in emergencies and lack of medical facilities.		

<b>IR-10</b>	<b>NAME(S)</b>	<b>Mohammad Najjarian / Ali Paeizi</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Intelligent structure with the ability of purify air and water using clean energies which works with IOT system</b>	
This invention is a structure that reduces environmental pollution using wind turbines and solar panels. This structure could be attached to different building. It could purify the air and also produce drinking water from the humidity of the air. It has lights and can be used in parks or other places. In addition, according to different weather conditions and different places it could monitor the pollution conditions and then act according to received data. This structure is portable and operates according to atmospheric environment. It could control the integrity of different building in order to develop and increase efficiency.		

<b>IR-11</b>	<b>NAME(S)</b>	<b>Aminah Akvan / Mohammad Mahdi Akvan / Mahboubeh Moghbeli Hanzaei</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Sport device equipped with advanced sensors with the aim of performing correct sit-ups and other sports movements which equipped with IOT technology</b>	
This device is designed to improve the quality of sit-up exercise, which works according to Internet of Things (IOT) system to record and monitor the performance of the athlete and has motion sensors to evaluate exercise. This device is equipped with sensors in order to measure and record heart rate, evaluate quality of movements and burned calories during the exercise. Also, this device has a pillow and medical mattress to prevent any injury to the user's neck and spine during exercise.		

<b>IR-12</b>	<b>NAME(S)</b>	<b>Somayeh Ilkhanimahabadian</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Air purifier with IOT interface</b>	
<p>In this invention, with the help of IOT technology, a device is produced. This device, in addition to air purification, can prevent energy loss. This air purifier have activated carbon filters. In addition, the other filter could be used, including electrostatic filters and titanium dioxide filters. Also, solar panels is used on this device for providing required energy. Also, this device is smart and the fan speed changes with increasing pollution. Also, this device has an air pollution control sensor for checking pollution.</p>		

<b>IR-13</b>	<b>NAME(S)</b>	<b>Amir Hossein Khayeri</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Gait rehabilitation and gait parameters recording system</b>	
<p>This invention is a monitoring system which facilitates the gait rehabilitation process. By using this invention, the patient can do the exercises at home and the data will be sent to the therapist every day.</p>		

<b>IR-14</b>	<b>NAME(S)</b>	<b>Fatemeh Tashtzar</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Foldable and portable energy panels</b>	
<p>My concept is a double sided solar and hybrid panel that is inspired from origami structure. It is a cylinder shape consist of Parallelogram attached to each other and when the base of this cylinder rotates and turns the Parallelogram sides change. Obviously, it is compact and portable. The second advantage is that this system is mounted mostly in cities and because of the air pollution I came up with a new idea that purifies the air pollution by sucking it inside the cylinder and passing it through a UV container and it sanitizes it too to prevent batteries.</p>		

<b>IR-15</b>	<b>NAME(S)</b>	<b>Mohammad Naeim Jalali</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Intelligence and rescue health wrist band</b>	
<p>This invention is a medical wrist band That has several advantages. It can protect us from the risks of drowning and rising blood pressure, and predicts illness and alerts, it informs people who have already planned. This concept has a motion novation system for the blind to find their way and prevent obstacles. This concept can take a record of vital signs. This concept has inflatable airbags in case of drowning it could burst and save the user.</p>		

<b>IR-16</b>	<b>NAME(S)</b>	<b>Alireza Sajedi / Neda Sajedi</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Optimization of Hydraulic Fracture Procedure in the Oil and Gas Industry</b>	
<p>Hydraulic Fracturing is a method used for extracting oil and gas from the reservoir underground. Due to the technological and economical limitations of hydraulic fracturing operations, optimum design of hydraulic fracturing is an important factor in the success of this kind of operation. Our goal is to identify the most critical parameters of hydraulic fracturing process which are responsible for improving the profitability of a project. Then, optimize these parameters by utilizing different optimization algorithms in order to maximize production while minimizing the cost of the whole project.</p>		

<b>IR-17</b>	<b>NAME(S)</b>	<b>Helya Afshar Fathy</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Traffic control system based on IOT and MQTT network</b>	
<p>My invention is a smart traffic control system, in traffic situations red light timing should be decreased and this should effect all the traffic lights on that road simultaneously and they are connected to each other with WIFI. That means according to the traffic condition my invention could change the traffic light timing to solve this issue.</p>		

<b>IR-18</b>	<b>NAME(S)</b>	<b>Dr. Fatemeh Pourrezagholie / Davoud Beheshtzadeh</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Making an artificial bladder tool for patients suffering from malignant bladder cancer</b>	
<p>This device is made with the function of emergency and medical emergencies to accelerate in patients with malignant bladder cancer. It should be noted that the invention of the artificial bladder and timely decisions by physicians and surgeons lead to definitive treatment of the disease in non-metastatic stages.</p>		

<b>IR-19</b>	<b>NAME(S)</b>	<b>Ashour Ghelichi</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Under water lifeguard capsule with compressed airbag system</b>	
<p>This invention; A robotic capsule is a lifeguard and carries a life bag and compressed air, which, after receiving the coordinates of the sinking point, immerses itself in the water under that point within 10 seconds, and performs rescue operations using an inflatable life bag. The purpose of this invention is to prevent drowning and injury to hundreds of people a day, including children, adults, and animals, in the seas, beaches, and pools of the world. And the introduction of a security system for swimming pools and beaches.</p>		

<b>IR-20</b>	<b>NAME(S)</b>	<b>Mojtaba Hedayati Chakosari / Erfan Ghanbarzadeh</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Probiotic Nano-battery</b>	
<p>This invention is biological system that generate electricity. In fact, it is a charger transfer system fabricated using nano-biopolymer to coat lactobacillus bacteria (without any salt bridge nor permeable membranes).</p>		

<b>IR-21</b>	<b>NAME(S)</b>	<b>Mohammadreza Zare / Vahid Razban / Seyed Ahmad Razavizadegan / Navid Farazinia / Kimia Behnamifar / Forough Heidarbeikifard / Mohammadsaber Tamaddon</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>A device for suctioning and cutting brain tumor</b>	
<p>This device have handle apex with a size of less than 8mm and cutter whit size of 3mm makes cross-sectional and superficial incisions to shrink and suck brain tumor. The level, pressure, rate of cutting and suctioning could be easily controlled by surgeon in operation room.</p>		

<b>IR-22</b>	<b>NAME(S)</b>	<b>Vahid Razban / Mohammadreza Zare / Seyed Ahmad Razavizadegan / Navid Farazinia / Kimia Behnamifar / Forough Heidarbeikifard / Mohammadsaber Tamaddon</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>A device for sectioning cancerous tissue in desired thickness</b>	
<p>This device was developed for performing biopsy in different disease conditions such as cancer. The surgeon in operating room can control the device by setting the rate of cutting and sectioning the tissue by a simple control panel.</p>		

<b>IR-23</b>	<b>NAME(S)</b>	<b>Dr. Shiva Najigivi / Dr. Seyedahmadreza Mirmotallebi / Dr. Alireza Najigivi</b>
<b>ORGANIZATION</b>	The First Institute Inventors & Researchers in I.R.IRAN	
<b>TITLE OF ENTRY</b>	<b>Three-dimensional device for the prevention and treatment of all head and face pain without medication with the combined effect of frequency, light and vibration</b>	
<p>Three-dimensional device for the prevention and treatment of all head and face pain without medication with the combined effect of frequency, light and vibration. High relaxation and prevention from diseases as well as treatment ability of invented instrument without any medication and side effects by the aid of three phenomena of frequency therapy, chromotherapy, and vibration therapy are very interesting and results in great efficiency. It is also possible to apply these parameters optionally for any person or any new illnesses.</p>		

## IRAQ

<b>IQ-01</b>	<b>NAME(S)</b>	<b>Karrar Jamal Talib</b>
<b>ORGANIZATION</b>	Ministry of Agriculture	
<b>TITLE OF ENTRY</b>	<b>The Preparation of Natural Coating with Okra Dried Powder for Eggs Fresh Coating Method for Keeping as Alternative from other Methods Storage First Time in Iraq</b>	
<p>The aim of this study is to prepare natural cover from dried Okra Powder (type of vegetable) for coating fresh table eggs. It is used as alternative way of preservative method for the first time in Iraq. The method involve applying a thin layer of dried Okra powder after laying at from by Rheology characteristic of vegetable gum to prevent the loss of moisture and CO<sub>2</sub> that happening during storage. Also it will maintain internal qualitative characteristic, to prolong storage period. It is safe method comparative to other storage methods. Okra gum powder dissolved in water and the egg will be dipped inside the solution for 10 minutes. It has been confirmed that gums are effective as preserve the method for any treatment. No weight loss in the treatment. We conclude from the present study that the use of Okra Powder as natural coating has led to the preservation of eggs during storage and maintaining the characteristics of the internal egg.</p>		

<b>IQ-02</b>	<b>NAME(S)</b>	<b>Basil Mohamed Ibrahim / Karrar Jamal Talib</b>
<b>ORGANIZATION</b>	University of Baghdad / Ministry of Agriculture	
<b>TITLE OF ENTRY</b>	<b>A New Local Way for The Birds Identification "Band In The Wing"</b>	
<p>The aim of the invention is to create a new method for the numbering of birds for research and commercial purposes in the wing, as it is applied to all birds of different sizes and for all ages at very low cost and simple local materials, including broilers. Including the use of metal numbers composed of chips The aluminum is printed on fixed numbers using the number bunch machine. It is printed using the hammering on these chips. It is installed in the skin flap area with a pin. It is used after hatching and at all ages. This method helps to definition birds and their numbers for study purposes as well as to follow the growth and for the purposes of genetic improvement and records and at a very low cost compared to the ready numbers, applied to the follow-up of the broiler chickens from the stage after hatching directly until the day of 35. This invention is designed to solve the problem of heavy numbers or that cause damage to birds, especially in the first age and is characterized by stability on the body of birds and ease of reading.</p>		

<b>IQ-03</b>	<b>NAME(S)</b>	<b>Tavga Sulaiman Rashid / Hayman Kakakhan Awla</b>
<b>ORGANIZATION</b>	Salahaddin University / Erbil Polytechnic University	
<b>TITLE OF ENTRY</b>	<b>Nanoemulsion Biopesticide (Rhuscor)</b>	
<p>In many parts of the world, plant disease is the limiting factor for tomato production. In the area of disease control, chemicals have been proven to be expensive and at times ineffective. It is therefore important to come up with some sort of biological control for such diseases. The present invention provides a solution to the current situation. An effective and efficient nanoemulsion biopesticide derived from <i>Rhus coriaria</i> extract as active ingredient and environmentally friendly surfactant (Emereen) was developed for the control of tomato bacterial and fungal pathogens. The advantages of the present invention are 1) non-hazardous to human health and environmental-friendly, 2) effective control of tomato plant diseases (66.4-82.58% disease reduction), 3) can control bacterial and fungal pathogens at the same time (post-harvest and pre-harvest diseases), 4) effective plant growth and disease resistance, 5) small volume application, and 6) low cost (due to less application). The combination of disease reduction and an increase of yield will directly increase the farmers' income every season. This biological-based product will enhance the quality of life of the farmers (no chemicals used) as well as consumers (no fungicide residues on the produce).</p>		

<b>IQ-04</b>	<b>NAME(S)</b>	<b>Prof. Dr. Ihsan Edan Abdulkareem Alsaimry / Prof. Dr. Khalil I.Alhamdi / Prof. Dr. Sundis S.Baker / Prof. Dr. Kawther H.Mehdi</b>
<b>ORGANIZATION</b>	UNIVERSITY OF BASRAH – COLLEGE OF MEDICINE – DEPT OF MICROBIOLOGY	
<b>TITLE OF ENTRY</b>	<b>A new international vaccine candidate for human eczema: Staphylococcus aureus superantigens (Staphylogen) Inducing Atopic Dermatitis/ Eczema Syndrome In Human.</b>	
<p>A new technique of five steps were used - as a first time internationally-to isolate, purify, identify and characterize the Staph. aureus exotoxin (staphylogen / or staphylogenic protein as a superantigen), where its purity and molecular weight were evaluated by using Polyacrylamide gel electrophoresis(PAGE 7.5%).      *- A high purified single band protein of Staph. aureus exotoxin has a molecular weight of 9 47.315) Kd, and eight purified bands of all Staph.aureus antigens have a molecular weight ranged from (13.567 – 549.540)Kd. *- In vivo results succeeded to induce eczematous - like lesions on mice (BALB/C) skin after its experimental infection with staphylogen, all bacterial antigens and two doses of viable cells and OMPs of Staph.aureus by using a various infection methods : intradermal, spot and prick technique of injection .b- Typical well known histopathological changes of eczematous lesions of AD patients were seen in our study and the same histopathological features were shown in histological examination of slices from eczematous like lesions of mice skin. * successful therapy of eczematous lesions in all ages of human by superantigen vaccine</p>		

<b>IQ-05</b>	<b>NAME(S)</b>	<b>Prof. Dr. Ihsan Edan Abdulkareem Alsaimry / Dr. Farqad M.Alhamadani / Prof. Dr. Khalil I. Alhamdi</b>
<b>ORGANIZATION</b>	UNIVERSITY OF BASRAH – COLLEGE OF MEDICINE – DEPT OF MICROBIOLOGY	
<b>TITLE OF ENTRY</b>	<b>A new techniques in isolation, identification and molecular characterization of Malassezia spp associated with human skin diseases</b>	
<p>New methods and advanced axis for the purpose of isolating and diagnosing-using Group-centred community-known Malassezia genus-species characterization scientifically and internationally isolate and diagnose difficult and impossible to keep her retirements are relatively long and unknown genetic qualities particularly-causing skin diseases For human amraditha studied in laboratory animals using new techniques and the pivot used for the first time in this kind of studies. This study was conducted to detect the various Malassezia species isolated from pityriasis versicolor patients by phenotypical and molecular methods with a study of histopathological experimental changes of PV.</p>		

<b>IQ-06</b>	<b>NAME(S)</b>	<b>Prof. Dr. Ihsan Edan Abdulkareem Alsaimry / Msc. Ban A. Alkhafaji</b>
<b>ORGANIZATION</b>	UNIVERSITY OF BASRAH – COLLEGE OF MEDICINE – DEPT OF MICROBIOLOGY	
<b>TITLE OF ENTRY</b>	<b>A new and modified methods for Molecular characterization of Methicillin Resistant Staphylococcus aureus (MRSA) genes</b>	
<p>A New and modified methods have been used to isolate, purify and characterize genes for methicillin-resistant Staphylococcus aureus (MRSA). These new methods included developing modern technologies, adding work steps, adding or changing some chemical materials used in insolation and characterization, changing working conditions such as temperatures and pH, creating additional steps, modifying some steps to suit the nature of the current study.</p>		



<b>IQ-07</b>	<b>NAME(S)</b>	<b>Prof. Dr. Ihsan Edan Abdulkareem Alsaimary / Msc. Hussein Naem Aldhaheeri / Prof. Dr. Murtadha M. Almusafar</b>
<b>ORGANIZATION</b>	UNIVERSITY OF BASRAH – COLLEGE OF MEDICINE – DEPT OF MICROBIOLOGY	
<b>TITLE OF ENTRY</b>	<b>A novel and modern techniques for early diagnosis of prostatitis and prostate cancer (prostitis) for Iraqi patients by using new biomarkers</b>	
<p>In this invention, new and developed new methods were used to detect different receptors (TLRs) isolated from patients with prostatitis by both phenotypic and molecular methods with the study of prostate specific antigen (PSA) titers and the detection of receptors (TLRs) by flow cytometry. This study show the effect of PSA level on patients with prostatitis and control group ,with P-value &lt;0.0001 therefore the study show a positive significant between elevated PSA levels and Prostatitis. These new methods included developing modern technologies, adding work steps, adding or changing some chemical materials used in insolation and characterization, changing working conditions such as temperatures and pH, creating additional steps, and modifying some steps to suit the nature of the current study.</p>		

<b>IQ-08</b>	<b>NAME(S)</b>	<b>Prof. Dr. Ihsan Edan Abdulkareem Alsaimary / Dr. Nidham M. Jamalludein / Dr. Wijdan N. Almousawi / Dr. Dania.M. Alturaihi / Dr. Nael H. Alnazal</b>
<b>ORGANIZATION</b>	UNIVERSITY OF BASRAH – COLLEGE OF MEDICINE – DEPT OF MICROBIOLOGY	
<b>TITLE OF ENTRY</b>	<b>Creation and preparation of a new international transport medium (MICROBASMED IQ VTM) for transport and preserve of corona virus (covid-19) samples</b>	
<p>A new transport medium used to store samples of samples taken from a patient with Covid-19 virus was used for transmission and diagnosis using internationally approved molecular methods. The new medium is called the green color MICROBASMED IQ VTM. The medium can be used to preserve and transmit viruses with DNA, RNA and DNA. The medium contains in its composition sugar glucose and fetal albumin in addition to containing a group of salts with special concentrations that suit the need of the Corona virus and the infected cell for life and survival. The new carrier medium MICROBASMED IQ VTM can be used as a substitute for other global media known to preserve the viability of the infected cell and corona virus and provide chemical components appropriate for their survival. The MICROBASMED IQ VTM medium is an addition of a global quality to the virus-transmitting media. Also, the new medium is not suitable for the survival and development of germs and fungi, as it contains antibiotics against germs and against new fungi used in this type of media. The new medium MICROBASMED IQ VTM is distinguished by its green color resulting from the addition of the green malachite tincture, which is considered as a chemical guide to the change of acidity. The new medium is also used to transmit viruses with RNA and DNA.</p>		

## IRELAND

<b>IE-01</b>	<b>NAME(S)</b>	<b>Rachel Howe / Sandra Nicholson / Carmel Davies / Attracta Lafferty / Thilo Kroll</b>
<b>ORGANIZATION</b>	University College Dublin	
<b>TITLE OF ENTRY</b>	<b>CAAI: Co-design of an Animal Assisted Intervention by young people for a Children's Hospital in Ireland</b>	
<p>The co-design of an Animal Assisted Intervention (AAI) by young people for a Children's Hospital in Ireland is one work package of a PhD research study. A scoping review protocol has been published and the scoping review is currently being completed to inform the co-design process. Children and young will be invited to participate in the co-design process to create a bespoke protocol and subsequent implementation of an animal assisted intervention in one Children's Hospital in Ireland. Innovative participatory research methods will be considered for either face-to-face or online co-design workshops. Proposal plans will be shared and constructive feedback sought.</p>		

## JAPAN

<b>JP-01</b>	<b>NAME(S)</b>	<b>Sir Dr. Yoshiro NakaMats</b>
<b>ORGANIZATION</b>	World Genius Convention	
<b>TITLE OF ENTRY</b>	<b>Dr. NakaMats Super M.E.N.</b>	
<p>Sir Dr. NakaMats has been introducing a series of new inventions for COVID-19 since the spring of 2020. In February of the same year, Sir Dr. NakaMats announced the first mask to prevent droplet infection from eyes and covers the nose and mouth, "Dr. NakaMats Super M.E.N." This was the first time Sir Dr NakaMats introduced face shields to the world, which are currently in use and widespread throughout the world. It is important to have a "personal blockade" rather than a "city blockade". If each individual is protected from the coronavirus and the patient does not transmit the coronavirus, COVID-19 will not spread.</p>		

## JORDAN

<b>JO-01</b>	<b>NAME(S)</b>	<b>NUHA ABUYOUSEF</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>ACTIVATED EYE STICKER</b>	
<p>Dry Eye Syndrome or Exposure Keratitis is a common ocular condition associated with Bell's palsy. Patients with Bell's palsy can easily open the affected eye—since the muscle that opens the eye is controlled by a separate cranial nerve—but they are unable to close the eyelid. In such condition if untreated, might lead to a total loss of the cornea, ulcers, eventually blindness. provide for a convenient way to cause a non-healthy eyelid to blink in response to a healthy eyelid blinking. A Special App has been developed for this device.</p>		

**KENYA**

<b>KE-01</b>	<b>NAME(S)</b>	<b>Ken-Andrew Muthui Gacheche</b>
<b>ORGANIZATION</b>	Subzero Engineering (KE)	
<b>TITLE OF ENTRY</b>	<b>Intergrated Sonar Echo Eye (I.S.E.E)</b>	
<p>I.S.E.E is an invention that was created in-order to be an assistive technology for Visually challenged persons. Much like Bats and dolphins we humans can employ Electronic devices to help people with a way to navigate by using sound and echoes. The idea was born after I spent a few days with blind people who would navigate their campus in Addis Ababa Ethiopia from memory alone. However sometimes there could be obstacles lying around along their path which would present a challenge, the idea was rebooted once upon returning to Kenya when I watched a documentary about a boy in the US who would use clicking sounds in order to get around. This inspired me to put to use some of my knowledge to come up with a solution for our brothers and sisters and Hence I.S.E.E version 1.0 was born, proof of concept completed Version 2 with improved aesthetics.</p>		

**KOREA**

<b>KR-01</b>	<b>NAME(S)</b>	<b>LOTUS PROSUMING MANAGEMENT / KOREA SOUTH-EAST POWER CO. / KOREA MIDLAND POWER Co., LTD. / KOREA WESTERN POWER CO., LTD. / KOREA SOUTHERN POWER CO., LTD. / KOREA EAST-WEST POWER CO., LTD.</b>
<b>ORGANIZATION</b>	SAME AS LISTED ABOVE	
<b>TITLE OF ENTRY</b>	<b>Smart Water Quality Sensor for High-Quality Water Management in Power Plants (Joint Co-operative R&amp;D Project by Lotus Prosuming Management and 5 Major Power Plants)</b>	
<p>The present invention relates to a smart water quality sensor for water quality management exclusively for thermal power plants. It is the world's first dedicated sensor developed separately for water quality management of standardized power plants. It is a system equipped with a multi-sensor and DO sensor that can measure temperature, pH, ORP and EC with just one sensor. In addition, it is equipped with RS485 communication and GPRS function using the MODBUS-RTU protocol, which is the conventional standard technology, so that remote measurement is possible. It is a joint cooperative R&amp;D project in which Korea's Lotus Prosuming Management and five power plants participated.</p>		

<b>KR-02</b>	<b>NAME(S)</b>	<b>Taekyung Lee</b>
<b>ORGANIZATION</b>	Korean Minjok Leadership Academy	
<b>TITLE OF ENTRY</b>	<b>The gyroscopic eddy current pendulum damping system for the stabilization of buildings in seismic waves</b>	
<p>This invention solved the problems of the existing models of vibration models of TMDs and TLDs by applying the characteristics of both gyroscopes and eddy currents which has the potential to build a self-automated system which could sense the wave and control the precision rate of the gyroscope to damp the oscillation motion which is impossible for TMDs and TLDs. Also, it could be used in all buildings regardless of height unlike the existing dampers.</p>		

<b>KR-03</b>	<b>NAME(S)</b>	<b>OH MOONSEOB / OH DAYEON / LEE YAESOOON</b>
<b>ORGANIZATION</b>	Clean Living Science	
<b>TITLE OF ENTRY</b>	<b>Blade Cleaner - Sseukssak (3-piece set) The Multi-Purpose Silicone Broom</b>	
<p>This is the first 3-WAY <b>BLADE cleaner</b> ever developed. With just one cleaner using three blades, it can perform the functions of any existing cleaning tools such as brooms, scrapers, window wipers, mops and brushes. The product comprises of two sizes: large and small. So it can be used in a wide range of places including low and high-ends, narrow and deeply cornered areas for easy cleaning. The special dust pan is developed together so that contaminants can be put directly into a small trash bin or a volume bag. Unlike the conventional sweepers or brooms, <b>Sseukssak</b> can easily sweep floors, wash clean toilets, car windshields and reach many narrow spaces around sofas or high windows, mirrors in cafes, and also pet fur and human hair. By developing each components for the vertical, side, and horizontal blades, the product can be easily cleaned in 3 ways for a convenient re-use.</p>		

<b>KR-04</b>	<b>NAME(S)</b>	<b>Kim, Ju Ha</b>
<b>ORGANIZATION</b>	Rich Byner Co., Ltd	
<b>TITLE OF ENTRY</b>	<b>7 types of efficacy Maqui berry containing low molecular weight collagen</b>	
<p>The invention has the anti-aging effect by the strong free radical scavenging effect of maqui berry. Free radicals are harmful oxygen that destroys cells in the body and destroys skin cells, causing wrinkles and loss of elasticity. It has an excellent effect in removing these free radicals and reigns as the throne of Dongan food. It shows sufficient merit for those who are interested in anti-aging. The product also helps to strengthen immunity: The second benefit of maqui berry is that it strengthens the immune system. Maqui berries are high in phytochemicals called phytochemicals. This substance is a substance that plants produce to protect themselves. It helps with physiological activity and has the effect of boosting immunity. By boosting your immunity, you can prevent from minor illnesses like colds to adult diseases.</p>		

<b>KR-05</b>	<b>NAME(S)</b>	<b>LEE YEON-HEE</b>
<b>ORGANIZATION</b>	Maewon High School	
<b>TITLE OF ENTRY</b>	<b>Multifunctional cutting board</b>	
<p>In order to solve the problem of contaminating the surroundings when using watery ingredients such as kimchi when using watery ingredients such as kimchi, slanted grooves (soup receiving part) were made on three sides of the cutting board so that the broth could be gathered in one place. A tray (a container for food ingredients) was attached to the bottom of the cutting board so that kimchi or vegetables could be cut and stored. A knife compartment was made on one side of the cutting board so that the knife could be used immediately.</p>		

<b>KR-06</b>	<b>NAME(S)</b>	<b>Uijune Jung</b>
<b>ORGANIZATION</b>	All Saints Episcopal School USA	
<b>TITLE OF ENTRY</b>	<b>Smart Robot by using LiDAR sensors and ultrasonic sensors to map the surroundings and dust information</b>	
<p>Robot cleaner is a device that recognizes the surrounding situation and automatically cleans it. It removes dirt and small foreign matter accumulated on the floor. Such a robot cleaner is attracting attention as a product required for modern people who are busy while pursuing convenience. However, most of the robotic vacuum cleaners could not recognize obstacles and spent a lot of time circling around furniture or objects and could not clean properly. Therefore, we designed smart robot which can map the structure of indoor space at once and effectively detect dust and clean it by employing Li dar sensor in this invention.</p>		

<b>KR-07</b>	<b>NAME(S)</b>	<b>Youngwoong Kim</b>
<b>ORGANIZATION</b>	Phillips Exeter Academy	
<b>TITLE OF ENTRY</b>	<b>Fine dust measuring devices utilizing the Tyndall effect and conductivity</b>	
<p>The method to measure fine dusts efficiently at low cost was studied to find out how to remove indoor fine dusts effectively. Specifically fine dust measuring device was produced in various methods. As a result a device more affordable and yet not less in performance than existing high-priced fine dust measurer was produced. In this invention, fine dusts in optically dispersed solution were analyzed, and based on the difference in gas condition, the solubility of complex fine dusts and the distribution of particles were examined.</p>		

<b>KR-08</b>	<b>NAME(S)</b>	<b>Youngbin Kim</b>
<b>ORGANIZATION</b>	Tabor Academy USA	
<b>TITLE OF ENTRY</b>	<b>Smart flowerpot &amp; aquarium using aduino sensor and filter system</b>	
<p>Even if you do not approach the flowerpot directly, you can display accurate indoor water content and moisture value in the flowerpot on the smartphone screen in real time through the smartphone application that can communicate with Bluetooth or Wi-Fi communication, alert you when the water content is insufficient. It is aimed to provide a smart phone-based watering management system that does not damage the interior by waterproofing the moisture measuring terminal.</p>		

<b>KR-09</b>	<b>NAME(S)</b>	<b>Jaehyuk Laurence Jang</b>
<b>ORGANIZATION</b>	Lake Braddock	
<b>TITLE OF ENTRY</b>	<b>Unmanned security system using drones with LiDar</b>	
<p>We invented security drones to prevent various kind of crime. Drones will be deployed to where necessary such as park 24 hours a day and it can transmit and receive data with nearest police station. Especially, it is helpful to secure allies in the night.</p>		

<b>KR-10</b>	<b>NAME(S)</b>	<b>Christine Yi</b>
<b>ORGANIZATION</b>	SIS	
<b>TITLE OF ENTRY</b>	<b>ELISA Techniques for finding Antibody Of Cronavirus2</b>	
<p>Coronaviruses (CoV) are a large group of viruses that can cause a range of illnesses in vertebrates.<sup>1</sup> In the past two decades, two highly pathogenic coronaviruses with zoonotic origin — severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) — have caused large-scale outbreaks of infectious diseases.<sup>2</sup> The novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the causative agent of the recent COVID-19 pandemic, first emerged in Wuhan, China, at the end of 2019. It is a highly transmissible and the third most pathogenic coronavirus that causes mild to severe respiratory infections in humans. On 30 January 2020, the World Health Organization (WHO) declared COVID-19 as the sixth public health emergency of international concern, and as of 18 April 2021, about 130 confirmed cases and 3 million deaths have been reported worldwide. SARS-CoV-2 is an enveloped virus with a positive-sense, single-stranded RNA genome.<sup>3</sup> SARS-CoV-2 entry into host cells is mediated by its transmembrane spike (S) glycoprotein. The S glycoprotein is responsible for binding to the host cell receptor and for the fusion of the viral and cellular membranes.<sup>4</sup> The S1 subunit of the S glycoprotein contains the receptor-binding domain (RBD), which binds to the host cell receptor angiotensin-converting enzyme 2 (ACE2), initiating viral cell entry.<sup>5</sup> Therefore, this receptor interaction site on the S1 subunit is considered the main target for therapeutic monoclonal antibodies.</p>		

<b>KR-11</b>	<b>NAME(S)</b>	<b>Woobin Rhee</b>
<b>ORGANIZATION</b>	Blair Academy	
<b>TITLE OF ENTRY</b>	<b>Variable step-by-step stairway that maximize energy efficiency</b>	
<p>This place has a lot of elevator or escalator installed in making people uncomfortable to climb stairs , but actually a lot of money on the problems caused to install and manage. Such devices are aging or because a lot of lift installation costs , the personal stories of the building or in many cases inefficient buildings install above equipment. However, in order to develop the stairs that do not use the power to take into account the human kinetic structure elements based on the physics. It was studying in detail how the physics of mechanics by this opportunity to be minimal damage to the knee cartilage. Therefore, the international invention contest and a chance to make the elderly are comfortably climb the stairs through the ideas and practices of the idea , the research on the possible installation costs are also cheaper and easier to install a device is enabled and a new concept of staircase was thinking ideas.</p>		

<b>KR-12</b>	<b>NAME(S)</b>	<b>Andrew Jang</b>
<b>ORGANIZATION</b>	SIS	
<b>TITLE OF ENTRY</b>	<b>The Applications of Laser-Driven Technologies for 3D Scanning</b>	
<p>Laser-driven technologies have progressed tremendously in recent years. Ranging from pinpointing functions and optics to aesthetic enhancements in the form of cosmetic surgeries and treatments, laser technology has become indispensable in people's lives. The coherency, high monochromaticity, and ability to reach extremely high powers are all properties that allow for these specialized applications.</p>		

<b>KR-13</b>	<b>NAME(S)</b>	<b>Jaehoon Jung</b>
<b>ORGANIZATION</b>	Dulwich International School	
<b>TITLE OF ENTRY</b>	<b>Novel harvesting techniques for application in small-scale, self-powered systems such as wearable device, smart devices</b>	
<p>Recently, research on a technology for charging without using a battery by applying new and renewable energy is being actively conducted. With the rapid development of the Internet of Things, I thought of a multi-hybrid generator that charges its own charging device for various wireless devices to operate using a piezoelectric element, a power generating element, and a photovoltaic device. The charging efficiency of conventional solar-powered charging devices is falling considerably. Therefore, I came up with this invention thinking that it would be advantageous in terms of efficiency by selecting and combining a high-efficiency power generator and a piezoelectric element, which have recently been increasing inefficiency among the new and renewable energy supplementing this.</p>		

<b>KR-14</b>	<b>NAME(S)</b>	<b>DANIELLE SEOYEON CHOI / WOOJU AN / HYUNMIN YOO / KANG DONGHWA / Jaewon Lee / Hanna Kim</b>
<b>ORGANIZATION</b>	CHEONGSHIM INTERNATIONAL ACADEMY / Fairmont preparatory academy / Fayston preparatory school / Cheshire Academy / KIS / SIS	
<b>TITLE OF ENTRY</b>	<b>Mind Control through the nature of fractal structure</b>	
<p>Generally speaking, good music is the average person who is easy to listen to and does not feel rejection. As we live, we listen to music in front of our households, singers sing, and birds sing. As such, music is a lot in our lives, and we can access music anywhere. However, not all of us like this music. People are the main reason that the music you love each person, and they chose the music that is good to hear. In the example, often a lot of people good music and popular songs that others also if there is a good feeling. So, the good music will be a common feature of good music, but found out by analyzing the sound to hear a good idea that would not make a lot of good music, just find out its features.</p>		

<b>KR-15</b>	<b>NAME(S)</b>	<b>Jun Wooseok / Hyunmin, Kim / LEE HO JUNG / YEIN WOO</b>
<b>ORGANIZATION</b>	CHEONGSHIM INTERNATIONAL ACADEMY / Gyeonggi Suwon international School / GLOBAL VISION CHRISTIAN SCHOOL / Faystone Preparatory School	
<b>TITLE OF ENTRY</b>	<b>Economic Detection Method of E. Coli Bacteria by the means of inexpensive gas sensors</b>	
<p>The increasing number of elderly people is becoming a new social problem in the advanced industrial society. Accelerating the nuclear family is accelerating the generation of the elderly only by self - or others. In the case of the elderly, it is very difficult to know whether the food is corrupt or not because the smell is relatively aged. Therefore, it is often the case that the food is at risk of becoming a health hazard because it does not know that it is corrupted and it is consumed as it is. Therefore, we want to invent a smart bacterial sensor that can visually confirm food corruption.</p>		

<b>KR-16</b>	<b>NAME(S)</b>	<b>TAE JUNSEO</b>
<b>ORGANIZATION</b>	Mercesburg Academy	
<b>TITLE OF ENTRY</b>	<b>The Transmission Rate of SARS-CoV-2 by Each Variant and The Correlation Between Population Density and Transmission Rate</b>	
<p>A study published by a few renowned researchers states that 'transmission rates are used to describe the flow of individuals in a population going from a susceptible state to an infected state'. As defined, transmission rate and population density are closely related especially in cases when the virus is widely spread. Certain areas such as suburbs with denser populations may show higher transmission rates whereas rural areas may show lower transmission rates. Different types of variants are influential as well as the population density. The mutated sequence of the genome can possibly demonstrate a noticeable difference in infectivity. This study was designed to anticipate the transmission rate of the respective mutated variant. This was done by analyzing the sequence of variant's genomes using Python and collecting the number of patients in a chronological manner. The transmission rate varies by the type of mutated variants due to its unique sequencing of the genome.</p>		

<b>KR-17</b>	<b>NAME(S)</b>	<b>Jaewon Ahn</b>
<b>ORGANIZATION</b>	Taipei American School	
<b>TITLE OF ENTRY</b>	<b>Meal Kit Business Plan For Promoting Middle Eastern Refugees</b>	
<p>We are living in a diaspora era. According to the annual report released by the UNHCR on June 19th, 2020 (a day before World Refugee Day) the total number of refugees worldwide stood at 79.5 million, 8.7 million more than in the previous year. Most of the refugees came from the Middle East and North Africa. In 2019, more than two-thirds of all refugees originated from just five countries: Syria, Venezuela, Afghanistan, South Sudan and Myanmar. Moreover, the average refugee recognition rate over the last 18 years (2000-2017) in 190 countries was 29.9%, and the protection rate was 44.2%. Although the recognition and protection rates seem to be decreasing in developed countries, it is actually a "flaw of the average." This is because of outliers that create a big deviation between countries. Among these low outliers is South Korea, which has only a 3.5% recognition rate and a 10.7% protection rate. However, refugee status in Korea has been disappointing ever since it was first officially recognized. In 2001, the first refugee to be recognized in Korea was an Ethiopian evangelist in his 20s. Yet, with poor support from the Korean government, he suffered from poverty and eventually decided to leave for another country after just 3 years.</p>		

<b>KR-18</b>	<b>NAME(S)</b>	<b>Hyunwoo Zong</b>
<b>ORGANIZATION</b>	Korean Minjok Leadership Academy	
<b>TITLE OF ENTRY</b>	<b>New innovative business idea of ocean plastic collection systems to protect marine environment</b>	
<p>WasteReapers is a member of the waste management market, which will reach 530 billion dollars market size in 2025. Among the whole waste management market, we are specialized in the marine waste collection and process market. Here "marine" also includes the river, lake, city waters, etc. Many start-up companies deal with marine waste; some clean up the ocean far from lands, and others manage people-crowded regions. In WasteReapers, we clean areas such as harbors and ports mainly; but, we will expand our service to the seacoast, seaside, shores, and inner-city waters.</p>		

<b>KR-19</b>	<b>NAME(S)</b>	<b>Hyungkyu Kim</b>
<b>ORGANIZATION</b>	Pioneer Academy US	
<b>TITLE OF ENTRY</b>	<b>EEG brain wave Detection by Using Convolutional Neural Network</b>	
<p>Epilepsy is one of the most common neurological disorders that affects millions of people around the world. Traditionally, it is diagnosed by visually inspecting electroencephalogram (EEG) recordings for abnormalities, which is time consuming and may lead to human errors. We thereby use convolutional neural networks (CNNs) to build a deep learning based automatic classifier that screens neural activities to detect epilepsy. We use publicly available data to train our model, and achieve overall accuracy of 99%.</p>		

<b>KR-20</b>	<b>NAME(S)</b>	<b>Minjoon Sohn</b>
<b>ORGANIZATION</b>	SIS	
<b>TITLE OF ENTRY</b>	<b>The future of facial recognition technology</b>	
<p>To create an optimized face classification model, we applied an embedding DCNN, using it as the basis for training the classifier system on a standard face recognition dataset. Also, features extracted from the created model implement clustering that groups similar faces into one. Taking these characteristics into account, various face recognition applications can be created. Face recognition algorithms boast high classification accuracy (over 90%), but these outcomes are not universal. A growing body of research exposes divergent error rates across demographic groups, with the poorest accuracy consistently found in subjects who are female, Black, and 18-30 years old. Current face recognition offers high-performance, scalable solutions for the most demanding real-time or post-event requirements. With face surveillance, search, identification and verification functions all on a single platform, it can be easily integrated into existing surveillance systems to extract faces in real time, match against an existing database or watchlist and produce real time alerts to help reduce public safety risks.</p>		

<b>KR-21</b>	<b>NAME(S)</b>	<b>Hannah Choi</b>
<b>ORGANIZATION</b>	KIS	
<b>TITLE OF ENTRY</b>	<b>A study on deicing policies and indirect benefits to society through the use of environmentally friendly deicing agents</b>	
<p>It is known that the use of eco-friendly de-icers can prevent environ mental or structural damage to generate more benefits. However, it is reluctant to use eco-friendly de-icers due to high price and the damage caused by the use of calcium chloride has constantly been accepted. Therefore, it is necessary to introduce eco-friendly de-icers actively at the government level. The use of eco-friendly de-icers can cause some disadvantages in terms of costs in the short term. However, it can reduce indirect social costs to give benefits to the whole society. Deicing agent is a chemical substance such as calcium chloride. When this material is sprinkled on the snow, it gets dissolved in the water, creating mixture, which in turn lowers freezing point to melt the ice. This is the principle behind deicing. However, deicing causes problems such as generation of holes on the roads and roadside building structures and corrosion of cars' lower chassis. Moreover, there is a research that claims that roadside plants perish as calcium chloride that is sprinkled on the leaves, obstructs photosynthesis. Advantages of Eco-friendly de-icers Eco-friendly de-icers are the de-icer that can fully supplement the disadvantages of calcium chloride de-icers. They can melt snow fast and effectively rather than calcium chloride de-icers. They do not damage car floors due to weak corrosiveness. Moreover, they do not exert adverse effects on soil and plants.</p>		

<b>KR-22</b>	<b>NAME(S)</b>	<b>Seungjae Kim</b>
<b>ORGANIZATION</b>	Chadwick International School	
<b>TITLE OF ENTRY</b>	<b>The Development of New Brain Wave Detection Device Using Arduino Sensor</b>	
<p>Process of Invention</p> <ol style="list-style-type: none"> <li>1) Summary of experimental methods for confirming the concept of telepathy</li> <li>2) It is necessary to organize the thoughts on the problem of inferring the phenomenon of information exchange between the sender and the receiver by the resemblance of brain waves,</li> <li>3) The rationale for not trying the method of directly examining the EEG correlation between the sender and the receiver without an output amplifier circuit</li> <li>4) It is necessary to understand basic data on the classification method of EEG waveforms</li> <li>5) Arrangement of variable-related thoughts about spatial, temporal, seasonal, or surrounding environmental factors and experimental results</li> </ol>		

<b>KR-23</b>	<b>NAME(S)</b>	<b>YUN YOUNG SEO</b>
<b>ORGANIZATION</b>	Korean Minjok Leadership Academy	
<b>TITLE OF ENTRY</b>	<b>Innovative Eco-friendly Bio-brick production for reducing carbon dioxide</b>	
<p>Cement bricks produce a large amount of carbon dioxide in the manufacture of lime (CaO), a source of cement. (<math>\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2 \uparrow</math>)---CO2 increasing problem MICP is a biological mineralization process in which certain microorganisms induce the precipitation of calcium carbonate (CaCO3). These biological reactions can usually be explained using the following reactions with enzymatic hydrolysis of urea. In all previous studies, calcium carbonate is manufactured using MICP, and it is mixed with sand to form bricks. Since it uses microorganisms, it has the advantage of not generating carbon dioxide, but there is a disadvantage that it takes a long time together with a special environment required for culturing microorganisms. In this study, eggshells, which can be easily obtained in everyday life, were used as a source of calcium carbonate, the main ingredient in brick manufacturing.</p>		

<b>KR-24</b>	<b>NAME(S)</b>	<b>Park Bo Hyun / Park Yoon Ki</b>
<b>ORGANIZATION</b>	St. Johnsbury Academy Jeju	
<b>TITLE OF ENTRY</b>	<b>A composite molded body of loess-coffee grounds showing air purification and antibacterial effect and its manufacturing method</b>	
<p>This invention is about the air purification function that can remove fine dust, germs, odors, and VOCs that exist in the air, and complex molds that show antibacterial effects. It includes ocher, plastic clay, and coffee grounds, and optionally provides ocher-coffee dregs that contain one or more purified water extracts from a group of oyster oak bark, oak bark, corvina bark, hagocho, yellow white and basalt. The ocher-coffee waste complex of this invention has excellent antibacterial, deodorization, and air purification, so if it is used as a building material, it can remove fine dust, germs, odors, and VOCs that exist in air and water quality.</p>		

<b>KR-25</b>	<b>NAME(S)</b>	<b>Soun Park</b>
<b>ORGANIZATION</b>	Korean Minjok Leadership Academy	
<b>TITLE OF ENTRY</b>	<b>Biorhythm detector using brain waves and heart waves</b>	
<p>This invention is designed to compile the circadian rhythm of the human body, caused by multiple factors including brain waves and heart rates. It comprises functions which detect physical/psychiatric illnesses caused by negative emotions and stress. Especially, the generation Y and generation Z show increased usage of electronic devices, which cause their heart rates and brain waves to change irregularly, which can cause a new type of physical/psychiatric symptoms. In order to settle the troubles shown above, I invented a circadian rhythm detector which detects the user's bpm and brain waves by integrating EEG recording technology, biosensors, and IOT technology.</p>		

<b>KR-26</b>	<b>NAME(S)</b>	<b>Jung Ju Yeon</b>
<b>ORGANIZATION</b>	Seoul Foreign School	
<b>TITLE OF ENTRY</b>	<b>Noise Filtering in Binary Space and Multispace using Principal Component Analysis</b>	
<p>Currently, image processing is growing in importance in many different ways. Applications of image processing can be found in a variety of practical fields. In the medical discipline, diagnosis of bone fractures often relies on x-ray fluorography. Therefore, post-processing of x-ray images is a topic of significant current interest. Even with best practically-achievable image quality, microfractures could be hard to identify. Often patients will only obtain dislocation, sprain, strain of joints, or a ligament issue diagnosis and medication that may not work. Administration of incorrect medication can result in dire consequences and require Magnetic Resonance Imaging (MRI) for an accurate fracture diagnosis. If microfractures and injuries are even partially identified during x-ray examination, this could be greatly beneficial for the patient financially and emotionally. Therefore image processing x-ray photos for accurate identification of microfractures and stress would help solve many problems in the medical industry.</p>		

<b>KR-27</b>	<b>NAME(S)</b>	<b>Jang Kyung Choi</b>
<b>ORGANIZATION</b>	Singapore American School	
<b>TITLE OF ENTRY</b>	<b>Stock Investment Trends Evaluation System by Using AI and Big Data</b>	
<p>There are various products in investment products. Recently investing in ESG companies is the mainstream. However, investors tend to invest in various kinds of investments (bonds, stocks, dollars, bitcoin and derivatives in Japanese currency) and investment in tax-saving products. If AI investment app is a one-dimensional AI app that informs investment in stocks or stocks by making prediction models without analyzing customers' propensity or investment patterns such as stocks or bonds, this new investment app is an advanced AI app. The following is a more precise analysis of 12 different categories. In other words, three subclasses are divided into four major subclasses, and finally four subclasses are applied to each of the three subclasses.</p>		

<b>KR-28</b>	<b>NAME(S)</b>	<b>Park dong min</b>
<b>ORGANIZATION</b>	BeBL Cosmetic Co.,Ltd.	
<b>TITLE OF ENTRY</b>	<b>Residual liquid quantity detecting container (liquid storage container)</b>	
<p>It was invented so that the remaining volume of all opaque containers can be seen visually. It is applied to containers in all fields such as cosmetics, food, and medicines. Visually visible things can be expressed in various forms such as analog and digital methods. This invention is designed to allow the display of liquid residue to be viewed in a visual form. It has great characteristics as a source technology that enables the world's first remaining liquid display. Because liquid such as vitamins, which discolor and deteriorate when placed in transparent containers by sunlight and lighting, should be placed in opaque containers, consumers cannot visually see how much of the liquid remains. This invention is designed to maximize the use of liquid by improving its shortcomings and visualizing the remaining amount of liquid in opaque containers. It is the world's first remaining liquid display technology.</p>		

<b>KR-29</b>	<b>NAME(S)</b>	<b>Edward Yang</b>
<b>ORGANIZATION</b>	Korea International School	
<b>TITLE OF ENTRY</b>	<b>Equipped with gene recognition function missing person tracking system</b>	
<p>The conventional technology is to attach a camera to an unmanned aerial vehicle, shoot and transmit it in the air. The technology of the present invention is a technology in which the color of a chromosome changes through chemical analysis when similar chromosomes are found in aerial photographs by carrying genetic chromosomes such as missing persons on unmanned aerial vehicles. It's easy to find missing persons. It also programs cell phones and other electronic devices owned by missing persons. It is also a multi-functional unmanned flight program that enables unmanned aerial vehicles to quickly and accurately track missing persons by operating a location tracking system with a slave Bluetooth module at radio RFID frequencies.</p>		

<b>KR-30</b>	<b>NAME(S)</b>	<b>Sumin Han</b>
<b>ORGANIZATION</b>	Korea International School	
<b>TITLE OF ENTRY</b>	<b>ESG Eco household goods refill machine</b>	
<p>This invention consists of refilling containers for various disposable plastic waste that destroy the environment, and secondly, refilling containers can reduce the use of detergents. It is also an eco-friendly refill vending machine equipped with a system to eradicate and destroy the viruses of masks used in this invention, which can be infected by contaminated mask waste due to the continued consumption of masks due to the recent COVID-19. The conventional technology was related to vending machines, but this invention was designed to be easily accessible by numbering the upper part and turning on the upper part when the consumer pressed the desired button such as Body Wash for number one and Shampoo for number two. It allowed consumers to purchase the amount they wanted and created a quality management system that could be treated with dissatisfaction if the consumer did not repurchase or purchase the product after use.</p>		

## KUWAIT

<b>KW-01</b>	<b>NAME(S)</b>	<b>Jenan Esam Saleh AIShehab</b>
<b>ORGANIZATION</b>	Electrodis Tech	
<b>TITLE OF ENTRY</b>	<b>WIRELESS POWER TRANSMISSION SYSTEM</b>	
<p>Many inventions and researches have been made in the wireless electricity field after the tesla coil invention in 1891. The real challenge facing those inventors and researchers nowadays is to transmit electricity wirelessly from a distance without the need for any physical connections or in other words, convert electromagnetic waves into electricity that can be used in charging and activating electronic/electrical devices. The invention presented "Electrodis" is proven and patented to transmit wireless electricity from up to 3meters.</p>		

## LEBANON

<b>LB-01</b>	<b>NAME(S)</b>	<b>Wael Khalil</b>
<b>ORGANIZATION</b>	National Association for Science and Research	
<b>TITLE OF ENTRY</b>	<b>Customized Porous Supracrestal Implant and Material and Methods Forming Them</b>	
<p>The present invention is related to osseointegrated implants named supracrestal implant, this new implant consists of new design, new material and new method forming them. The design is configured to fit and integrate the jaw and restore missing teeth by using 3 D Printing technology, the material used is a composite material that enhance the osseointegration of the implant to the jaw by using bioactive component as well by using mixture of material that would mimic the composition and biomechanics of bone and improve short- and long-term implant success by improving implant – bone interface</p>		

<b>LB-02</b>	<b>NAME(S)</b>	<b>Mazen Abdullah</b>
<b>ORGANIZATION</b>	National Association for Science and Research	
<b>TITLE OF ENTRY</b>	<b>Vehicle Safe System</b>	
<p>In case of serious accident: Outer-Airbag that inflate outside when triggered the airbag multi-sensors which measure speed, distance and shapes using digital image processing technology. In addition, removable flexible Collar hanging on the headrest, to support the neck and protect the body by preventing neck harm.</p>		

## MACAO

<b>MO-01</b>	<b>NAME(S)</b>	<b>Wang Yifu</b>
<b>ORGANIZATION</b>	Tianjin No. 19 Middle School	
<b>TITLE OF ENTRY</b>	<b>A cap that keeps a safe social distance</b>	
<p>During the epidemic period, people should keep a distance of 1 meter. In the process of shopping or queuing, it is inevitable that the distance will become smaller. So I invented a hat to keep social distance. After connecting the safety distance social cap with the power supply, wear it with the top of the head, the screen direction is forward, and the power supply is backward. When there is no person approaching within 1 meter on the left and right sides, the speaker will not appear, the screen will display smiling face, and the light of the halo board will be blue. When a person approaches within 1 meter on both sides, the loudspeaker will give an alarm, the screen will change, and the light of the halo plate will turn red.</p>		

<b>MO-02</b>	<b>NAME(S)</b>	<b>Vong Un Tong / Wong Weng lo / Liu Zhi Xi</b>
<b>ORGANIZATION</b>	The Affiliated School of the University of Macau	
<b>TITLE OF ENTRY</b>	<b>A study of the repairing effect of Cabomba caroliniana on eutrophic water</b>	
<p>In this study, we carried out an experiment on the algae-inhibiting properties of Cabomba caroliniana. The extraction and performance study of Cabomba caroliniana tissue were designed. Our purpose is based on the excessive reproduction speed of red tide algae, hence this experiment was carried out. Based on the algae-inhibiting properties of Cabomba caroliniana, provides the basic gist for the biological control of Cabomba caroliniana and also the development of natural algae inhibitors. Meanwhile, Cabomba caroliniana can effectively solve the damage caused by the excessive propagation on the red tide control. The performance of the extraction of Cabomba caroliniana on the algae-inhibiting properties was successful, which means it might have a huge development in the future that can reduce the pollution in the ocean.</p>		

<b>MO-03</b>	<b>NAME(S)</b>	<b>Ziheng Xu / Aiden Fu</b>
<b>ORGANIZATION</b>	Pui Ching Middle School, Brentwood College School	
<b>TITLE OF ENTRY</b>	<b>Airport Security and Sanitization Drones</b>	
<p>The COVID-19 causes a high demand of temperature measurement and disinfection, especially in the high-risk places, such as airports. We designed and developed two specialized drones to simplify and optimize the sanitation and health checks in airports. One flying drone is equipped with ultrasonic sensor and temperature sensor, which allows for quick and continued scanning remotely to identify potentially dangerous covid-9 hosts. The other one is a sanitization drone capable of spraying disinfectant all around the airport. The developed drone system is useful to improve the security level and reduce the risk in crowded space such as airports.</p>		



<b>MO-04</b>	<b>NAME(S)</b>	<b>Zhang Puxin</b>
<b>ORGANIZATION</b>	Tianjin Xingnan Middle School	
<b>TITLE OF ENTRY</b>	<b>Alarm device for anti reverse buckle swimming ring</b>	
<p>I saw a news report that a parent was watching his mobile phone while his child was swimming. The child's life buoy was accidentally reversed. The child struggled for two minutes and no one found it. He almost drowned. The independent double-layer air bag is used in the swimming circle, and the upper layer is the gyroscope placement area. When it is detected that the swimming circle is inverted or tilted to a certain angle, it will send a signal alarm at the first time, and send an alarm bell sound to inform the lifeguard. At the same time, send mobile phone information to remind parents. This ring tone will be issued continuously and can only be released by manual operation after the lifeguard confirms the safety of the personnel.</p>		

<b>MO-05</b>	<b>NAME(S)</b>	<b>Ka-Wai HUANG Garvie / Man-Kei IEONG / Chak-Tong SOU / Yi-Xing LIANG</b>
<b>ORGANIZATION</b>	Lou Hau High School, Macao, China	
<b>TITLE OF ENTRY</b>	<b>An Integrated Quality Inspection System for the Rotor of Commutator Motor based on EEMD Algorithm</b>	
<p>Precise diagnoses of electric motors' faults are of great importance because they can cause a significant threat to the operators' safety and impact the financial investments due to equipment loss operation and downtime. The inter-turn short circuit fault (ITSCF) of rotor winding (RW), in particular, is the primary mode of electric motor failure. This invention address the need to prevent catastrophic motor failure and satisfy the market's needs by providing a novel, high-performance, low-cost, easy-to-operate fault detection device for ITSCF. The device consists of two parts: (1) EM generator that energizes RW; (2) EM probe precisely positioned a ferrous metals strip near the RW under test for detecting ITSCF through mechanical vibration.</p>		

<b>MO-06</b>	<b>NAME(S)</b>	<b>HONG MAN FONG / LAM WENG HEI / HOI CHON HANG</b>
<b>ORGANIZATION</b>	Macao Baptist College	
<b>TITLE OF ENTRY</b>	<b>Automatic elevator, air purification, self-cleaning system</b>	
<p>The main body of this work entails refitting the internal structure of the elevator with components including affordable Arduino electronic boards, an infrared sensor, UVA/UVC ultraviolet lamp, and exhaust fan. Through special construction techniques, it is possible a low-cost, low-energy, high-efficiency and environmentally- friendly design which can be installed directly to the existing elevators and solve air quality problems.</p>		

<b>MO-07</b>	<b>NAME(S)</b>	<b>Leong Si Sam / Shi Zhuang Hao / Wang Ka Kuan / Hong Yu Ting / Chang Chan Chong</b>
<b>ORGANIZATION</b>	The Affiliated School of the University of Macau	
<b>TITLE OF ENTRY</b>	<b>Design and application of a community epidemic prevention intelligent recycling robot</b>	
<p>In the context of rapid development of industrialization and global pneumonia epidemic, and noticing personnel in front line were busy and chaotic especially during the peak of epidemic, we designed a smart robot to participate in this disease prevention and control war. Robots work for people during epidemic reduce risk of people cross-infection, save labor cost and improve work efficiency.</p>		

<b>MO-08</b>	<b>NAME(S)</b>	<b>Kaiyuan Zheng</b>
<b>ORGANIZATION</b>	Tianjin Experimental Primary School	
<b>TITLE OF ENTRY</b>	<b>Disposable mask recovery device</b>	
<p>In order to solve the problem of centralized collection and anti-virus of waste disposable masks, the author made a special collection device of waste masks, built-in ultraviolet disinfection lamp, timely centralized anti-virus sterilization, to prevent further spread of bacteria. Through sensors and simple programs, a random reward mechanism is designed to improve people's enthusiasm for the recycling of used masks.</p>		

<b>MO-09</b>	<b>NAME(S)</b>	<b>SOU CHAN FONG / XU WEN XI / CHAO CHOU TANG</b>
<b>ORGANIZATION</b>	Macao Baptist College	
<b>TITLE OF ENTRY</b>	<b>Extraordinary Wheelchair ver.2</b>	
<p>Extraordinary Wheelchair ver.2 can enhance common wheelchair's flexibility and safety. We used Mecanum wheels, infrared sensors, joystick, GPS sensor and speech recognition system to enhance the wheelchair's functionality. When the infrared sensors detected obstacle, the wheelchair will change its speed to protect user. GPS sensors can let user's parent know where s/he goes. And the speech recognition system allows the wheelchair to get close to the user by verbal instructions.</p>		

<b>MO-10</b>	<b>NAME(S)</b>	<b>HOI CHON LAI / HO KA SENG / LIN CHAN HOU / HOI HOU LAI / WONG MARCO ANOK / CHAN HOU (Tutor)</b>
	<b>ORGANIZATION</b>	MACAU Pui Va Middle school
	<b>TITLE OF ENTRY</b>	<b>IOT based water feature control system with environmental protection idea</b>
<p>This study investigated how to utilize the foam box to build the water feature such that energy can be saved with taking the Macao SAR's environmental protection policy and plans into consideration. This study refers to Chinese traditional culture of scenery with mountains and rivers to build a miniature garden landscape. In this work, we employ the IOT technique and light effect to add the science factors and art effect. Moreover, there are secondary linked purified water system in this work. It is important that the water is from the air conditioner's condensing water.</p>		

<b>MO-11</b>	<b>NAME(S)</b>	<b>Cheong Cheng Un</b>
	<b>ORGANIZATION</b>	Pui Ching Middle School
	<b>TITLE OF ENTRY</b>	<b>Barrier Free Bus Station</b>
<p>The "barrier-free bus station" is in trapezoid shape, with one side ascending and the other side descending. The conveyor belt has a slope of 6 degrees and a speed of 0.5 m/s. Each time it can send one wheelchair. When a bus arrives, it will enter the station special track where there is no gap between the station platform and the bus. A wheelchair on the station platform can slide and enter the bus by itself because the height of the station is the same as the bus ground. Therefore the "Barrier-Free Bus Station" is safe and convenient.</p>		

<b>MO-12</b>	<b>NAME(S)</b>	<b>Zhengyan Xiao</b>
	<b>ORGANIZATION</b>	Tianjin Yaohua High School
	<b>TITLE OF ENTRY</b>	<b>Multifunctional packaging bottle</b>
<p>The packaging bottle can monitor the temperature and humidity changes of large bottles of milk products, the change of each remaining amount in the bottle, the change of drinking date, etc.; when the safety index is exceeded, an alarm will be recorded and the food safety data information will be established.</p>		

<b>MO-13</b>	<b>NAME(S)</b>	<b>Wong Tan I / Huang Teng leong / Lei I Lam / Leong Weng lan / Cheang Lai Man</b>
	<b>ORGANIZATION</b>	Pui Ching Middle School, Macau
	<b>TITLE OF ENTRY</b>	<b>PCMS Science Café — the latest multimedia platform for science knowledge</b>
<p>PCMS Science Cafe, a student organization established in 2017, discovered the correlation between the flavor of the food and science, which prompts us to make videos about the scientific reasons behind the change of the flavor. Students can gain a huge amount of scientific knowledge and also fun facts through our videos. Movies and pictures and other methods can attract the audience's attention and make it easier for them to accept scientific knowledge. Our videos are posted on social media platforms. Students regularly participate in charity bazaars and science fairs. This programme not only brings positive effects to the public, but also enhances students' comprehensive ability.</p>		

<b>MO-14</b>	<b>NAME(S)</b>	<b>HUANG KAI / AO PUI IN / CAI JIAWEI</b>
	<b>ORGANIZATION</b>	Macau Baptist College
	<b>TITLE OF ENTRY</b>	<b>Real time data linkage science popularization optical experiment system (Ver 1.0)</b>
<p>The utility model is suitable for the auxiliary teaching purpose of physical optics experiment of basic science, specifically relates to a speed motor, ultrasonic ranging sensor, diversified experimental accessories, terminal experimental console, and IOT data controlled by data thread with Android system (tablet and mobile phone) for interactive control. The instrument of the utility model can fully meet the needs of daily teaching. Also, it is convenient for the students' studies, motivating students to learn and improve their learning efficiency.</p>		

<b>MO-15</b>	<b>NAME(S)</b>	<b>Xiyao Wang</b>
	<b>ORGANIZATION</b>	Tianjin Yaohuajiacheng International School
	<b>TITLE OF ENTRY</b>	<b>Research tools on the causes of moon shape change</b>
<p>I study the changing law of moon shape in the sky with my teacher in science class. I found that the teacher's teaching aids are equivalent to the phenomena produced when we stand outside the earth and observe the moon's revolution around the earth. It's hard for the students to understand. I think if we can go back to the earth and observe from the perspective of the first person, it will be helpful for students to understand the reasons for the change of moon shape. So I designed this tool to explore the law of moon phase change.</p>		

<b>MO-16</b>	<b>NAME(S)</b>	<b>WONG CHI HANG / CHAN KENG LAM / KUONG CHI HIM</b>
<b>ORGANIZATION</b>	Pui Ching Middle School Macau	
<b>TITLE OF ENTRY</b>	<b>Smart Soap Dispenser Based on Haar Cascade Object Detection and Estimation of Hand Area</b>	
<p>The automatic induction soap dispenser on the market usually uses infrared sensor. When an object reaches the sensing range, it will automatically provide soap. However, if that object is not a hand, it will cause waste. By using the object detection of artificial intelligence to identify whether there is a hand extending to the sensing range of the smart soap dispenser, and also estimate the size of the hand to determine the amount of soap, this can effectively control waste. We also add an output function that plays a hand-washing song for 20 seconds and dispenses tissue paper afterwards.</p>		

<b>MO-17</b>	<b>NAME(S)</b>	<b>XingXiWen / YangXizi</b>
<b>ORGANIZATION</b>	Tianjin Experimental Primary School	
<b>TITLE OF ENTRY</b>	<b>Sole disinfection robot</b>	
<p>Sole disinfection robot. During the epidemic, I learned in the news that soles are the way to spread COVID-19. I think, how can we kill the sole without touching it? I made this robot with what I learned in robotics class. Let me show you. As long as the sole is near the ultrasonic sensor, the motor drives the spray device to spray the disinfectant water on the sole, and the disinfection task can be completed without contact. I put him at the door of the classroom, students will not bring the virus into the classroom. I also designed and made a hand disinfection robot in the same way. When the hand is close to the ultrasonic sensor, it will spray hand sanitizer. It can be used with sole disinfection robot, so it is safer.</p>		

<b>MO-18</b>	<b>NAME(S)</b>	<b>Sou Chak Tong / Chen Jia Hao / Weng Jia Ning / Liang Yi Xing</b>
<b>ORGANIZATION</b>	Lou Hau High School, Macao, China	
<b>TITLE OF ENTRY</b>	<b>Using smart buoys to build the global four-in-one Internet of Things</b>	
<p>In our research, we begin our study on radio waves for the IoT. Radio wave communication has significant advantages in terms of its ability to provide low-latency data transmission, high data bandwidth connectivity. To solve the short-range issue due to signal attenuation, we proposed the use of "Smart Bouys" that act as relays between the "underwater things." These smart buoys consist of a cable connected underwater antenna array transceiver that receives and transmit data to and from the underwater sensors and a Surface transceiver that allows communication between other smart buoys, surface vessels, planes, etc. This maritime communication system architecture allows the very long-distance transmission for underwater things.</p>		

<b>MO-19</b>	<b>NAME(S)</b>	<b>Ding Yixuan</b>
<b>ORGANIZATION</b>	Tianjin Experimental Primary School	
<b>TITLE OF ENTRY</b>	<b>Volleyball beginner's ball cushion assistant practice device</b>	
<p>Volleyball beginner cushion ball auxiliary practice device, mainly consists of a bracket and two groups of infrared sensors, as well as timer and counter and other auxiliary equipment. The device uses infrared sensors to respond to blocking rays, through two sets of infrared ray, vertical and parallel, limit the effective range and height of the ball, and record the effective number of the ball within the set time, reflect the training results, to achieve the purpose of beginners to complete the continuous training.</p>		

<b>MO-20</b>	<b>NAME(S)</b>	<b>YuXuan Guo</b>
<b>ORGANIZATION</b>	Tianjin Experimental Primary School	
<b>TITLE OF ENTRY</b>	<b>Watermelon picking artifact</b>	
<p>Based on the principle of sound wave measurement, a melon picking artifact was made. The melon picking artifact includes a knocker, a mobile phone and a matching melon shooting mobile app. The functions of the melon shooting mobile app include detection, recording and setting. When using it, it is controlled by the mobile phone app. The mechanical device of the knocker is used to knock the watermelon, collect the acoustic signal, and analyze it. Finally, an analysis report is generated on the mobile phone app to point out the degree of raw and ripe watermelon.</p>		

## MACEDONIA

<b>MK-01</b>	<b>NAME(S)</b>	<b>Dr Dragan Jovanov</b>
<b>ORGANIZATION</b>	National Association of Inventors of Macedonia (NAIM)	
<b>TITLE OF ENTRY</b>	<b>Agrophyto tonic with atomic absorption of macro and micro elemental action and properties of parts of herbal plants white clover root and flower, walnut leaf and bark, Macedonian oak and basil root with specific geo-climatic and initial conditions from a certain territory for improvement of health in patients with Multiple sclerosis.</b>	
<p>Agrophyto tonic with atomic absorption of macro and micro elemental action and properties of parts of herbal plants white clover root and flower, walnut leaf and bark, Macedonian oak and basil root with specific geo-climatic and initial conditions from a certain territory for improvement of health in patients with Multiple sclerosis. Agrophyto tonic is made with the determination of atomic absorption, dry mass, ash, sand, macro and micro elements, extraction, phyto components to improve the health of people with Multiple sclerosis.</p>		

<b>MK-02</b>	<b>NAME(S)</b>	<b>Matej Miłosievski / Andreja Popovikj</b>
<b>ORGANIZATION</b>	Yahya Kemal College - Skopje	
<b>TITLE OF ENTRY</b>	<b>AM:PM Smart Mug: Eco-friendly, 3D Printed Mug w/ Solar powered Wireless Charger</b>	
<p>This project's purpose is lowering the CO2 emissions and amount of plastic being produced by providing the public with a product for everyday use, which is Eco-friendly, recyclable/biodegradable and practical at the same time. We created the "AM:PM SMART MUG - ECO-FRIENDLY, 3D PRINTED MUG W/ SOLAR POWERED WIRELESS CHARGER". The AM:PM smart mug is a thermal mug with a solar powered charger/s integrated in its cap. The cap resembles a solar power bank with a 5000 mAh lithium battery, a 5V/1A USB output and a 5V/1A, 5W wireless charger output, while still serving as a cap for the mug.</p>		

<b>MK-03</b>	<b>NAME(S)</b>	<b>Ema Gajdova / Elena Popovska</b>
<b>ORGANIZATION</b>	Yahya Kemal College - Skopje	
<b>TITLE OF ENTRY</b>	<b>The Potential In Biodegradable Film Obtained From Whey Protein</b>	
<p>This project aims to obtain a biodegradable, lightweight bipolymer as an environmentally friendly, bacteriostatic and inexpensive alternative to synthetic plastics. Preferred type of raw material for such plastic is classified as second generation feedstock, meaning a non-edible biomass, allowing for its complete utilization. Such material is liquid whey, the byproduct of cheese production. Annually Europe's cheese factories produce 50 million tons of whey, discarding 40% into the environment, which is toxic due to whey's high biological oxygen demand. Whey protein's structures, treated under pressure and certain temperatures, can be unfolded to form polymers that can be utilized in bio-plastic production.</p>		

<b>MK-04</b>	<b>NAME(S)</b>	<b>Kristijan Nikolov</b>
<b>ORGANIZATION</b>	Yahya Kemal College - Skopje	
<b>TITLE OF ENTRY</b>	<b>Multipurpose Organic Anti-Rash Cream</b>	
<p>The project was conducted in two stages. The first stage consists of doing microbiological laboratory testing of oils against bacteria/fungus. The second stage consists of preparing the cream by mixing all of the ingredients in a controlled temperature. The main goal of this project is to test how oils perform against the bacteria and to prepare all-natural organic cream that helps in skin related problems.</p>		

<b>MK-05</b>	<b>NAME(S)</b>	<b>Kristijan Nikolov</b>
<b>ORGANIZATION</b>	Yahya Kemal College - Skopje	
<b>TITLE OF ENTRY</b>	<b>Multipurpose St John's wort / Black Cumin Oil Cream</b>	
<p>The project was conducted in two stages. The first stage consists of doing microbiological laboratory testing of oils against bacteria/fungus. The second stage consists of preparing the cream by mixing all of the ingredients in a controlled temperature. The main goal of this project is to test how oils perform against the bacteria and to prepare all-natural organic cream that helps in skin related problems. The multipurpose St John's wort / black cumin oil cream that is a final outcome of this project is entirely natural. It does not contain preservatives, corrosive substances, corticosteroids and other irritants.</p>		

<b>MK-06</b>	<b>NAME(S)</b>	<b>Meryem Alkin / Engin Alkin / Ahmet Tarik Dinc</b>
<b>ORGANIZATION</b>	Yahya Kemal College - Skopje	
<b>TITLE OF ENTRY</b>	<b>Vinegars: Apple, Aronia, Plum, Hawthorn "Apple, Aronia, Plum, Hawthorn-wonder plants that removes heavy metals from water"</b>	
<p>Our aim is to prove that with this natural resource apple, aronia, plum and hawthorn vinegar can make the quality of water way better, especially the quality of polluted water, and with that We can make better conditions for living and We will make better environment and make the people's lives better.</p>		

## **MALAYSIA**

<b>MY-01</b>	<b>NAME(S)</b>	<b>Associate Prof Dr ASMA ABDUL RAHMAN / Prof Dr MOHAMMAD HAMIRUCE MARHABAN / Col Associate Prof Dr KHAIROL AMALI AHMAD / Dr AHMAD ABDUL RAHMAN / Miss MARYAM ABDUL RAHMAN</b>
<b>ORGANIZATION</b>	Faculty of Major Languages Studies, Islamic Science University of Malaysia (USIM)	
<b>TITLE OF ENTRY</b>	<b>Multi-Relational Latent Morphology-Semantic "MORPHOSEM" Analysis Model for Extracting Qur'anic Concept: A New Innovative for Sustainable Society</b>	
<p>In this research, we propose a Multi-Relational Latent Morphology-Semantic Analysis Model (MORPHOSEM) based on a combination of Arabic Semantic and six multiple relations between words, which are synonym, antonym, hypernym, hyponym, homonym, and meronym, to precisely extract Qur'anic concept. The existing literatures focus only on very limited relationships between words which could not extract the in-depth concept of Qur'anic without considering the importance Arabic Semantic. Therefore, the objectives of this research are: (1) to analyses and categorize Quranic words according to Arabic Semantic patterns, (2) to propose a new model for extracting Quranic concept using MORPHOSEM, (3) to investigate semantic relationships between Qur'anic words, and (4) to validate the proposed model with Arabic linguistic, and Qur'anic experts.</p>		

<b>MY-02</b>	<b>NAME(S)</b>	<b>SUTHIKSHA BALOO / NARASHIMMA NAIDU BALOO</b>
<b>ORGANIZATION</b>	MALAYSIAN INNOVATION, INVENTION & CREATIVITY ASSOCIATION (MIICA) / SK TAMAN MEGAH	
<b>TITLE OF ENTRY</b>	<b>SMART WATER PLANT SENSOR (SWPS)</b>	
<p>Water is very much related to human activities. Agriculture is one of the fields where water is vital. However, water wastage is very rampant in the water plant system or irrigation in small and large scales which causes water wastage in a huge amount every year. Therefore, an efficient water management system is needed when it comes to irrigations, small-scale plantations and farming. The invention of the Smart Plant Water Sensor (SPWS) is a timely invention to reduce water wastage and also for lucrative harvesting. The mechanical device of SPWS is to sense the water level of the stored container/ tank when the irrigation /watering starts in the designated area.</p>		

<b>MY-03</b>	<b>NAME(S)</b>	<b>AZMY BIN AWANG / MOHAMAD KHAIRULLAH BIN ATAN / ANIQ NOR RAHIMI BIN ABU SEMAN / AMNI BALQIS BINTI ZURKURNAI / NURAINA NAFEESA BINTI ABDUL HAKIM</b>
<b>ORGANIZATION</b>	MAKTAB RENDAH SAINS MARA JELI	
<b>TITLE OF ENTRY</b>	<b>Greentech PedunCube</b>	
<p>PedunCube is a biocomposite material made from banana peduncle fibre, starch of <i>Cucurbita</i> spp. (pumpkin) and peels of <i>Benincasa hispida</i> (wax gourd). The production of this material was inspired by the dire need to solve plastic pollution crisis that are worsening right now on earth. The plastic pollution is caused by the usage of petroleum-based plastics that are non-biodegradable.</p>		

<b>MY-04</b>	<b>NAME(S)</b>	<b>Avinaash S/O Ramani / Ughanthinii D/O Kaliyappan</b>
<b>ORGANIZATION</b>	SEKOLAH MENENGAH KEBANGSAAN KULIM (SMKK) -SCHOOL	
<b>TITLE OF ENTRY</b>	<b>ARIES – A CONCEPT TO BE A SOLUTION FOR GLOBAL WARMING, ENERGY SAVING, AND FILTER EFFICIENCY</b>	
<p>THE NAME OF OUR DESIGN IS ARIES. IT MEANS ARDUINO IN ENERGY SAVING. FOR LOTS OF US, KEEPING YOUR ROOM AT A COMFORTABLE TEMPERATURE IS SAFER THAN BATTLING THE HEAT ON YOUR OWN, ESPECIALLY FOR KIDS LIKE AND THE ELDERS. THUS, WITH THE USAGE OF THE AIR CONDITIONING, WE NEED TO MAKE SURE THE FILTER ARE WELL MAINTAINED TO ENSURE ENERGY EFFICIENT AND REDUCE IN CLIMATE CHANGE. FOR MANY OF US, CHANGING AIR FILTERS IS AN EASILY FORGETTABLE CHORE. SO, WOULDN'T IT BE GREAT IF YOUR AIR FILTER COULD ALERT YOU WHEN IT BECAME CLOGGED AND LOST ITS EFFICIENCY? NOW IT CAN WITH OUR INVENTION NAMED ARIES. WE HAVE USED ARDUINO FOR OUR INVENTION IS TO DETECT AND MONITOR OF AIR CONDITIONER FILTER EFFICIENCIES AND PERFORMANCE AND SUSTAINABILITY.</p>		

<b>MY-05</b>	<b>NAME(S)</b>	<b>ASSOC. PROF. TS. DR. WAN ABDUL RAHIM BIN WAN MOHD ISA / DR. AHMAD IQBAL HAKIM BIN SUHAIMI / DR. NURULHUDA BINTI NOORDIN / SULAINI A/L HUSSAIN</b>
<b>ORGANIZATION</b>	Universiti Teknologi MARA	
<b>TITLE OF ENTRY</b>	<b>Virtual Reality of Sewang Dance by Semai People for Indigenous Tourism</b>	
<p>The objective is to develop a virtual reality of the sewang dance of Semai people towards preserving the culture of the Semai people for indigenous tourism. The methodology used is the agile methodology. The virtual reality is developed using MakeHuman, Marvelous designer, Blender, and Unity3D. The main Semai cultural elements that were incorporated in the application are Semai traditional attire, sewang dance attire, and songs. The virtual reality is one form where the unique culture of Semai people is being preserved in form of virtual reality. Virtual reality is already available in google play store <a href="http://bit.ly/sewangdancelink">http://bit.ly/sewangdancelink</a></p>		

<b>MY-06</b>	<b>NAME(S)</b>	<b>LILI NURLIYANA ABDULLAH / SAKINAH 'ALIAH AHMAD SALEH / NURUL AMIRAA MOHAMED RAFIC / NURUL AMELINA NASHARUDDIN / MAS RINA MUSTAFFA</b>
<b>ORGANIZATION</b>	UNIVERSITY PUTRA MALAYSIA	
<b>TITLE OF ENTRY</b>	<b>AID: DEPRESSION DETECTION USING FACIAL AND VOICE RECOGNITION</b>	
<p>This project is to develop a mobile application for detecting depression using facial and voice recognition. The target audience of this project is for the community who are curious and interested to know their mental health status. The purpose of this application is to identify user's mental health state and detect any depression symptoms. This application is to provide assistance for users to easily contact mental health helplines at any time in order to seek help from professionals to combat depression. We aim to help all users regardless of age and gender to identify depression symptoms from early stage by providing features that are simple and easy to understand.</p>		

<b>MY-07</b>	<b>NAME(S)</b>	<b>Maryam Muzamir</b>
<b>ORGANIZATION</b>	Methodist Girls Primary School Kuantan @ SK (P) Methodist Kuantan	
<b>TITLE OF ENTRY</b>	<b>YAM 2.0: Sustainable Livestock Feed</b>	
<p>Annually up to 8 million tonnes of waste crustacean shells are produced globally. In developed countries, disposal can cost up to US\$150 per tonne. YAM 2.0 made of ground shrimp and sea snail shells from food waste; and invented as sustainable livestock feed. YAM 2.0 contains all the essential amino acids and have a nutrient value comparable to that of soya-bean meal. Advantages of YAM 2.0 include providing protein and nutrients suitable for livestock; improve the taste of food, stimulate growth and development; and contain chitin, calcium and pigment supply which increase eggshell formation and quality of yolk. YAM 2.0 also provides stable, natural, cheap, economical and suitable raw materials used in formulas, feeds for livestock, poultry and fishery. As livestock breeding rises rapidly, waste crustacean shells from southeast Asia could be transformed into protein-rich livestock feed with an annual market value of more than \$100 million, according to World Bank data.</p>		

<b>MY-08</b>	<b>NAME(S)</b>	<b>Norhashila Hashim / Maimunah Mohd Ali / Samsuzana Abd Aziz / Ola Lasekan</b>
<b>ORGANIZATION</b>	Universiti Putra Malaysia	
<b>TITLE OF ENTRY</b>	<b>SMART SENSOR FOR FRUIT RIPENESS DETECTION</b>	
<p>The smart sensor for fruit ripeness detection is an integrated monitoring system of optical approach and artificial intelligence (AI). This imaging-based smart sensor predicts the fruit ripeness using thermal imaging technique. The integration of AI assists in the decision making process without human interference with high precision and yield higher quality products. It offers non-destructive evaluation with simple, rapid, efficient, and intelligent interpretation that is beneficial to fresh produce producers and agricultural industries at large. It also promotes automated and end-to-end quality control platform for each production chain.</p>		

<b>MY-09</b>	<b>NAME(S)</b>	<b>Amir Izwan Sarifuddin / Salvinder Singh Karam Singh / Shahrum Abdullah</b>
<b>ORGANIZATION</b>	Universiti Kebangsaan Malaysia	
<b>TITLE OF ENTRY</b>	<b>Expert System In Fatigue Reliability</b>	
<p>Coil spring is an important component where it often receives high vibrations that increase mechanical failure. The creation of expert system applications can enable prediction of fatigue life to be done in real time. The purpose of this study is to characterize strain signal behavior in predicting lethargy life and identifying failure factors due to random load and developing expert systems. The simulation method to monitor the strain signal feature was carried out using an expert system application developed using MATLAB software which contains three parts namely statistical analysis, reliability and reliability.</p>		

<b>MY-10</b>	<b>NAME(S)</b>	<b>FIRDAUS BIN MOHAMAD / YUELDA MARLIANA BINTI YUDASRIL / NUR HUMAIRA BINTI ABDUL RAHIM / NUR IFFAH BINTI MD BADRU</b>
<b>ORGANIZATION</b>	VOCATIONAL COLLEGE OF SUNGAI BULOH	
<b>TITLE OF ENTRY</b>	<b>SCI-POLY – LEARNING SCIENCE THROUGH GAMES</b>	
<p>Sci-Poly is an interactive teaching and learning styles that combined science and games together purposely designed to attract students to be more attach towards Science subject. An action study was conducted on students from Vocational College Sungai Buloh to determine the effectiveness of Sci-Poly as an alternative teaching method. From the data collected, there are significance difference in students' performance and achievement in Science subject after using Sci-Poly during their lesson. Sci-Poly is a set of games that consist of game board, lesson card, quizzes, questions, facts, knowledge and some reward element that able to attract and help students to pick up their lesson easier and more convenient.</p>		

<b>MY-11</b>	<b>NAME(S)</b>	<b>OMINENT SDN BHD</b>
<b>ORGANIZATION</b>	OMINENT SDN BHD	
<b>TITLE OF ENTRY</b>	<b>GRAPHENE REINFORCED ECOCOAT KENZO</b>	
<p>In an industry of health hazards, toxic coatings are often used without concern to its users. We introduced Kenzo, a high solids, Zero VOC ceramic coating, that revolutionized the industry. Safer and free of VOCs, it outperformed market leaders, becoming one of the most sought after premium coatings worldwide. We integrated Graphene nanoplatelets (GNP) into our Kenzo formula. It Improved water-spotting and chemical resistance, increased slickness and slip angles, all without the loss of clarity. IGL Coatings is a Malaysian technology firm focused on developing innovative disruptive &amp; sustainable nanotechnology products. Distributed in more than 50 countries, Kenzo is the first and only Graphene Reinforced ceramic coating with a 100% solids, Zero VOC formula.</p>		

<b>MY-12</b>	<b>NAME(S)</b>	<b>OMINENT SDN BHD</b>
<b>ORGANIZATION</b>	OMINENT SDN BHD	
<b>TITLE OF ENTRY</b>	<b>ECOCOAT TITAN – DURABLE PHOTOCATALYST CERAMIC COATING</b>	
<p>Ecocoat Titan was created to address the growing problems of difficult, costly ineffective and inefficient sanitation, during this time of Pandemic. The photocatalytic coating employs titanium dioxide (TiO<sub>2</sub>) to effectively break down and actively disables pathogens when activated by light. This continuous action reduces the need for constant sanitation. Durable against soap and IPA, Titan can easily maintained with a simple wipe-down. Reducing pathogen spread and threat at high risk and high traffic areas. Titan is developed by IGL Coatings, a multi award-winning technology firm, trusted in more than 50 countries worldwide for its green, high-performing products.</p>		

<b>MY-13</b>	<b>NAME(S)</b>	<b>HU LAEY NEE / NORSARIHAN AHMAD / TAN YOONG MING / MUHAMMAD HARITH MOHD ALI HANAFIAH</b>
<b>ORGANIZATION</b>	INSTITUTE OF TEACHER EDUCATION, SARAWAK CAMPUS, SARAWAK, MALAYSIA & SJKC MANONG, KUALA KANGSAR PERAK, MALAYSIA.	
<b>TITLE OF ENTRY</b>	<b>CRACK THE NUMBERS (CTN)</b>	
<p>The current global Covid19 Pandemic has changed the current teaching and learning atmosphere into a booming emergence of online learning via mobiles, computers and applications. However, limitations in internet connectivity, lack of learning materials and infrastructure impede the students learning. Thus, Crack The Numbers (CTN) is developed to help Primary school students who are weak in Mathematics to master numbers effectively in a fun and interesting way. CTN uses QR code printed on flash cards and combined with the use of Hologram to enhance learning experience among weak Primary school students. Findings from this invention showed improved learning in Mathematics.</p>		

<b>MY-14</b>	<b>NAME(S)</b>	<b>MUHAMAD FAKHRUL SYAKIRIN BIN MAGRUL SUHAINI</b>
<b>ORGANIZATION</b>	KOLEJ VOKASIONAL TAIPING	
<b>TITLE OF ENTRY</b>	<b>SMS QUEUE SYSTEM USING MICROCONTROLLER, GSM AND BLUETOOTH DEVICE</b>	
<p>This project is designed using Microcontroller, GSM and Bluetooth device to facilitate public who uses take-a-number system (queue numbering system) at government and private department counters. This system can overcome problems regarding paper wastage, time, avoid littering and to enhance management system to become smoother and systematic. This system operates by sending the queue number to customer by using short message service (SMS). In addition, this system enables customers to save their time as they can complete their affairs while waiting for their turn. This is because this system will send a notification alert to customers when their turn is approaching.</p>		

<b>MY-15</b>	<b>NAME(S)</b>	<b>Associate Prof. Dr. Rayner Alfred / Dr. Januarius Gobilik / Associate Prof. Dr. Joe Henry Obit / Associate Prof. Dr. Geoffrey Tanakinjal / Associate Prof. Dr. Bonaventure Boniface</b>
<b>ORGANIZATION</b>	Universiti Malaysia Sabah	
<b>TITLE OF ENTRY</b>	<b>A Live-Physical Weight Estimation of Cattle Using Deep Learning Approach</b>	
<p>The invented live-physical weight estimation of cattle algorithm is implemented using a deep learning approach in which the image segmentation is performed using the Faster RCNN algorithm and the automated estimation of the cattle's weight is performed using a Convolutional Neural Network algorithm. The proposed deep learning based live-physical weight framework is developed to solve the laborious task to manually weight the cattle. The purpose of developing the proposed live-physical weight monitoring system is to support the optimization of beef cattle farm productivity based on cattle's physical weight estimation using a deep learning approach.</p>		

<b>MY-16</b>	<b>NAME(S)</b>	<b>Associate Prof. Dr. Rayner Alfred / Dr. Januarius Gobilik / Prof. Murnizam Hj Halik / Associate Prof. Dr. Joe Henry Obit / Associate Prof. Dr. Bonaventure Boniface</b>
<b>ORGANIZATION</b>	Universiti Malaysia Sabah	
<b>TITLE OF ENTRY</b>	<b>AutoClassPaddy: An Automated Classifier of Paddy Rice Field Using an Optimized Convolutional Neural Network</b>	
<p>The invention of the automated classifier of paddy rice field (AutoClassPaddy) using an optimized Convolutional Neural Network was motivated by the fact that there is a lack of efficient methods and modern technologies applied for monitoring and forecasting the paddy rice production in Sabah Malaysia. The invented <b>AutoClassPaddy</b> can classify the paddy rice field based on the spectral images of paddy rice field taken using drones and processing them using the deep learning algorithm called the Convolutional Neural Network. The invented <b>AutoClassPaddy</b> system is fully automated and enabling the monitoring of the paddy rice growth based on the class of the paddy rice field.</p>		

MY-17	NAME(S)	Dr. Ch'ng Huck Ywih / Gunavathy a/p Selvarajh / Dr. Norhafizah binti Md Zain
ORGANIZATION		Universiti Malaysia Kelantan Jeli Campus
TITLE OF ENTRY		<b>Agro Wastes to Organic Amendments Improves Soil Health and Crop Productivity without Polluting the Environment</b>
<p>Malaysian acidic soil impedes food and cash crops productivity. Chemical fertilization to improve soil and crop productivity has not been successful. Hence, we transformed agricultural wastes (rice straw, rice husk, and pineapple leaves) into organic amendments to mitigate the problem. Our green technology restores soil fertility and increases rice and maize productivity by providing essential plant nutrients such as N, P, and K, and reduces leaching of those elements that pollute environment. Our invention also paves a lucrative way of producing organic-based fertilizers to facilitate organic farming using unwanted waste materials to produce cheaper fertilizer compared with chemical fertilizers alone.</p>		

MY-18	NAME(S)	Assoc. Prof. Dr. Ganeshsree Selvachandran (Team Leader) / Assist. Prof. Dr. Quek Shio Gai
ORGANIZATION		UCSI University, Kuala Lumpur, Malaysia
TITLE OF ENTRY		<b>iConMix: An Automated Intelligent Mixing System for Optimal Concrete Mixing Powered by Machine Learning and Complex Fuzzy Logic</b>
<p>iConMix is an automated, intelligent AI-powered system that autonomously determine the optimal solution for concrete mixing. Such solution is deduced by the program without wasting any amount of material for testing. This is the first dedicated program for such a purpose in literature that harnesses the recent advancements in artificial intelligence and machine learning. Although there has been a great amount of technological advancement in the manufacturing and construction industries in recent years, concrete mixing has been remaining a manual process requiring long hours of experimentation before the optimal composition of the raw materials is deduced.</p>		

MY-19	NAME(S)	Assoc. Prof. Dr. Ganeshsree Selvachandran (Team Leader) / Assist. Prof. Dr. Quek Shio Gai
ORGANIZATION		UCSI University, Kuala Lumpur, Malaysia
TITLE OF ENTRY		<b>iScanDiaRet: An Artificial Intelligence System Powered by Machine Learning and Complex Fuzzy Logic for the Automated Detection of Diabetic Retinopathy and other Eye Diseases</b>
<p>The iScanDiaRet is an AI system that enables the automated detection of DR and other eye diseases using only retinal images, without the need for any human intervention. This is the first detection system of its kind in literature and also in existence in Malaysia. Our system is powered by machine learning algorithms and complex fuzzy logic and is therefore able to detect even the slightest abnormality in retinal images to make an accurate diagnosis of retinal problems such as the early onset of DR and other eye diseases such as retinal detachment, glaucoma, age-related macular degeneration and macular hole.</p>		

MY-20	NAME(S)	Assist. Prof. Dr. Quek Shio Gai (Team Leader) / Assoc. Prof. Dr. Ganeshsree Selvachandran
ORGANIZATION		UCSI University, Kuala Lumpur, Malaysia
TITLE OF ENTRY		<b>iElectroCast: An Automated Intelligent Electricity Load Forecasting System</b>
<p>Our proposed electricity load forecasting system is an intelligent system that autonomously determines the optimal amount of electricity that needs to be produced and supplied to a region/area, thereby ensuring that power producers do not over-produce and under-supply. Our proposed AI system has been trained using actual smart meter datasets from E.ON SE which is an international, privately-owned energy supplier based in Essen, Germany that was obtained via the IEEE Computational Intelligence Society data bank. The performance of our AI system was compared with the hard truth i.e. data of the actual consumption of electricity given by E.ON SE.</p>		

MY-21	NAME(S)	Dr. Leow Meng Chew / Dr. Ong Lee Yeng / Prof. Lau Siong Hoe / Prof. Koo Voon Chet / Mr. Leow Kang Ren / Mr. Lai Guo Yao / Mr. Loo Eng Keong
ORGANIZATION		Multimedia University
TITLE OF ENTRY		<b>Connected and Interactive Advertising Campaign (Connect-Interact)</b>
<p>This invention aims to showcase ONE new revolutionary way of Digital-Out-Of-Home advertising system that provides four powerful concepts (<b>Augmented, Analytics, Interactive, Connected</b>). Every signage is <b>connected</b> to the cloud for remote management on the advertising campaign. Content of every signage can be changed anytime, from anywhere, in any way for optimal advertising effectiveness. Advertising are humanly activities that warrant more humane <b>interactions</b>. By involving immersive interactive activities that are <b>augmented</b> through smart devices such as camera, microphone and audience's mobile devices, audience is engaged effectively with visual, auditory, reading/writing and kinaesthetic (VARK) modalities. The interaction data in the aspect of behavioural and engagement level is collected for data <b>analytics</b> to better understand the potential customers.</p>		



<b>MY-22</b>	<b>NAME(S)</b>	<b>Razis Bin Rahim / Radziah Binti Lateh / Sharon Agapitus / Azhawati Binti Mohd Noor / Hazieque Aqashah Bin Mohd Famy</b>
<b>ORGANIZATION</b>	Kolej Vokasional Sungai Petani 2	
<b>TITLE OF ENTRY</b>	<b>Pumpkin Dodol (Pressure Cooking Technique)</b>	
<p>"Dodol" is a toffee-like, sweet and sticky festive confectionery commonly found in Malaysia and Indonesia. Dodol is made with coconut milk, sugar, and glutinous rice flour; mixed together and stirred continuously until it become very thick, sticky and sweet. There are various type of commercialised dodol made in Malaysia with flavors such as "durian", "pandan", strawberry and corn. This innovation is to make, a unique flavoured dodol made from yellow pumpkin (<i>Cucurbita moschata</i>) to enhance dodol's nutritional values and taste. It normally takes up to 9 hours to cook traditionally but with high pressure cooker the cooking time can be shorten to just 30 minutes. This innovative product is marketable and has high commercial values internationally.</p>		

<b>MY-23</b>	<b>NAME(S)</b>	<b>Professor Dr. Vijayaletchumy Subramaniam (Project Leader) / Kavenia Kunasegran (Co-Researcher)</b>
<b>ORGANIZATION</b>	University Putra Malaysia	
<b>TITLE OF ENTRY</b>	<b>MALAY LANGUAGE STAR GRADING SYSTEM</b>	
<p>The innovation titled "MALAY LANGUAGE STAR GRADING SYSTEM" developed by researchers Professor Dr. Vijayaletchumy Subramaniam &amp; Kavenia Kunasegran has solved a major problem faced in government schools in Malaysia. The Ministry of Education Malaysia has enforced that all students are to pass Malay Language in their tertiary education exams as it is made compulsory. If the student fails in the Malay Language exam, the student will not be able to continue his/her studies at a higher education level. The current statistics shows 35% of tertiary levels students fail their Malay Language. Thus, this innovation in a form of a system aids teachers and students in learning and mastering Malay Language progressively. The system encourages progressive learning that can be suited to the level of learning in students.</p>		

<b>MY-24</b>	<b>NAME(S)</b>	<b>Assoc. Prof. Dr. Malarvili Bala Krishnan / Om Prakash Singh / Dr. Teo Aik Howe</b>
<b>ORGANIZATION</b>	Universiti Teknologi Malaysia (UTM)	
<b>TITLE OF ENTRY</b>	<b>Smartphone Application Based Respiratory Illness Monitoring Device (Ibreathe)</b>	
<p>A portable, hand-held and real-time human respired CO<sub>2</sub> measurement device that can be used for respiratory assessment based on sidestream technology. The device measures and displays the CO<sub>2</sub> waveform, partial end-tidal carbon dioxide (PetCO<sub>2</sub>), respiratory rate (RR) and newly proposed features onto the TFT and save those into the secure digital card via real-time clock. The device is able to differentiate asthma and Chronic Obstructive Pulmonary Disease (COPD) conditions while monitoring its severity level. The device is integrated with internet of things (IoT) which allows the user or physicians to monitor and assess the patient conditions virtually.</p>		

<b>MY-25</b>	<b>NAME(S)</b>	<b>Dr. Hassanain Al-Talib / Dr. Alyaa R Mahmood / Prof. Ariza Adnan / Dr. Chan Yean Yean</b>
<b>ORGANIZATION</b>	Faculty of Medicine – Universiti Teknologi MARA (UiTM)	
<b>TITLE OF ENTRY</b>	<b>A Multiplex PCR rapid detection kit of hemorrhagic bacteria from stool samples</b>	
<p>The present invention discloses a novel multiplex PCR kit for rapid detection of haemorrhagic bacteria from stool samples. This kit comprises a freeze-dried PCR reagents. Primer system optimization was performed for detecting Shigella, Campylobacter, Salmonella and E. coli individually or simultaneously with internal control through multiplex PCR. Specific primers and gBlock sequences were used as a positive control in separated tube reaction. Brand-new and specific primers pool are designed. Including internal control which will rule out false-negative results and check for PCR inhibitors in samples. The current kit is working and stored in room temperature without need for cold chain.</p>		

<b>MY-26</b>	<b>NAME(S)</b>	<b>Asst. Prof. Dr. Nur Ayuni Jamal / Assoc. Prof. Dr. Farazila Yusof</b>
<b>ORGANIZATION</b>	International Islamic University Malaysia (IIUM) and University of Malaya (UM)	
<b>TITLE OF ENTRY</b>	<b>Designing A Newly Energy Absorber Potential Based on Closed-Cell Porous Aluminum for Automotive Application</b>	
<p>In recent years, porous Aluminum (Al) has drawn increasing attention, particularly in the applications requiring reduced weight and energy absorption capability especially in the automotive industry. To date however, few efforts have been directed towards the fabrication of closed-cell porous Al with low to medium porosity. Therefore, a newly closed-cell porous aluminum (Al) was designed in the current study by exploiting the use of polymethyl methacrylate (PMMA) as a space holder fabricated via powder metallurgy method. Overall, the current invention could offer a new research prospect by providing a balance performance of physical, compressive as well as energy absorption capability.</p>		

<b>MY-27</b>	<b>NAME(S)</b>	<b>Siti Shahirah Saidin / Dr. Sakhiah Abdul Kudus / Dr. Adiza Jamadin / Muhamad Azhan bin Anuar / Dr. Norliyati Mohd Amin</b>
<b>ORGANIZATION</b>	Faculty of Civil Engineering, UiTM Shah Alam	
<b>TITLE OF ENTRY</b>	<b>VIBRATION SERVICEABILITY ASSESSMENT FOR UHPC BRIDGE BASED ON OPERATIONAL MODAL ANALYSIS</b>	
<p>In this study, the vibration responses from the UHPC bridge were measured using accelerometers. The modal parameters were decomposed from these measured data through commercial post-processing software. It is imperative to get reliable experimental modal parameters from OMA. These modal parameters were achieved and verified using different OMA algorithms, which cover both time domain and frequency domain techniques. The results of Frequency Domain Decomposition (FDD), Enhanced Frequency Domain Decomposition (EFDD), and Stochastic Subspace Identification (SSI) were compared and justified in order to validate the accuracy of the results obtained. The modal parameters obtained were then checked and verified following the EN1991-2 standard to certify the limitation of the UHPC bridge structure's serviceability.</p>		

<b>MY-28</b>	<b>NAME(S)</b>	<b>Nur Azrinadhirah Binti Shahril Nizam / Nurain Binti Hamdan / Nur Athirah Syabilah Binti Azeman / Qaseh Adilla Binti Saifullah</b>
<b>ORGANIZATION</b>	Sekolah Menengah Sains Selangor	
<b>TITLE OF ENTRY</b>	<b>Greenhouse Smart Grow (GSG)</b>	
<p>Greenhouse Smart Grow (GSG) is an agricultural method to cultivate crops in narrow residential areas. It is a multi-level hydroponic rack that uses led lights powered by a solar panel as a light source. Plastic wrap and mosquito net is used to protect the plants. The solar panel collects energy during the day and supplies it to the led lights at night which allows photosynthesis to happen 24 hours. As a result, GSG has produced luscious pesticide-free vegetables. GSG has also helped reduce global warming by using solar energy and encouraging more people to venture into the field of agriculture.</p>		

<b>MY-29</b>	<b>NAME(S)</b>	<b>SAMSUL ALAM BIN MOHAMAD SHAMSUDDIN / SUPIAN BIN ZULKIFLI NUR ZAIDATUL FARAHIN BINTI ZAIDI / SITI NURUL SHAQIRRAH BINTI NAIM / MAS NUR NABIGHAH BINTI MAS WIRAASTA</b>
<b>ORGANIZATION</b>	SEKOLAH MENENGAH KEBANGSAAN ASAJAYA (ASAJAYA NATIONAL HIGH SCHOOL)	
<b>TITLE OF ENTRY</b>	<b>SCHOOL AIR POLLUTION DETECTOR (SAPD)</b>	
<p>The air pollution that currently happened at Pasir Gudang, Johor Malaysia 2019, caused more than hundred pupils around that area being treated to breathing difficulties and unconsciousness. As the hazardous materials have been exposed to air, an uncontrolled air borne substances from the industrial waste that have not been managed wisely had spread and affect them badly . School Air Pollution Detector (SAPD) is arduino-base project is an early step to prevent previous event form being happened again with its function to help detect poisonous gas and alert the students especially those who has physical disabilities. SAPD will avoid the fatal injuries happen.</p>		

<b>MY-30</b>	<b>NAME(S)</b>	<b>Johan Ismail / Nur Eliza Abd. Rahman / Nurdiana Ahmad Denil / Rozihan Mohamed / Ahmad Nasir Mohd. Yusoff</b>
<b>ORGANIZATION</b>	Universiti Putra Malaysia	
<b>TITLE OF ENTRY</b>	<b>The JOME Card Games: Gamifying Education</b>	
<p>JOME and JOME Edugamia are brand-new card game that provides social, strategy and competitive game play experience to the young and urban adults. JOME is an accumulating-type card game that is played with a specially printed deck. The engaging JOME game mechanics was designed for the education purpose of university students, with intention to reinforce of understanding the evolution of animal kingdom. When playing JOME, players need to plan and strategize at every move throughout the game, hence improving patience and concentration. As JOME is also a joyful game, when played among friends, it improves relationships and social skills.</p>		

<b>MY-31</b>	<b>NAME(S)</b>	<b>Prof. Dr. Ahmed Osumanu Haruna / Dr. Latifah Omar / Liza Nuriati Lim Kim Choo / Dr. Kevin Muyang Tawie Sulok / Dr. Adiza Musah Alhassan</b>
<b>ORGANIZATION</b>	Universiti Putra Malaysia Bintulu Sarawak Campus (UPMKB), Malaysia	
<b>TITLE OF ENTRY</b>	<b>Enhancing Soil and Crop Productivity for Food Security</b>	
<p>Excessive use of chemical fertilizers to improve soil and crop productivity has not been successful for sustainable food crops production because of the polluting effects of chemical fertilizers. Thus, we transformed unwanted agricultural wastes into solid and liquid organic amendments or soil conditioners which are able to increase soil and food crop productivity in addition to increasing farmers' economic income on nutrient deficient soils such as acidic soils. This is possible because our approach enhances soil chemical, physical, and biological properties. The economic viability for adopting our intervention to produce food crops is superior to the existing methods of producing food crops through excessive use of chemical fertilizers. Moreover, our innovation significantly decreases carbon dioxide, methane, and nitrous emissions in farming systems including pineapples, rice, papaya, and black pepper cultivation on mineral and organic soils.</p>		

<b>MY-32</b>	<b>NAME(S)</b>	<b>Prof. Dr. Sumathi Sethupathi (Inventor) / Assoc. Prof. Dr. Mohammed JK Bashir (Co-inventor) / Assoc. Prof. Dr. Yamuna Munusamy (Co-inventor)</b>
<b>ORGANIZATION</b>	Universiti Tunku Abdul Rahman	
<b>TITLE OF ENTRY</b>	<b>EggSORB</b>	
<p>Global warming and solid waste have been identified as serious threats to the global environment. EggSORB is an eco-friendly sorbent made from eggshell waste generated from the egg cracking industry. EggSORB able to remove toxic gaseous such as sulphur dioxide, carbon dioxide and hydrogen sulphide efficiently via adsorption. These toxic gaseous are released from fossil fuel combustion or biogas. The production of EggSORB indirectly enhances recycling and landfilling of solid wastes. Production of EggSORB is simple, green and low-cost. EggSORB is biodegradable and the spent can be used as fertilizer or building material. EggSORB is a sustainable and eco-friendly material.</p>		

<b>MY-33</b>	<b>NAME(S)</b>	<b>Yamuna Munusamy / Asmipuddin / Sumathi Sethupathi / Mathialagan Muniyadi</b>
<b>ORGANIZATION</b>	Universiti Tunku Abdul Rahman & BridgeField Resources Sdn. Bhd	
<b>TITLE OF ENTRY</b>	<b>ProGreenRubber</b>	
<p>ProGreenRubber is reclaimed rubber from waste vulcanized products such as latex gloves and tires. ProGreenRubber could be categorized into natural rubber, nitrile butadiene rubber and styrene butadiene rubber grades. Our reclaiming technology is greener compared to existing technology because no solvents are used, plant based chemicals and phthalic free plasticizers are applied and could be done at ambient temperature. Compared to rubber powders in market, ProGreenRubber could be compounded again like virgin rubbers with compounding ingredients such as fillers and vulcanizing agents or blended with other polymers to produce products such as rubber mats, rethread tires, safety boots and O-rings.</p>		

<b>MY-34</b>	<b>NAME(S)</b>	<b>Safya Afiff Sarajul Fikri / Munif Afifi Sarajul Fikri / Muadz Afifi Sarajul Fikri / Associate Professor Dr. Siti Hamidah Mohd Setapar / Miss Zarith Asyikin Abdul Aziz</b>
<b>ORGANIZATION</b>	Sekolah Kebangsaan Sungai Pusu Gombak / Sekolah Menengah Al-Amin / Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia, Kuala Lumpur	
<b>TITLE OF ENTRY</b>	<b>SUN SCREEN LOTION ENRICHED ROSELLE: SAFER COSMETIC FOR KIDS</b>	
<p>The invention involves plant seeds oil and aqueous extract of Malaysian local plant (Roselle) as sustainable basis of our invented sun screen lotion for kids with safer ingredients infused. Our team collaborative with a big institution, Universiti Teknologi Malaysia (UTM) found nutritious values (vitamin C and E) of Roselle extracts, promoted skin moisturizing and anti-oxidant effects. Hence, this project impactful towards Malaysian kids to own a safer sun screen product, while helping them to protect skin since at early age using our safer ingredients, besides we urge to help mothers who seek the safer cosmetic product for their kids.</p>		

<b>MY-35</b>	<b>NAME(S)</b>	<b>Dr. Seyed Jamalaldin Seyed Hakim / Prof. Mohd Irwan Juki / Associate Prof. David Yeoh / Associate Prof. Dr. Farzad Hejazi / Associate Prof. Dr. Shahiron Shahidan / Associate Prof. Dr. Shahrul Niza Mokhtar</b>
<b>ORGANIZATION</b>	University Tun Hussein Onn Malaysia (UTHM) / University Putra Malaysia (UPM)	
<b>TITLE OF ENTRY</b>	<b>Damage Modelling Development Based Hierarchical Neuro-Fuzzy Intelligence System and Simulation of Integral Experiments</b>	
<p>The objective of this project was to develop a novel integrated damage model using neuro-fuzzy intelligence approach to predict damage in steel girder bridge structures. A model of damage development under force vibration is proposed to describe the process of damage in the structure. A numerical method for calculating crack-like zones is suggested. Experimental and finite element analyses of the structure were performed to generate modal parameters and study the efficiency of the damaged model in order to improve structural damage identification.</p>		

<b>MY-36</b>	<b>NAME(S)</b>	<b>Stefan Chew Kien Ming / Brandon Chew Joon Yip / Rita Khan / Carmen Lam Kar Mun / Shim Dezhn</b>
<b>ORGANIZATION</b>	iMagic Technologies (M) Sdn. Bhd.	
<b>TITLE OF ENTRY</b>	<b>PlaxiBATH – Mobile walk-in bath device with water recycling facilities</b>	
<p>PlaxiBATH is a portable walk-in bathtub designed to assist older adults and disabled person to bathe on their own independently and comfortably. Equipped with 12 distinctive features as compared to a conventional bathtub. PlaxiBATH is unique and convenient; safe and secure; comfortable and relaxing; and environmentally friendly. Multiple safety features such as the ease door access, panic button, automatic fall detection alert system and anti-slip floor with interior illuminated with LED lights are included to reduce the possibility of bath related accident or death occurred among the elderly. PlaxiBATH aims to bring back the joy of personal hygiene in privacy.</p>		

<b>MY-37</b>	<b>NAME(S)</b>	<b>Assoc. Prof. Dr. Farzad Hejazi / Dr. Seyed Jamalaldin Seyed Hakim</b>
<b>ORGANIZATION</b>	University Putra Malaysia / University Tun Hussein Onn Malaysia	
<b>TITLE OF ENTRY</b>	<b>Panel Damper for Structures and Bridges Subjected to Vibration</b>	
<p>The Panel Damper is a new device for use in buildings and bridges in order to dissipate and absorb vibration effect on structure and protect structures against any type of vibration such as earthquake, wind, flood, explosion and tsunami. This device which developed using high damping viscoelastic material is applicable in structures by replacing to the panel inside the frames structure. This device is able to implement in design of new structures and also in existing buildings and by consider of manufacturing cost of device, it is economy and feasible to use in normal structure such as residential buildings. (US Patent No: US20170362821A1, Canada Patent No: CA3040725A1, Japan Patent No: JP2018506662A, New Zealand Patent No: NZ753110, Malaysia Patent No: P12014703806)</p>		

<b>MY-38</b>	<b>NAME(S)</b>	<b>Assoc. Prof. Dr. Rafidah Zainon / Ms. Noorfatin Aida Baharul Amin / Professor Ir. Dr. Mohd Fadzil Ain</b>
<b>ORGANIZATION</b>	Universiti Sains Malaysia, Malaysia	
<b>TITLE OF ENTRY</b>	<b>A Portable AutoRad Dispenser</b>	
<p>Manual radiopharmaceutical dispensing technique in current practice is laborious and it provides inaccurate radioactivity. The dispensing process must be repeated until accurate dose is acquired. The radiopharmaceuticals are gamma emitters, thus, the personnel are exposed to gamma radiation during dispensing process. The longer they spend during dispensing, the more radiation dose will be absorbed and accumulated by the fingers and whole-body. Thus, a portable AutoRad dispenser was designed to allow a real-time volume and radioactivity measurement to dispense high dose radiopharmaceutical to reduce dose to the personnel, and to enhance the accuracy and precision of radioactivity measurements for patient treatment.</p>		

<b>MY-39</b>	<b>NAME(S)</b>	<b>Shahidan Idris / Associate Professor Dr Nasreen Badruddin / Professor Dato Dr Abu Bakar Abdul Majeed / Professor Tan Maw Pin</b>
<b>ORGANIZATION</b>	Universiti Teknologi PETRONAS	
<b>TITLE OF ENTRY</b>	<b>Classification of Cognitive Frailty in Elderly People from Blood Samples using Machine Learning</b>	
<p>Cognitive Frailty (CF) is a prevalent age-related disease that is affecting many individuals worldwide. Medical intervention needs to be timely, as the late stages of CF prove to be challenging. While the existing clinical diagnosis and screening tools for CF can detect the syndrome, a means of prediction is needed to identify CF in patients before its onset. The proposed invention is a machine learning software tool to identify CF in patients using features extracted from blood samples. The prediction model in the software classifies the disease based on the different blood-based parameters (e.g., Glucose, Creatinine, and C-Reactive Protein).</p>		

<b>MY-40</b>	<b>NAME(S)</b>	<b>Wan Norfazilah Wan Ismail / Hartina Mohd Yusop / Nur Nabilah Mohd Za'im</b>
<b>ORGANIZATION</b>	Universiti Malaysia Pahang	
<b>TITLE OF ENTRY</b>	<b>GetDry! – Get dry with nano waterproof spray!</b>	
<p>Why do people opt for water-based coatings? To put it simply, they are safer, less harmful on the environment, and less odorous. Water-based coating is water-soluble but become water repellent when dry. The spray coating is made to increase water resistance on a surface and enhance its stain resistance ability. The waterproof spray does not change the fabric's texture, shape, or colour. This colourless liquid leaves the surface or fabric with its natural form, including breathability and weight. The waterproof spray usually applied to many rainwear and most times it can be applied to other outdoor gear as well.</p>		

<b>MY-41</b>	<b>NAME(S)</b>	<b>Ismie Roha Mohamed Jais / Erlane K Ghani / Azian Mohamad Azman / Ahmad Shakirin Zainal Abidin / Yazrina Yahya / Hanis Maisarah Abu Bakar</b>
<b>ORGANIZATION</b>	Higher Education Leadership Academy (AKEPT)	
<b>TITLE OF ENTRY</b>	<b>Talent Management in Higher Education: A Profiling System Management</b>	
<p>Higher Education Leadership Academy (AKEPT) has been actively involved in Leadership Talent Management for Higher Education Institutions in Malaysia. Such involvement is aligned with the aspiration of the Malaysia Education Blueprint (Higher Education) 2015-2025 that clearly states the need to build competent leaders towards talent excellence. To ensure leadership excellence in the higher education institutions, it is important for AKEPT to create initiatives that can gauge leadership competency gaps of potential talents in order to execute a more strategic leadership development plan for effective and efficient talent management. Following this, 525 academics from 20 public universities, polytechnics and other related higher education agencies have been profiled through the AKEPT Leadership Assessment Centre. To accommodate this profiling data, a reliable and systematic execute framework is crucial for AKEPT in order to move this critical agenda which eventually sustains organisation culture of excellence. Following this, AKEPT has created UNILEAD.</p>		

<b>MY-42</b>	<b>NAME(S)</b>	<b>SARASWATHY D/O SUPPIRAMANIAM</b>
<b>ORGANIZATION</b>	SJK (TAMIL) JENJAROM, KUALA LANGAT, SELANGOR, MALAYSIA	
<b>TITLE OF ENTRY</b>	<b>NSS SIDDHA AYURVEDIC MIX – Grow Green Global (3G)</b>	
<p>This <b>NSS SIDDHA AYURVEDIC MIX – Grow Green Global (3G)</b> cups and plates are made from a mixture of 100% pure natural plants with vegetable wax as a surface content. The vegetable wax is a thermostable compound and doesn't content any chemical when it direct contact with the food or drinks. This cups and plates are eco-friendly and therefore 100% biodegradable and compostable. After being sterilized and thoroughly cleaned and grind into a powder, the powder processed and shaped using a hot pressing machine. The family consists of a cup, big plate and a deep bowl. Made of a natural product, this disposable cups and plates degrade naturally in the landfill and returns natural materials back to earth. This <b>NSS SIDDHA AYURVEDIC MIX – Grow Green Global (3G)</b> cups and plates has large amounts of polyphenols that are natural antioxidants. Food or drinks served on these cup and plate absorbs the polyphenols that are said to be safe to human and does not cause to any to health risks.</p>		

<b>MY-43</b>	<b>NAME(S)</b>	<b>Dr. Noraini Ahmad / Prof. Dr. Rauzah Hashim / Syaidatul Atiqah Sazalee</b>
<b>ORGANIZATION</b>	University of Malaya	
<b>TITLE OF ENTRY</b>	<b>Self-Assembly Properties of Nonionic Glycolipid Hexosomes: Effect of Co-surfactant</b>	
<p>Branched-chain glycolipid, namely 2-hexyldecyl-<math>\beta</math>-(<math>\alpha</math>)-D-glucoside (<math>\alpha\beta</math>-Glu-OC<sub>10</sub>C<sub>6</sub>) exhibited an interesting liquid crystalline phase behaviour, where <math>\alpha\beta</math>-Glu-OC<sub>10</sub>C<sub>6</sub> formed a focal conic texture of columnar phase in anhydrous condition, whereas inverse hexagonal dispersions (hexosomes) have been observed in binary aqueous media. The addition of co-surfactants (Tween series) to the glycolipid dispersions reduced the critical aggregation concentration (CAC) value of <math>\alpha\beta</math>-Glu-OC<sub>10</sub>C<sub>6</sub>, thus making the system more stable. The addition of Tween series has reduced the particle size and enhanced the stability of <math>\alpha\beta</math>-Glu-OC<sub>10</sub>C<sub>6</sub> hexosomes. Thus, branched-chain glycolipid provided an alternative nonionic surfactant and could be used as a new drug carrier system for pharmaceutical applications.</p>		

<b>MY-44</b>	<b>NAME(S)</b>	<b>Shahrul Nizam Mohamad Razali / Sheerad Sahid</b>
<b>ORGANIZATION</b>	Universiti Kebangsaan Malaysia (UKM), Malaysia	
<b>TITLE OF ENTRY</b>	<b>'TEACHA' – (Tutor, Expert and Coaching Assistant) apps</b>	
<p>The 'TEACHA' (Tutor, Expert and Coaching Assistant) application has gone through a creative and innovative process in providing the best solutions to the world of education in particular. The development of this one-stop application is the latest idea and platform in facilitating the search for teachers, educators, coaches and experts for the public (customers) to obtain learning or training services through portals &amp; mobile applications (phones or tablets). In addition, it also provide a new platform based on the latest technology to the user that registered with this application. The idea of developing this facility was generated from the current problem statement that limit the ability to find personal teacher, tutor and coaches on the respective subject and interest. Developed with a combination of current information technology, this application is able to facilitate the search of instructors based on the nearest location (using GPS search technology), profile check and background experience, select the appropriate instructors, direct reservation slots and online payment transaction equipped with cyber security features. All processes can be done quickly, safely and transparently. This 'TEACHA' application is the first new phenomenon for the education industry widely.</p>		

<b>MY-45</b>	<b>NAME(S)</b>	<b>Sheerad Sahid / Shahrul Nizam Mohamad Razali</b>
<b>ORGANIZATION</b>	Faculty of Education, Universiti Kebangsaan Malaysia (UKM)	
<b>TITLE OF ENTRY</b>	<b>Enhancing Agribusiness Entrepreneurs Performance: A Marketing Model for Agricultural Entrepreneurship (MAE)</b>	
<p>Many studies involving marketing in SMEs often found that small business firm face difficulty in adapting the conventional marketing theory. Therefore, there is a suggestion to adopt non-conventional marketing practice known as Entrepreneurial Marketing that was developed specifically to solve marketing issues in small business firm. This paper proposed an innovative entrepreneurial marketing model that will help in improving and strategizing business performance of Malaysian agricultural-based entrepreneurs.</p>		

<b>MY-46</b>	<b>NAME(S)</b>	<b>NURADLIN NADHIRAH BINTI BORHAN / NURUL IZZATI BINTI MOHD SALEH / WAN MOHD YUSOF RAHIMAN / MOHD SHARIZAL BIN ABDUL AZIZ / MOHD REMY ROZAINY MOHD ARIF ZAINOL</b>
<b>ORGANIZATION</b>	UNIVERSITI SAINS MALAYSIA (USM)	
<b>TITLE OF ENTRY</b>	<b>Biological Stain Detection Using OpenCV with the Aid of Ultraviolet A (UVA) Light</b>	
<p>Nowadays, the world are facing threats due to the spread of bacteria and viruses. Thus, a lot of researches are continuously exploring the topic of contaminants. One of the most significant ways to kill the contaminants are by sanitizing. Unfortunately, there is a lack of methods in detecting the contaminants for the sanitization to be performed efficiently. This project discussed the approach of detecting biological stains using image processing techniques from OpenCV programming software. The experiment was executed in two different kinds of situation, such as attaching and not attaching a blue bandpass filter onto the camera, and then by experimenting on a different color of background surfaces.</p>		

<b>MY-47</b>	<b>NAME(S)</b>	<b>Azwati Azmin / Aiza Mahyuni Mozi / Zafirah Faiza / Rabiatuladawiah Akbar / Najwa Rawaida Ahmad Fauzi / Wan Mohd Yusof Rahiman Wan Abdul Aziz</b>
<b>ORGANIZATION</b>	Universiti Teknologi MARA, UiTM Dengkil, Universiti Sains Malaysia	
<b>TITLE OF ENTRY</b>	<b>Evaluation of Digitalizing pre-hospital care services via Internet of Things (IoT) Platform</b>	
<p>Pre-hospital care requires precise evaluation of the latest advancement in technology make it accessible for helping the patient to secure treatment, especially for patients in a critical condition. This project proposed digitalizing pre-hospital care services in order to help facilitate the prehospital care operations easier. Heart rate monitoring is practiced as a vital approach to diagnosing heart attack condition and the contribution of recent technology where wireless technology help to monitor heart activities based on Internet of Things (IoT) platform. This technology contributes to a wider free movement, more mobility and more satisfaction among the patients. Heart rate data is obtained using the pulse rate sensor connected with a microcontroller NodeMcu ESP8266, before transmitting precisely to the IoT cloud using the ESP 8266 WiFi module where it acts as a transmitter to store the database of the patient. In conclusion, this project is to improve the prehospital care in developing proper digital pre-hospital care services for the patient.</p>		

<b>MY-48</b>	<b>NAME(S)</b>	<b>Mohamad Hazwan Bin Mohd Ghazali / Zainab Zainal / Wan Mohd Yusof Rahiman Wan Abdul Aziz / Mohd Sharizal bin Abdul Aziz / Mohd Remy Rozainy Mohd Arif Zainol</b>
<b>ORGANIZATION</b>	Universiti Sains Malaysia	
<b>TITLE OF ENTRY</b>	<b>Vibration-Based Fault Detection in Drone Using Artificial Intelligence</b>	
<p>Recent years have seen a huge increase in the study of drone. There is a lot of published articles regarding drone, focusing on control optimization, fault detection, safety mechanisms, etc. In fault detection, most of the study focused on the effects of faulty propellers and rotors, and there is very limited academic research on the drone arms. In this paper, a fault detection based on the vibration of the multirotor arms using artificial intelligence (AI) is proposed. There are some cases where due to accident, the arm of the multirotor crack or loose. This is normally unnoticeable without disassembly and if not taken care of, it would have likely resulted in a sudden loss of flight stability, which will lead to a crash. Two types of AI methods are incorporated in this study, namely, fuzzy logic and neuro-fuzzy. Their results are compared to determine the best method in predicting the safety of the multirotor. Both methods provided acceptable decision making but neuro-fuzzy approach depends on the dataset used as overfit model might give incorrect decision making. Our system is more suitable for early prediction before flying the multirotor outdoor.</p>		

<b>MY-49</b>	<b>NAME(S)</b>	<b>Nurul Izzati Mohd Saleh / Nuradlin Nadhirah Borhan / Wan Mohd Yusof Rahiman / Mohd Sharizal bin Abdul Aziz / Mohd Remy Rozainy Mohd Arif Zainol</b>
<b>ORGANIZATION</b>	Universiti Sains Malaysia	
<b>TITLE OF ENTRY</b>	<b>Obstacle Avoidance for Nonholonomic Mobile Robot</b>	
<p>This invention employs the LIDAR-based approach to mobile robot obstacle detection and navigation. The system fuses two algorithm which is Pure Pursuit Controller (PPC) and Vector Field Histogram (VFH+) to navigate itself. PPC is a path following algorithm where the mobile robot follows a predefined path inside a global map. On the other hand, VFH+ determine obstacle free region and calculate the steering direction based on LIDAR readings. As a result, the mobile robot navigates itself by following a predefined path while avoiding obstacles. Once the obstacle was avoided, the mobile robot returns to its predetermined path.</p>		

<b>MY-50</b>	<b>NAME(S)</b>	<b>Kelvin Teoh Theng Kah / Azwati Azmin / Wan Mohd Yusof Rahiman / Mohd Sharizal bin Abdul Aziz / Mohd Remy Rozainy Mohd Arif Zainol</b>
<b>ORGANIZATION</b>	Universiti Sains Malaysia	
<b>TITLE OF ENTRY</b>	<b>Sensing and Control of Autonomous Driverless Car on Road (SCAD)</b>	
<p>Intelligent robot navigation has gained numerous attentions from the space, transportation, and industrial areas. It is a vital part in making the robot moves autonomously in various static and dynamic conditions. In robot navigation, a camera becomes the main sensor of the sensing of the environment. Any inputs that come across the camera (the eyes of the robot) will then be sent to the image processing system with an algorithm that can decide the navigation of the robot. The real-time image processing for this project is using OpenCV with C++. The controller for the navigation is using Arduino. This study is divided into two sections which are vision image processing and robot navigation control.</p>		

<b>MY-51</b>	<b>NAME(S)</b>	<b>WAN MOHD YUSOF RAHIMAN / AZWATI AZMIN / MOHAMAD ANUAR KAMARUDDIN / MOHD SHARIZAL ABDUL AZIZ / MOHD REMY ROZAINY MOHD ARIF ZAINOL / MUHAMAD FAIZAL PAKIR MOHAMED LATIFF</b>
<b>ORGANIZATION</b>	UNIVERSITI SAINS MALAYSIA / UNIVERSITI TEKNOLOGI MARA	
<b>TITLE OF ENTRY</b>	<b>MECHANICAL ENGINEERING DESIGN OF DISABLE PRODUCT WITH AUTOMATED WHEELCHAIR</b>	
<p>Disable is a person who cannot manage their daily life perfectly from a result of mental or physical problems. This product is about automated wheel chair design with capability to claim the stairs. The mechanism of the product was analyzed, to come up with the simplest and the most convenient portable structure for the user. In order to do so, the detail of the project activities have simulated all possible scratch wheelchair structures using the simulation feature in Solidworks software. The ergonomic feature of the automated wheelchair was reviewed, to provide the best experience users.</p>		

<b>MY-52</b>	<b>NAME(S)</b>	<b>ZAINAB ZAINAL / MOHAMAD HAZWAN BIN MOHD GHAZALI / WAN MOHD YUSOF RAHIMAN / MOHD SHARIZAL BIN ABDUL AZIZ / MOHD REMY ROZAINY MOHD ARIF ZAINOL</b>
<b>ORGANIZATION</b>		School of Electrical & Electronic Engineering, Universiti Sains Malaysia
<b>TITLE OF ENTRY</b>		<b>A simple approach of H-Infinity-PID Controller tuning algorithm for Automated Lane Change Maneuver</b>
<p>Proportional-Integral-Derivative (PID) controller is the simplest controller widely used in industrial control applications. Despite this, tuning its gains can be difficult, especially in automated lane change maneuver control. This project employs the simplicity of PID tuning using the newly proposed algorithm, adopted from the stabilized boundary locus on the Kp-Ki plane, to get the Hurwitz stable condition where the ultimate gain, <math>K_u</math>, and time, <math>T_u</math>, are obtained. Then, from these values, a new Kp-Ki value is optimized using H-infinity control synthesis. Finally, hybrid of this method and the Ziegler-Nichols tuning method, the PID gains (<math>K_p</math>, <math>K_i</math> &amp; <math>K_d</math>) are acquired.</p>		

<b>MY-53</b>	<b>NAME(S)</b>	<b>NOORASHRINA A. HAMID / AHMAD FUZAMY MOHD ABDUL FATAH</b>
<b>ORGANIZATION</b>		UNIVERSITI SAINS MALAYSIA
<b>TITLE OF ENTRY</b>		<b>LSCF-CuO CATHODE FOR INTERMEDIATE TEMPERATURE SOLID OXIDE FUEL CELL (IT-SOFC)</b>
<p>Development of LSCF-CuO as a composite cathode for Intermediate Temperature Solid Oxide Fuel Cells (IT-SOFC) were done via a modified sol-gel method which employs the use of EDTA as a chelating agent during the nanoparticle synthesis. Physical and chemical characterization results show LSCF-CuO has a smooth and well-defined morphology with high purity and a small crystal size. The high surface area of LSCF-CuO provides sufficient active sites for oxidation reduction reaction to occur with small polarization resistance associated which is 0.161 Ohm. Activation energy for LSCF-CuO cathode also smaller than LSCF which is 125.63 kJ/mol and 144.25 kJ/mol, respectively.</p>		

<b>MY-54</b>	<b>NAME(S)</b>	<b>MOHD SHARIZAL ABDUL AZIZ / MOHAMMAD HAFIFI HAFIZ ISHAIK / MOHD REMY ROZAINI MOHD ARIF ZAINOL / WAN MOHD YUSOF RAHIMAN / MOHAMAD ANUAR KAMARUDDIN / MUHAMAD FAIZAL PAKIR MOHAMED LATIFF</b>
<b>ORGANIZATION</b>		UNIVERSITI SAINS MALAYSIA / UNIVERSITI TEKNOLOGI MARA
<b>TITLE OF ENTRY</b>		<b>COPPER COLUMN GRID ARRAY (CuCGA)</b>
<p>The solder joint reliability is a major concern in the microelectronic industry. High reliability of solder joints is important to ensure the functionality of the electronic systems which operate at high temperature, especially in the automotive and aerospace industries. Automotive devices (e.g., airbag deployment) are being transformed into extraordinary ones by adopting numerous convenience and safety features, which require an electronic system to ensure the functionality of devices. The application of Copper Column Grid Array (CuCGA) could enhance the reliability of the solder joint in the microelectronics assembly.</p>		

<b>MY-55</b>	<b>NAME(S)</b>	<b>NOR ELIZA BINTI ALIAS / MUHAMMAD SAIFUL ADHAM BIN SHUKOR / RASNAVI A/P PARAMASIVAM / MOHD REMY ROZAINY MOHD ARIF ZAINOL</b>
<b>ORGANIZATION</b>		UNIVERSITI TEKNOLOGI MALAYSIA
<b>TITLE OF ENTRY</b>		<b>Rain.Stat Web-Software</b>
<p>Extreme values are observed to increase in intensity and frequency due to climate change. To assist in the estimation of extreme rainfall values, Rain.Stat provide a platform to handle data and estimate Hershfield probable maximum precipitation (PMP) visually. PMPs are commonly used by water engineers to design critical infrastructure such as dams and hazardous landfills, and to generate flood hazard maps for flood risk reductions management. Rain.Stat will assist in large data handling and analysis since statistical method associated to extreme rainfall values involve up to hundreds and thousands of rainfall station and data.</p>		

<b>MY-56</b>	<b>NAME(S)</b>	<b>Dr Wan Abd Al Qadr Imad Wan Mohtar / Dr Zul Ilham Zulkiflee Lubes / Dr Adi Ainurzaman Jamaludin / Dr Sarina Abdul Halim Lim / Sassi Soumaya</b>
<b>ORGANIZATION</b>		Universiti Malaya
<b>TITLE OF ENTRY</b>		<b>New superfood for soy sauce producers: High-gamma aminobutyric acid (GABA) immune-booster soy sauce</b>
<p>The famous flavour enhancer monosodium glutamate (MSG) is vastly used. Despite its ability to speed up human brain function, MSG is naturally converted into a calming compound called gamma-aminobutyric acid (GABA). GABA is a widely-used neurotransmitter that reduces blood pressure. However, chemically-synthesized GABA is no longer acceptable because it involves causing massive pollution. A new, more efficient, and reliable process for producing naturally-synthesized GABA has been developed in soy sauce. Such famous Asian fermented food produces significant intracellular GABA levels via co-cultivation of unique microbial consortia. Together, this provides a new fermentation strategy for manufacturers for natural GABA-containing soy sauce.</p>		

MY-57	NAME(S)	Dr. Mohd Hafizal Bin Mohd Isa / Muhammad Ersyad Ahmad Jailani / Dr. Muhamad Azhar Ghazali
ORGANIZATION		School of Housing Building & Planning, Universiti Sains Malaysia
TITLE OF ENTRY		Textile Waste Applications as Buildings' Sound Insulation Materials
<p>Textile recycling techniques have been developed to cope with the increase in textile waste. This research studied the potential of textile waste as a sound insulation panel and the aim is to investigate the type of textile wastes as insulation materials. The sound absorption coefficient is measured, and the results show that recycled textile is able to absorb sound and reduce the reflected sound. The usage of cotton as sound insulation shows better sound absorbing efficiency compared to other materials. The usage of textile waste can reduce the noise levels and also provide positive impact on the environment.</p>		
MY-58	NAME(S)	MOHAMAD ANUAR KAMARUDDIN / MOHAMAD HAZIQ MOHD HANIF / MOHD REMY ROZAINY MOHD ARIF ZAINOL / HERNI HALIM / MOHD SHARIZAL ABDUL AZIZ / WAN MOHD YUSOF RAHIMAN WAN ABDUL AZIZ / RASYIDAH ALROZI / MOHD MUSTAFA AL BAKRI ABDULLAH / MUHAMAD FAIZAL PAKIR MOHAMED LATIFF
ORGANIZATION		UNIVERSITI SAINS MALAYSIA / UNIVERSITI MALAYSIA PERLIS / UNIVERSITI TEKNOLOGI MARA
TITLE OF ENTRY		ENVIRONMENT AUDIT MATRIX SYSTEM (EMAXs)
<p>Environmental protection measures need various steps and procedures at the Project site. To ensure that all the necessary environmental protection works have been implemented and functional, hard structures and human intervention are needed. Slope protection, embankment, consolidation, siltation reduction, vegetation and earthworks activities are some of environmental protection works commonly implemented at the construction site. When there are issues on the site, engineers and experts are required to be at the Project site to oversee the effectiveness of protection works. An internet of things (IOT) application has been developed to assist engineers to monitor and checks the effectiveness and compliance of environmental protection works at the site. This app is helpful as it does not need physical documentations, reports and checklist, rather than, a mobile phone or tablet with or without internet accessibility.</p>		
MY-59	NAME(S)	Ahmad Zhafran Ahmad Mazlan / Mohamad Syazwan Md Isa / Wan Mohd Amri Wan Mamat Ali
ORGANIZATION		Universiti Sains Malaysia
TITLE OF ENTRY		Multi-frequency Dynamic Vibration Absorber (DVA) to Reduce the Vibration of Motorboat Engine Handle
<p>Petrol-driven motorboat engine consisted of direct handle-engine mounting mechanism which exposed the operators to the high level of vibration and can lead to the Hand-arm Vibration syndrome (HAVs) problem. This invention is focusing to reduce the transmitted vibration from the motorboat engine handle in specific direction and frequency range using Dynamic Vibration Absorber (DVA). From the result, the vibration transmissibility of the handle showed significant vibration effect within the frequency range of 0 – 100 Hz, and the implementation of DVA has successfully reduced the vibration up to 52.4 %, which can protect the operators from getting HAVs.</p>		
MY-60	NAME(S)	Ms. Elliana Aminuddin / Dr. Siti Suhaily Surip / Dr. Ahmad Sufriil Azlan Mohamed / Ts. Dr. Mohd Hafiidz Jaafar
ORGANIZATION		Product Design Department, School of The Arts, Universiti Sains Malaysia
TITLE OF ENTRY		AR 5'S: Vest for Ergonomic Body Posture
<p>AR 5'S is designed for persons engaged in the processing of Manual Material Handling (MMH), especially for factory workers. The common injuries among warehouse/ factory workers are injuries caused by repetition routine from the body, knees and slipped discs. Furthermore, low back pain is a very common problem, with about 80% of the population facing back pain at some point in the worker lives. In about 23% of cases, it becomes a longstanding problem, while in 5%, it becomes disabling. AR 5'S is designed to resolve the Musculoskeletal Disorders (MSD) problem that musculoskeletal imbalances can be experienced during repetitive activities from time to time. In order to support the lumbar, AR 5'S has 5 jointing bones protection including left and right side waist. The middle bones resemble human body bones, when lifted heavy load, it allows a persons to perform correct posture. The Rapid Entire Body Assessment (REBA) was used to validate the effectiveness of AR 5'S with REBA score 8 out of 12.</p>		
MY-61	NAME(S)	Mohd Hafiidz Jaafar / Azman Ahmad / Mohd Ridhwan Ramli / Norhaniza Amil / Mohamad Anuar Kamaruddin / Herni Halim
ORGANIZATION		UNIVERSITI SAINS MALAYSIA
TITLE OF ENTRY		PIAQUS (Portable Indoor Air Quality System) – Development of IOT Sensors to Monitor Indoor Air Quality
<p>Various chemical-related accidents that could lead to fatalities, permanent disabilities, non-permanent disabilities, and occupational illnesses have occurred in laboratories. The laboratory is the most hazardous area in the aspect of chemical safety in the education setting. While the problem may not be as critical as industries with the chemical application, the exposure to students has made it a significant issue that needs to be controlled. The program's objective is to produce a cost-efficient and user-friendly product to monitor and alert the level of total volatile organic compound in the study area. The product is equipped with sensors to measure air quality variables that can be taken simultaneously and analyzed immediately.</p>		



<b>MY-62</b>	<b>NAME(S)</b>	<b>MOHAMED ERFAN BIN MOHAMED SIRAJ / SHARIFAH MASHITA SYED MOHAMAD / NUR HANA SAMSUDIN / MOHD HAFIIDZ JAAFAR</b>
<b>ORGANIZATION</b>	UNIVERSITI SAINS MALAYSIA	
<b>TITLE OF ENTRY</b>	<b>Campus Safety and Health Reporting System</b>	
<p>The report describes a project to develop an application to improve the occupational accidents and illnesses reporting system in an organization. This project, named "Occupational Safety and Health Reporting System" introduced a mobile application to facilitate the accident reporting. With this project in place, it is expected that the process of handling accidents to administer the corrective and preventive action could be done more efficiently. This project will also digitalize the current manual paper-based system in place. The mobile application will be crucial in enabling immediate location-enabled reports to be sent so that the corrective action can begin as soon as possible. There will also be a dashboard for the responsible authorities to use to manage the accident reports. This dashboard will also be able to provide insights on the accidents using a classification technique called tagging. The motivation that drives the development for this application is to reduce the losses generated by not being able to handle time-critical occupational safety and health incidents efficiently.</p>		

<b>MY-63</b>	<b>NAME(S)</b>	<b>Dr Mohd Hisham Mohd Isa / Prof. Dr Ismail Mohd Saiboon / Dr Azlan Helmy Abd Samat / Assoc Prof. Dr Mohd Johar Jaafar</b>
<b>ORGANIZATION</b>	Faculty of Medicine, Universiti Kebangsaan Malaysia	
<b>TITLE OF ENTRY</b>	<b>Educating Public on Cardiopulmonary Resuscitation using Fit-CPR initiative</b>	
<p>Fit-CPR program has been developed to create an awareness and instil knowledge &amp; skills of cardiopulmonary resuscitation (CPR) among public. This research evaluated the effectiveness of the Fit-CPR teaching method against the conventional classroom method (CCM) on the knowledge acquisition and performance of the public on CPR. The results show a significant improvement regarding knowledge and performance in Fit-CPR group and comparable to the CCM group. FIT-CPR program is as effective as the CCM method in teaching CPR to public. Moreover, this can be achieved at a shorter training duration with fewer facilitators.</p>		

<b>MY-64</b>	<b>NAME(S)</b>	<b>MUHAMAD FAIZAL PAKIR MOHAMED LATIFF / ZURAI SAH DOLLAH / MOHAMAD ANUAR KAMARUDDIN / MOHD REMY ROZAINY MOHD ARIF ZAINOL / MOHD SHARIZAL ABDUL AZIZ / WAN MOHD YUSOF RAHIMAN WAN ABDUL AZIZ / MOHD MUSTAFA AL BAKRI ABDULLAH</b>
<b>ORGANIZATION</b>	UNIVERSITI TEKNOLOGI MARA / UNIVERSITI SAINS MALAYSIA / UNIVERSITI MALAYSIA PERLIS	
<b>TITLE OF ENTRY</b>	<b>LEMOR-NATURAL COAGULANT FOR WATER PURIFICATION</b>	
<p>This research was aimed to determine the effect of mixing duration using extraction of natural coagulant from combination of orange peels and lemon peels for water turbidity removal in water treatment process. Inorganic coagulant such as aluminum sulfate, ferric chloride, calcium carbonate and synthetic organic polymer (polyaluminum chloride (PACl) polyethylene imine) are example of coagulants that being used in water treatment. Some studies have reported that aluminum sulfate and polyaluminium chloride used in coagulation process may lead to Alzheimer's disease caused by its remaining residue and can develop serious damage to human health such as abnormal tissue in or on brain tissue. The main benefits of utilizing natural plant-based coagulants as water treatment material are the availability of the substances, practical in terms of cost, highly biodegradable, safe to human health and environmentally friendly. It is also producing less voluminous and non-toxicity sludge.</p>		

<b>MY-65</b>	<b>NAME(S)</b>	<b>Rossitah Selamat / Mohd Remy Rozainy Mohd Arif Zainol / Rrahimi Binti Jamil / Zarina Syuhaida Shaarani / Azhani Ariffin / Husaini Aza Mohd Adam</b>
<b>ORGANIZATION</b>	Politeknik Tuanku Sultanah Bahiyah	
<b>TITLE OF ENTRY</b>	<b>Escherichia coli Removal Via Low Frequency Electromagnetic Field In Riverbank Filtration</b>	
<p>This project aimed to remove concentrations of pathogenic bacteria <i>Escherichia coli</i> (E. coli) via low-frequency electromagnetic fields (LF-EMF) in riverbank filtration. Design and development of a LF-EMF device with horizontal coiled columns capable to produce uniform magnetic fields exposure. The LF-EMF simulation was performed to determine the removal of E. coli bacteria in the river water induced by a 50 Hz with a range of 2 to 10 mT magnetic field with diameter 50 mm, length = 500 mm of pipe. The result demonstrate 100% of <i>E. coli</i> removed by 10 mT LF-EMF at 4 hours exposure.</p>		

<b>MY-66</b>	<b>NAME(S)</b>	<b>Lai Jun Tung / Assoc. Prof. Dr. Mohd Remy Rozainy Mohd Arif Zainol</b>
<b>ORGANIZATION</b>	University of Science Malaysia	
<b>TITLE OF ENTRY</b>	<b>Tree-like Street Light</b>	
<p>Our creation is hope to develop already developed area to a more sustainable area by installing tree-like street light as a replacement of permeable pavement. The water collected will be stored in underground water storage tank while excess water collected during flood will flow to ponds, river or even underground to recharging groundwater supply. Thus, we plan to create a tree-light street light that can generate electricity to nearby sewage system to reduce carbon footprint. This can also encourage country intention to develop more sustainable energy to replace fossil fuel in the future. We believe with our creation, city or town will act more like an artificial forest.</p>		

<b>MY-67</b>	<b>NAME(S)</b>	<b>Dai Yilei / Ahmad Sufriil Azlan Mohamed / Nur Azzalia Kamaruzaman / Mohd Hafiidz Jaafar</b>
	<b>ORGANIZATION</b>	Universiti Sains Malaysia
	<b>TITLE OF ENTRY</b>	<b>Toxland Adventure VR</b>
<p>Toxland Adventure 2 is a Virtual Reality game for primary toxicology education as the gamification of the board game made by National Poison Center, Malaysia. The game uses Oculus Quest VR platform and let the player to immerse in a stadium like environment where the player can roam around freely using the two touch controllers. The player will see a large 7 by 8 game board that has four types of box; blue, red, Q&amp;A and regular. The player just needs to use the touch controller to roll the dice and the dice will determine the movements of the player's token on the box. The final movement of the token on any of the boxes will activate either no action, good toxicology practice or bad toxicology practice. Video pop-ups and Q&amp;A helps to strengthen the understanding of practices on handling toxic materials at home. The score records the time taken. The game can be played in Multiplayer mode.</p>		

<b>MY-68</b>	<b>NAME(S)</b>	<b>Nurul Shahida Sahidi / Dr. Ahmad Sufriil Azlan Mohamed / Dr. Khairul Anuar Sharriff / Daniel Chin Jie Yie</b>
	<b>ORGANIZATION</b>	School of Computer Sciences, Universiti Sains Malaysia
	<b>TITLE OF ENTRY</b>	<b>VIBi3DB : Visualisation of Bone Images &amp; 3D Bone Models</b>
<p>VIBi3DB is a system developed specifically to assist any clinician or researcher to view any MRI scanned images and its 3D modelling through cloud database. The Images can be viewed using the sliders and corresponds to the rotation of its 3D model. Furthermore, each STL 3D model is 3D printable and can be connected via cloud-based storage for remote 3D Printing.</p>		

<b>MY-69</b>	<b>NAME(S)</b>	<b>Daniel Chin Jie Yuan / Dr. Khairul Anuar bin Sharriff / Dr. Ahmad Sufriil Azlan Mohamed</b>
	<b>ORGANIZATION</b>	School of Computer Sciences, Universiti Sains Malaysia
	<b>TITLE OF ENTRY</b>	<b>E-RC3D: Enhanced Ray Casting Algorithm for 3D Reconstruction</b>
<p>The algorithm is designed to construct 3D model from the 2D micro-CT scan images and improve by using Marching Cubes with Ray Casting's volumetric data that is subjected to smoothing, preserving the similarity, and reduction of number of vertices and faces. The outcome of this algorithm is a conversion of thousands of 2D micro-CT scan images to 3D reconstruction with high similarity percentage and reliable enough to be viewable on mobile devices and suitable for 3D Printing.</p>		

<b>MY-70</b>	<b>NAME(S)</b>	<b>NURUL FARHANA MOHD YUSOF / HERNI HALIM / LEE ANN YEN / WAN MOHD AMRI WAN MAMAT ALI / ARIF IZZUDDIN MUHAMMAD</b>
	<b>ORGANIZATION</b>	UNIVERSITI SAINS MALAYSIA
	<b>TITLE OF ENTRY</b>	<b>Development of Palm Oil-based Grease With Copper Nano Particle Additive</b>
<p>The harmful environmental effect of the mineral oil-based commercial greases has been raising concerns in the community. The development of the biodegradable lubricants is crucial to solve this problem. In this invention, the palm oil-based grease was formulated with refined palm olein, lithium stearate soap and copper (Cu) nanopowder. Several tests have been done to evaluate the formulated grease and compared with the commercial grease. The testing shows that the formulated grease exhibited an improved lubricant property in terms of comparable viscosity, low friction and less surface wear, thus having a good performance and competitive with the commercial greases.</p>		

<b>MY-71</b>	<b>NAME(S)</b>	<b>PROFESSOR DR SALINA HUSAIN</b>
	<b>ORGANIZATION</b>	NATIONAL UNIVERSITY OF MALAYSIA
	<b>TITLE OF ENTRY</b>	<b>Rig-S: All-in-One Portable Device for Endoscopes</b>
<p>The use of endoscopes in Otorhinolaryngology is crucial for diagnosis and treatment. However, risk of micro-organisms transmission can be as high as 1-3:1000 patients if disinfection protocols are breached. The novel coronavirus 2 is also capable of human-to-human transmission. Here we introduce a portable endoscope sterilizing device to reduce the risk of patient-to-patient microorganism transmission. This device comprises of storage and sterilizing compartments in sets of three. Each compartment is separate and functions independently. This innovative device provides the solution for proper sterilization of multiple rigid endoscopes in a busy clinic to avoid cross-infection and possible litigations.</p>		

<b>MY-72</b>	<b>NAME(S)</b>	<b>ASSOC PROF DR MAI SHIHAH ABDULLAH / PROF DR JULISMAH JANI / ASSOC PROF DR MOHD IZWAN SHAHRIL / DR ROZAIREEN MUSZALI / TS HJ MOHD ESA BARUJI</b>
<b>ORGANIZATION</b>		SULTAN IDRIS EDUCATION UNIVERSITY
<b>TITLE OF ENTRY</b>		<b>WEB-BASED SPORT'S INFRASTRUCTURES SAFETY AUDIT CAI (Context-Audit-Index) MODEL</b>
<p>School is entity of the Ministry of Education (MoE) Malaysia and compulsory to carry out school safety audit periodically. Web-based system is innovated to develop a standard model of systematically high validity and reliability instrument items to coordinate audit report for sports infrastructures in schools i.e. store, field, open courts, covered open hall and hall. It consists of context audit on sports equipment and facilities, sports infrastructures safety audit, and sports management audit to help the schools to audit. It also serves as a traffic light safety and risk indicators. The audit report is accessible to all stakeholders including auditors.</p>		

<b>MY-73</b>	<b>NAME(S)</b>	<b>Wong Xin Ying / Zarul Fitri bin Zaaba</b>
<b>ORGANIZATION</b>		Universiti Sains Malaysia
<b>TITLE OF ENTRY</b>		<b>MyHalal (MH)</b>
<p>Halal industry has great potential covering local and international markets. This growth is fueled by high demand from the population who aware of the benefits brought by the Halal products. In Malaysia, Department of Islamic Development Malaysia (JAKIM) is the official agency which responsible for the Islamic affairs. In most circumstances, public able to check the Halal status of foods and premises by accessing to the official website. The searching via website is quite tedious and not user friendly. Therefore, this work bridges the gap by proposing mobile and web application namely MyHalal (MH) which significantly improved the current method.</p>		

<b>MY-74</b>	<b>NAME(S)</b>	<b>KUMARAN GENGATHARAN / THANESH BALAKRISHNAN / BATMANATAN PARASURAMAN / GOPALA RAO SIMANCHALAM / PUSPARATHA PERUMAL / GOMATHY SANKARAN / SARASWATHY JAYASANKARAN / K SARALA KRISHNAN / GANDHI MATHY KANAN / INDRADEVI KRISHNASAMY</b>
<b>ORGANIZATION</b>		SUDAROLI TEACHERS
<b>TITLE OF ENTRY</b>		<b>Health Education Assessment Module (MoPen-PK)</b>
<p>MoPen PK which is a Health Education assessment module. MoPen PK is more focused on classroom based assessment. MoPen PK focuses on elective subjects namely Health Education which is always not given attention by the teachers. MoPen PK is built using three phases namely the needs analysis phase, the design &amp; development phase and the implementation &amp; evaluation phase. The needs analysis phase was conducted using Health Education teachers of 298 teachers and it was found that 98 percent of teachers agreed with the development requirements of MoPen PK. In the design phase 20 experts from various fields have participated in their construction and MoPen PK items. The constructs and items contained in the module have been agreed upon by experts.</p>		

<b>MY-75</b>	<b>NAME(S)</b>	<b>Anuar bin Mohd Yusof / Tan Tse Guan / Nooraziah Ahmad / Mohammad Dzulsyafiq Bin Mohammad Yusoff / Mohammad Syukran Bin Kamal Ruzzaman</b>
<b>ORGANIZATION</b>		Universiti Malaysia Kelantan
<b>TITLE OF ENTRY</b>		<b>INNOVATION EDUCATION 4.0 ADAPTING MASSIVE OPEN ONLINE COURSE: "MOOC IN MOOC" TECHNIQUE</b>
<p>Technique "MOOC in MOOC" applied to integrate between theory-based courses and skill-based courses. Poster production skill course by using Adobe Photoshop used as evaluation with included three learning outcomes as indicators. This course was designed and become a "Learning Object" for the other courses in the Faculty of Creative Technology and Heritage such as Computers and Art course and Computer Graphics 2D course as a pioneer. The activities in the course was designed by integrating Web 2.0 tools such as Powtoon, Biteable, Goanimate, Coggle, Popplet, Canva, and Google apps. The creativity of learners can be highlighted.</p>		

<b>MY-76</b>	<b>NAME(S)</b>	<b>Mohd Redzwan Abdul Mutalib / Haryanti Mohd Affandi / Mohd Izwan Mahmud</b>
<b>ORGANIZATION</b>		Jerantut Community College / Universiti Kebangsaan Malaysia
<b>TITLE OF ENTRY</b>		<b>MALAYSIAN VOCATIONAL TEACHERS' CAREER CHOICE EXPLORATION MODEL</b>
<p>Malaysian Vocational Teacher's Career Choice Exploration Model serves as a guideline for career development in the vocational teaching profession and reference to acquire excellent vocational teachers'. This model comprises three career choice exploration levels covers secondary school, university, and graduate level. This model is different from other models because of the presence of the spiritual factor as one of the primary elements, which is not found in any other models. Furthermore, the spiritual element did not have a place in previous research as most research focuses on person-environment fit, including skill, ability, personality, career interest, integrity value, and emotional intelligence.</p>		

<b>MY-77</b>	<b>NAME(S)</b>	<b>ASST PROF DR NORZALIFA ZAINAL ABIDIN / KALAM BIN PIE / AINA SUHAILA BT MOHD NIZA</b>
<b>ORGANIZATION</b>	IIUM JUNGLE SCHOOL INITIATIVES FLAGSHIP, AAD KAED AND JUNGLE SCHOOL GOMBAK MALAYSIA	
<b>TITLE OF ENTRY</b>	<b>JUNGLE SCHOOL SUSTAINABLE COMMUNITY BASED TOURISM AND OUTREACH INNOVATION ENHANCEMENTS</b>	
<p>This Innovation Promotes The Spin Off Activities To Support The Indigenous JUNGLE SCHOOL INITIATIVES FOR EMPOWERMENT to the Orang Asli and Orang Asal (native) people and public community members. The community based tourism activities are designed for awareness campaigns during the Pandemic partial lockdowns to ensure continuous educational campaigns can be conducted to support the orang Asli communities and enhancing the outreach to the general public. This is a collaboration efforts between IIUM Jungle school initiative Flagship, Jungle school Gombak Malaysia and Applied Arts and Design, Kulliyyah of Architecture and Environmental Design, International Islamic University Malaysia.</p>		

<b>MY-78</b>	<b>NAME(S)</b>	<b>Dayang Rafidah Syariff M.Fuad / Oh Zi Jian / Shukor Beram / Associate Professor Khalip Musa / Associate Professor Zahari Hashim</b>
<b>ORGANIZATION</b>	Universiti Pendidikan Sultan Idris	
<b>TITLE OF ENTRY</b>	<b>Dayang, Khalip and Zahari PIL Model 2021</b>	
<p>The Dayang, Khalip, and Zahari PIL Model 2021 was designed following significant research to assist Malaysian principals in leading innovation in schools. The absence of principle innovation leadership models to guide principals in leading innovation is the main inspiration for this invention. Pilot research and an actual study were conducted in Malaysian schools. A total of 583 secondary teachers were involved in this study. Structural Equation Modelling (SEM) AMOS version 24 was used to analyse the data. This model confirmed five constructs: creative behaviours, effective communication, technical skills, open behaviours, and closed behaviours.</p>		

<b>MY-79</b>	<b>NAME(S)</b>	<b>Chockalingam Aravind Vaithilingam</b>
<b>ORGANIZATION</b>	VERTICALS-High Impact Research Laboratories, Taylor's University, Malaysia	
<b>TITLE OF ENTRY</b>	<b>Gyro VAWT - Independent Energy Generating Unit</b>	
<p>An aspect of the present invention provides a multi-rotor wind turbine for generating energy, comprising: a rotor unit: a hub configured to rotate about its central axis; a frame member positioned generally concentric to the hub; a plurality of flexible blades; each blade is adapted to include at least a serrated portion and connected to the frame member; a rotor shaft rotatable about a longitudinal axis; whereby the hub and frame members are mechanically connected to the shaft; a connector adapted to receive multiple rotor units and permit the rotor units to be rotated thereon; and a drive mechanism connected to the rotor shaft thereby providing movement to the rotor unit.</p>		

<b>MY-80</b>	<b>NAME(S)</b>	<b>Aloysius Yapp / Lim Chai Kim</b>
<b>ORGANIZATION</b>	Centre for Immersive Technology and Creativity/CITC	
<b>TITLE OF ENTRY</b>	<b>*Ngasu (The Hunting): Virtual Reality Iban Longhouse with Local Myth and Hunting practice</b>	
<p>CGI Iban longhouse VR Walkthrough stand as Computer Generated Imagery for Iban longhouse Virtual Reality Walkthrough. It is a transition practice from manual to digital. Virtual Reality/VR Longhouse: The Walkthrough is a simulation project which reconstruction of actual Iban longhouse from Saribas district in Sarawak. The main purposes are using immersive technology (VR) to preserve heritage and culture. Because of modernization, the conversion of the traditional longhouse to the modern longhouse made this project more significant.</p>		

<b>MY-81</b>	<b>NAME(S)</b>	<b>MOHAMAD MALI / NOOR IDAYU MOHD TAHIR / AHMAD KAMIL HUSSAIN / MOHAMAD KHAIRULNIZAM MOHD RUSLAN / JAMALUDDIN MAHMUD</b>
<b>ORGANIZATION</b>	UNIVERSITI TEKNOLOGI MARA	
<b>TITLE OF ENTRY</b>	<b>CHyCLOP - Compendious Hybrid Composite Failure Load Predictor</b>	
<p>Compendious Hybrid Composite Failure Predictor (CHyCLOP) is a newly engineering tool for composite and hybrid composite laminates. This new tool is developed with MATLAB program by embedded the solutions in Mechanics of Composite Materials, Higher Order Shear Deformation Theory (HSDT), and Maximum Stress Criterion and Tsai-Wu Criterion. CHyCLOP can accurately estimate the resulting displacement in 3 direction (x, y, and z) and accurately predict the failure load of two mix composite laminates. Come with Graphical User Interface (GUI), the used and speed up the input-process-output time to counter the complicated use in finite element software.</p>		

<b>MY-82</b>	<b>NAME(S)</b>	<b>Nur Auni Izzati Jusoh / Nur Aini Sabrin Manssor / Nor Fazli Adull Manan / Praveena Nair Sivasankaran / Jamaluddin Mahmud</b>
<b>ORGANIZATION</b>	Universiti Teknologi MARA (UiTM) Shah Alam	
<b>TITLE OF ENTRY</b>	<b>MORINGA OLEIFERA BARK – SILICONE BIOCOSMPOSITE (MOBSil): A novel soft composite material for cushioning applications</b>	
<p>Moringa Oleifera Bark - Silicone Biocomposite is a biocomposite material that was commercially introduced and copyrighted as MOBSil. The bark of Moringa oleifera plant was found to contain medicinal properties, and thus this could embed into silicone rubber. Initially, the properties of MOBSil was improved to suit cushioning applications. Then, basic cushioning products are developed, such as rubber mat and racket grips. These products could be done DIY and easily trained for instant commercialisation by Small Industries. The goal would be to venture further into commercialising industrial grade cushioning and sealing solutions in collaboration with GV Medhini Sdn Bhd.</p>		

<b>MY-83</b>	<b>NAME(S)</b>	<b>Arrvindhana a/l Jaichandran; Trishar Nishel Kumar; Vhaishhnave John a/l Johnson; Jeshiah Jeevakumar a/l M Kumaran</b>
<b>ORGANIZATION</b>	SJK TAMIL KAJANG	
<b>TITLE OF ENTRY</b>	<b>NUTTY FINGER MILLET SHAKE</b>	
<p>Nutty Finger Millet Shake is made up of common herbs, legumes and nuts in proper proportion into a sachet. Each sachet carries enough nutrient needed by children as a breakfast meal. It supplies carbohydrate, protein, a small amount of fat, minerals and vitamins to provide enough nutrients as a starter. It also comes in two flavours -vanilla and chocolate to cater for all consumers.</p>		

<b>MY-84</b>	<b>NAME(S)</b>	<b>LAKSHAN THEVAN / HARITHARAN KAVIYARASU / KAARTHIKKA SINNADURAI / KIRISSHA NAVIN</b>
<b>ORGANIZATION</b>	SJK TAMIL KAJANG	
<b>TITLE OF ENTRY</b>	<b>OCIMUM HERBAL BATH &amp; FRAGRANT SACHET</b>	
<p>This packet of 7 types of dried herbal leaves and flower petals are used in the bath water to relief nasal congestion and headache. It also provides a sense of relief from various body pain after a hot bath, as it has aromatherapy effect. This packet of content can also be used as a fragrant sachet in the room, car, study room and the kitchen as well.</p>		

<b>MY-85</b>	<b>NAME(S)</b>	<b>Yuvaneshvar Shanmugasilan; Aryanthiran Moganthiran; Nivaash a/l Sivaraja; Manjusrya a/p Saravanan</b>
<b>ORGANIZATION</b>	SJK TAMIL KAJANG	
<b>TITLE OF ENTRY</b>	<b>VITNOCHI</b>	
<p>VITNOCHI is a pouch created using herbs that carries a lot of medicinal values. It is dried and made into a pouch. This pouch needs to be put in hot water to enable it to release the herbal values in to water and releases as steam. Anybody who feels unwell, nose congestion, headache and migraine can inhale to steam to get instant relief from the condition. The used pouch can be further used as a patch placed in the forehead to reduce headache.</p>		

<b>MY-86</b>	<b>NAME(S)</b>	<b>Dr. Siti Efliza Ashari / Prof. Dr. Rosfarizan Mohamad / Ts. Sr. Dr. Muhammad Ridzuan Yahaya / Nur Farzana Izzati Mohd Jaslina</b>
<b>ORGANIZATION</b>	Universiti Putra Malaysia (UPM)	
<b>TITLE OF ENTRY</b>	<b>BioEsst OLEATE: Encapsulated Technology Assisted by Nanodelivery System for Skin Hyperpigmentation Therapy</b>	
<p>Nowadays, the production of cosmeceutical products has become advances, commercialized, and highly profitable. Anti-tyrosinase-enriched cosmeceutical has emerged as a core key product towards a healthy and youthful appearance in the cosmeceuticals industry. BioEsst OLEATE is authenticated as a potential anti-tyrosinase superior than other active ingredients. An ideal solution with a novel approach of delivering BioEsst OLEATE using nanodelivery system was developed to provide greater absorption. Hence, the application of nanoemulsions as a carrier system was feasible to boost the successful delivery of BioEsst OLEATE into the skin. Therefore, this invention aims to develop a natural, safe, less toxic, and efficient anti-tyrosinase agent for skin hyperpigmentation therapy.</p>		

<b>MY-87</b>	<b>NAME(S)</b>	<b>NURHUDA MD TAHIR / ROHIZA HUSSAIN / MUHAMMAD AMEEN ATAN / NORMALIZA AHMAD / SITI NUR MASTURA SULAIMAN</b>
<b>ORGANIZATION</b>	KOLEJ VOKASIONAL PERDAGANGAN	
<b>TITLE OF ENTRY</b>	<b>TOP ASSISTANT : A BLENDED LEARNING TOOL</b>	
<p>Many Diploma of Accounting students at Vocational Colleges in Malaysia face a hardship of understanding the subject DBE2243, Computerised Accounting System (mainly utilised with the User Business System software). They could not identify the date of accounting and the starting date of business transaction for each business. This leads to a majority of the students making mistakes in determining the starting period, closing date and closing period. Thus, TOP Assistant (Table of Period) has been invented. From the pre &amp; post data samples of 127 Accounting students from 11 Vocational Colleges in Malaysia, it has been proven that the system works.</p>		

<b>MY-88</b>	<b>NAME(S)</b>	<b>Lee Leik Senn / Aloysius Yapp / Lim Chai Kim</b>
<b>ORGANIZATION</b>	South Sea Heritage & Culture Resources	
<b>TITLE OF ENTRY</b>	<b>Virtual Amber Mall</b>	
<p>The main purpose for the creation is to preserve and heritage which carries a most wonderful element (Amber) virtually. By using virtual technology the upcoming generation can witness the wonderful element from the earth and somehow the amber room is the biggest inspiration for this creation.</p>		

<b>MY-89</b>	<b>NAME(S)</b>	<b>DATO' DR. SIEW KUANG CHOONG @ SIOH KUANG LING</b>
<b>ORGANIZATION</b>	MEDI GLOBAL ENTERPRISE SDN BHD	
<b>TITLE OF ENTRY</b>	<b>Circumcision Device "CIRCUMSTAR -1"</b>	
<p>An improved version of the award winning circumcision device, allowing error-free circumcision surgery in an industry-leading one to two minutes, by passing expensive laser surgery or technical expertise. A clamp device allows patient to return to normal life immediately, such as swimming. This invention is extremely safe and idiot-proof, while shortening manpower and time. Patient regain mobility immediately after surgery. This invention bypasses all transitional stigma of circumcision surgery.</p>		

<b>MY-90</b>	<b>NAME(S)</b>	<b>OH ZI JIAN / KHOO YIN YIN / MARINAH AWANG</b>
<b>ORGANIZATION</b>	SULTAN IDRIS EDUCATION UNIVERSITY	
<b>TITLE OF ENTRY</b>	<b>Development of the blue ocean leadership model toward employee engagement and team performance among lecturers in vocational colleges</b>	
<p>The research aims to develop a blue ocean leadership model toward employee engagement and team performance among lecturers in vocational colleges. A quantitative approach using a questionnaire method was applied in this study. 402 lecturers from 22 vocational colleges located in the Northern Zone of Malaysia were selected as the study sample. The findings of the study indicate that blue ocean leadership has a significant impact on employee engagement while employee engagement has a significant impact on team performance. Besides, the partial mediating effect of employee engagement on the relationship between blue ocean leadership and team performance was also demonstrated.</p>		

<b>MY-91</b>	<b>NAME(S)</b>	<b>AP Dr. Akbariah Mohd Mahdzir / Dr. Norhayati Mohd Noor</b>
<b>ORGANIZATION</b>	Universiti Teknologi Malaysia / Universiti Kebangsaan Malaysia	
<b>TITLE OF ENTRY</b>	<b>Marital Strength Scale (MSS) and m<sup>2</sup>CODE Model</b>	
<p>Marital Strength Scale (MSS) is proposed as one of a marriage status assessment instruments designed specifically for use with married couple in marriage counselling. It is a real-time online assessment on self-discovery particularly to assist marriage counsellor to be able to accurately identify the marital issue hence able to initiate the counselling session more effectively. MSS is a valid and reliable online assessment on self-discovery that can measure the strength of marital relationship. Develop based on a strong theoretical foundation, extensive primary data and were constructed based on the newly re-discovered constructs.</p>		

<b>MY-92</b>	<b>NAME(S)</b>	<b>NIK NUR WAHIDAH NIK HASHIM / MUGAHED AL-EZZI AHMED EZZI</b>
<b>ORGANIZATION</b>	INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA	
<b>TITLE OF ENTRY</b>	<b>Automated Speech-based Depression Detection</b>	
<p>Depression is a mental disorder of high prevalence, leading to a negative effect on individuals, society, and the economy. Traditional clinical diagnosis methods are subjective and require extensive participation of experts. Furthermore, the severe shortage in psychiatrists' ratio per population in Malaysia imposes patients' delay in seeking treatment and poor compliance to follow-up. Besides, the social stigma of visiting psychiatric clinics also prevents patients from seeking early treatment. Automatic depression detection (ADD) using speech signals can act as a second assessment tool to assist with early detection. Speech-based ADD is a promising depression biometric because it is fast, convenient, and non-invasive.</p>		

<b>MY-93</b>	<b>NAME(S)</b>	<b>Mohamad Hafiz Mamat / Norfarariyanti Parimon / Mohd Firdaus Malek / Muhamad Kamil Yaakob / Mohamad Rusop Mahmood</b>
<b>ORGANIZATION</b>	Universiti Teknologi MARA	
<b>TITLE OF ENTRY</b>	<b>Ultra-highly Sensitive Flexible Humidity Sensor Based on Novel Nickel Oxide Nanocarnation-Like Mesostructure Film</b>	
<p>The humidity sensors based on metal oxide semiconductors are important in the field of environment monitoring, semiconductor, food processing, agricultural, medical and health. Nickel oxide (NiO) is one of the p-type metal oxides, with a wide energy bandgap (3.6 to 4.0 eV) that has attractive properties for application in humidity sensors. Herein, we fabricated a novel mesoporous and ultra-highly sensitive nanocarnation-like mesostructure film for humidity sensing. The sensor is fabricated using a simple, low temperature, and eco-friendly solution immersion. Our product has better performance than commercial humidity sensor with sensitivity value exceeding 250, which is ultra-sensitive.</p>		

<b>MY-94</b>	<b>NAME(S)</b>	<b>MANMEET MAHINDERJIT SINGH / Anizah Abu Bakar / Azizul Rahman Mohd Shariff</b>
<b>ORGANIZATION</b>	SCHOOL OF COMPUTER SCIENCES, UNIVERSITY SAINS MALAYSIA	
<b>TITLE OF ENTRY</b>	<b>App-sensors Mobile Data Collector (AMoDAC)</b>	
<p>App-sensors Mobile Data Collector (AMoDAC) is an Android mobile apps to quantify privacy risks for Smartphone apps usage and monitoring device user's apps utilization patterns and behaviors. AMoDAC provides protections against data leakage derived from excessive permission requested by developers in downloading apps. AMoDAC engine consist of privacy risk metrics calculated using tree structure relationship with data size, sensors, permissions, and risk for each mobile application. AMoDAC is used to identify, continuous quantify risks and display the user permissions granted for each application. Overall; with the above-mentioned AMoDAC usefulness; Smartphone users would be safeguard against likelihood from being hacked.</p>		

<b>MY-95</b>	<b>NAME(S)</b>	<b>Rahmita Wirza O.K. Rahmat / Goh Jian Hui / Ng Seng Beng</b>
<b>ORGANIZATION</b>	Universiti Putra Malaysia	
<b>TITLE OF ENTRY</b>	<b>AR-IoT Interactive Hydroponic Greenhouse Mobile Application</b>	
<p>This invention is a computer system that combine a hydroponic gardening system with a mobile application. The major goal of this product is to attract younger generation and allow them to efficiently manage their plants using a mobile application IoT based and sensors, by transmit the temperature, humidity, and pH value of the Greenhouse. This product has various intriguing features such as Augmented Reality, a basic game, and an animation. The user acceptance test results demonstrate that the software can pique the interest of younger generations while also assisting them in managing and monitoring the status of hydroponic plants.</p>		

<b>MY-96</b>	<b>NAME(S)</b>	<b>MAHANIM BINTI HANID / ABDULLAH PIRUS BIN LEMAN / NORISIAH BINTI HASHIM / KHO MEI YE / OTHMAN BIN MOHAMED</b>
<b>ORGANIZATION</b>	FACULTY OF BUILT ENVIRONMENT, UNIVERSITY MALAYA	
<b>TITLE OF ENTRY</b>	<b>Virtual Reality Teaching Tool: Mixing Digital and Physical in Learning Environment for Secondary School Student in Design Subject</b>	
<p>Generation Z students in secondary school often get bored, less motivated and lose their focus in the traditional learning environment due to the lack of engagement between students and teacher. Therefore, there has been a need to redesign the conventional pedagogy by adopting technology inclusion in knowledge acquisition that turns into a more attractive, dynamic and motivational process of learning. The embedment of virtual reality in the style of teaching the students would be able to produce motivation, engagement, and resilience learning environment and also as an additional learning aid for home revision. Virtual reality allows users to see objects and forms outside of the physical realm, which will lead to new ways to preview objects before even a prototype is built. It will allow educators to display concepts or process in a safe and secure environment.</p>		

<b>MY-97</b>	<b>NAME(S)</b>	<b>ASSOC. PROF. DR. MOHAMED AKHIRUDDIN IBRAHIM / AZNIWATI ABDUL AZIZ / SHAHIRAH SULAIMAN</b>
<b>ORGANIZATION</b>	UNIVERSITI SAINS ISLAM MALAYSIA	
<b>TITLE OF ENTRY</b>	<b>QURANIM</b>	
<p>This invention is an interactive website called QURANIM – an Interactive Website: Animals in the Quran and Its Benefits. This website is developed to facilitate users, especially among students to fully understand on animals and its benefits that Allah bestowed to mankind.</p>		

## MEXICO

<b>MX-01</b>	<b>NAME(S)</b>	<b>Emmanuel Campos Genaro / David Campos Genaro / Braulio Santiago Castillo / Jose Miguel Medina Pérez / Iván Hernández Rocincuet</b>
<b>ORGANIZATION</b>	Smart Site Co./ Instituto Politécnico Nacional (IPN)	
<b>TITLE OF ENTRY</b>	<b>GEcos V.1.Modular and deployable geodesic green house</b>	
<p>The GEcos project is the set of software and hardware and deployable architecture focused on the replication of artificial eco-systems. The main idea is to design smart greenhouses with thin-shell structure based on a geodesic polyhedron, and in this way to be able to be deployed by aircraft, in inaccessible geographic areas, this system is designed to operate self-sustainably without any human intervention.</p>		

<b>MX-02</b>	<b>NAME(S)</b>	<b>Thania Monserrat Montoya Olmedo / Jesus Manuel Montoya Tinajero / Emmanuel Alejandro Montoya Olmedo / Martin Eduardo Mujica / Marisol Rossano Camacho</b>
<b>ORGANIZATION</b>	<b>UAEM, UNAM, TECHNOLOGICAL INSTITUTE OF TOLUCA</b>	
<b>TITLE OF ENTRY</b>	<b>AXOLCARE (Automated system for preservation and conservation of species)</b>	
<p>The recreation of artificial ecosystems for captive systems for the preservation and conservation of species, in addition to aquaculture production for consumption, has become a priority in recent years due to the environmental imbalance caused by humans, in addition to food shortages, leading man to develop technological alternatives for the sustenance and survival of this, this implies research and a deeper knowledge of the species that surround us since they give a balance to the environment.</p>		

## MOLDOVA

<b>MD-01</b>	<b>NAME(S)</b>	<b>COBZAC Vitalie / NACU Viorel / GLAVAN Aiina / JIAN Mariana / SEDAIA Ecaterina / ABABII Polina</b>
<b>ORGANIZATION</b>	<b>Nicolae Testemitanu State University of Medicine and Pharmacy of the Republic of Moldova</b>	
<b>TITLE OF ENTRY</b>	<b>Small-sized graft fixation and cellularization device</b>	
<p>The invention relates to regenerative medicine, tissue engineering, traumatology, surgery, and can be used for graft fixation, increase the efficiency of graft cellularization and ensures a easier transplantation of the grafts. The invention is one: efficient, safe, of good quality, easy in utilisation and production, but also economic. With the help of the device is possible a more abundant grafts cellularization, it ensures protection of cellularised material and an easier transplantation of the grafts. According to our studies, from complet/almost complete cell lost, the yield in transplantation of cells fixed to a graft increased to 92% (n=16).</p>		

## MONGOLIA

<b>MN-01</b>	<b>NAME(S)</b>	<b>Myagmarsuren Tsanjid</b>
<b>ORGANIZATION</b>	<b>Urangar Urial NGO</b>	
<b>TITLE OF ENTRY</b>	<b>Mongolian Khalkh doll and hand bags</b>	
<p>The KHALKH doll: A pair of KHALKH dolls are 21cm tall. It is crafted using the macramé art with colorful threads. The dolls are crafted using a combination of the ancient and the modern style of KHALKH nation. The dolls are made out of metal. The decoration of the female doll's hat made using a piece of silver.</p>		

## MOROCCO

<b>MA-01</b>	<b>NAME(S)</b>	<b>OUBOUHOUCHE MUSTAPHA</b>
<b>ORGANIZATION</b>	<b>N/A</b>	
<b>TITLE OF ENTRY</b>	<b>Underwater Free Breathing Apparatus</b>	
<p>Making a device that is lightweight, safe and provides self-oxygenation to the diver, and enables researchers in the depths of the water to reach narrow places that were prevented by the large size of the oxygen cylinders used in diving. And the device also helps the diver to quickly survive if he was attacked by a shark, for example, during diving, or he experienced stress or fatigue while diving in the depths. The features of this project are: The device produces oxygen on its own / Being a fully automatic /Ease of use / Its light weight /Helps flow during diving.</p>		

## PAKISTAN

<b>PK-01</b>	<b>NAME(S)</b>	<b>ILYAS Shehzadi Noor</b>
<b>ORGANIZATION</b>	<b>CMA Choi Cheung Kok Secondary School</b>	
<b>TITLE OF ENTRY</b>	<b>"Phone Safer" - Charge them Safe</b>	
<p>Sometimes the sockets are found far from the ground, it is not able to use to charge the phone if the length of charging cable is not enough. While using the multi sockets, it may affect the visual perception. With the help of this invention, it provides a pocket to store the phone while charging, it could also prevent the children from approaching the socket when the socket is not in used.</p>		

<b>PK-02</b>	<b>NAME(S)</b>	<b>GURUNG Bidha</b>
<b>ORGANIZATION</b>	<b>CMA Choi Cheung Kok Secondary School</b>	
<b>TITLE OF ENTRY</b>	<b>"Wash Kids Easy" - a Universal water spout extension</b>	
<p>During COVID-19 period, hygiene standard becoming more and more important to kids. Parents wash kids' hands more frequency in public washroom. However, most water sink of the public washroom does not fit the height of the kids and parents needed to hold the kids up the reach the spout of the water tap to clean the kids' hands. Such measure will lead to parents feel tired or even back pain for long terms.</p>		



## PERU

PE-01	NAME(S)	LOYDA LUZ GUEVARA CASTAÑEDA / CARLOS ALBERTO FARJE GALLARDO
	ORGANIZATION	UNTRM
	TITLE OF ENTRY	DISPOSITIVO INTRAORAL PARA CONTROLAR EL MAL ALIENTO THE INTRAORAL DEVICE AGAINST BAD BREATH
<p>The Intraoral Device Against Bad Breath (IDABB) is a product that is placed in the upper dental arch. Said device consists of dental rings with aerosol outlets connected by hoses to a container located on the palate. The container has a button to release the aerosol over the entire surface of the oral cavity. The button can be activated with the fingers or with the tongue. The contents of the container are refillable so it allows you to control bad breath without having to remove the device from your mouth.</p>		

## PHILIPPINES

PH-01	NAME(S)	ROLLIE ANNE R. SALVADOR / KATE D. MONTERO
	ORGANIZATION	Pitogo High School
	TITLE OF ENTRY	MECHANICAL PROPERTIES OF PILI ( <i>Canarium ovatum</i> ) NUTSHELL REINFORCED IN RECYCLED POLYETHYLENE BIO-COMPOSITE
<p>This study evaluates the mechanical properties of Pili nutshell-plastic composite through compounding and compressing. Tensile and flexural tests were conducted. Flexural strength of pure HDPE is 24.3 MPa lower than both formulations of 26.75 MPa. Hence, Pili nutshell had improved the rigidity, hardness values of the composites. With 70% - 30% of Pili-plastic composite, higher tensile strength of 18.7 MPa than 60% - 40% formulation of 17.3 MPa was obtained. However, its lower than pure HDPE of 26.0 MPa which shows low fracture toughness when matrix was reinforced. The composite produced can be used as construction and building/structural applications where rigidity and hardness is foremost required.</p>		

PH-02	NAME(S)	Faye Louise C. Oller / Lara Nicole B. Carpio / Sofia Karel M. Daitol / Eulyn Cathrin C. Bayani / Mark Joseph B. Pangilinan / Julia Lenina Z. Villas
	ORGANIZATION	Oriental Mindoro National High School
	TITLE OF ENTRY	Screening of Force Pupation Property of <i>Gynura procumbens</i> for Critical Periods of <i>Papilio demoleus</i> : Input as Biocontrol Alternative for Critically Endangered Insects
<p>Critical period and morphometric analysis were conducted to screen the force pupation property of <i>Gynura procumbens</i> in curtailing larval duration of <i>Papilio demoleus</i>, a pest devouring <i>Rutaceae</i> host plants. Experimental samples exhibited shorter larval and pupal periods compare to control samples. Research experimentation also reveals that "force pupating factor" has no potential constituents or composition that can affect the butterfly's wings morphology. In that manner, this indicates that "force pupating agent" as specified by this research is as safe biocontrol alternative for critically endangered insects.</p>		

PH-03	NAME(S)	ANTONIO GABRIEL A. GOCO
	ORGANIZATION	HOLY INFANT ACADEMY OF CALAPAN
	TITLE OF ENTRY	H.I.N.T.O (Human Intoxication Notification Tool for Vehicles)
<p>HINTO is an innovative tool installed to the vehicle so that: 1. The engine will not start if the driver does not test his breath; 2. If HINTO detects the alcohol level to be acceptable, the engine starts; 3. If HINTO detects high alcohol level, the engine will not start. HINTO will send an SMS to a number to call for help. With the GPS module and incorporated GSM module, locating the drunk driver is improved. With the Blynk App, driver details are shown to monitor who is using the vehicle and emergency contact details readily available. HINTO is a valuable device that can help save lives.</p>		

PH-04	NAME(S)	Villanueva, Rachele De Mesa
	ORGANIZATION	Good Shepherd Academy of Victoria Inc.
	TITLE OF ENTRY	SOLAR-POWERED SAND SEPARATOR
<p>This machine is an eco-friendly machine that will reduce human effort in the actual process of separating efficiently a large amount of sand into fine quality sand. Using this machine is a more convenient way of doing things in construction fields. Working time, sand quality and quantity of sand being separated were tested to determine its efficiency. Compared to manual separator, its automatic feature makes it more practical to use. The use of solar energy to function this machine makes it more unique and resourceful in using energy source for free. Indeed, it is very innovative and truly useful.</p>		

<b>PH-05</b>	<b>NAME(S)</b>	<b>Christia Mae L. Maramot</b>
<b>ORGANIZATION</b>	Good Shepherd Academy of Victoria Inc.	
<b>TITLE OF ENTRY</b>	<b>Cot-Tray: The Utilization of Textile Waste as Seed Starting Tray</b>	
<p>This study presented a new and simple way of recycling cotton textile waste by utilizing them to produce a seed starting tray called Cot-Tray. The focus of the study was to determine the significant difference between the Cot-Tray and plastic seed starting tray in terms of the following parameters: soil moisture retention, germination percentage, and germination rate. The researcher created Cot-Tray by weaving and sewing it. Based on the results, producing Cot-Tray is proven as a beneficial way of addressing an environmental problem particularly textiles waste while creating a functional and efficient product.</p>		

## **POLAND**

<b>PL-01</b>	<b>NAME(S)</b>	<b>PAULINA FRĄTCZAK / ADRIAN GRZONKA / TUTORS: LIDIA GAJZIK / BARBARA HALSKA / JERZY MADUZIA</b>
<b>ORGANIZATION</b>	The Complex of School No 6 in Jastrzebie-Zdroj, Poland	
<b>TITLE OF ENTRY</b>	<b>The influence of different breeding conditions of Galleria Mellonella larvae on the possibility of recycling polyethylene from the natural environment</b>	
<p>Recently, the problem of environmental pollution and ecological actions intrigued us and made us aware of the seriousness of the situation related to the destruction of the natural environment. We came across articles on the possibility of utilizing the ubiquitous polyethylene and polypropylene by the larvae of Galleria Mellonella. During our research, 6 terrariums with Galleria Mellonella larvae were used, which were bred in different temperature conditions and with different access to food. We compared the amount of polyethylene that was eaten and the influence of ambient temperature on the larvae life. Moreover, their life cycles were described.</p>		

<b>PL-02</b>	<b>NAME(S)</b>	<b>Daniel Czech / Mateusz Niedobecki</b>
<b>ORGANIZATION</b>	Zespół Szkół Technicznych w Rybniku	
<b>TITLE OF ENTRY</b>	<b>ISP - Intelligent Air Filtration and Ventilation System &amp; SMOGBASE</b>	
<p>The project we have developed is a response to the increase in mortality due to air pollution. According to the data of the European Environment Agency, there are twice as many deaths in Europe every year – not only among the elderly, but also among the young. For this purpose, we have made two innovative and easy-to-use devices. Their task is to improve the comfort of our lives and increase public awareness of the air we breathe every day.</p>		

<b>PL-03</b>	<b>NAME(S)</b>	<b>Marcin Kremieniewski / Marcin Rzepka / Miłosz Kędziński / Ewa Kałna</b>
<b>ORGANIZATION</b>	Oil And Gas Institute – National Research Institute	
<b>TITLE OF ENTRY</b>	<b>Composition of low-permeability lightweight slurry</b>	
<p>The invention consists in the 'composition of a low-permeability slurry with a reduced density', which is used to seal boreholes, as well as during special application works in the construction sector.</p>		

<b>PL-04</b>	<b>NAME(S)</b>	<b>Marcin Kremieniewski / Marcin Rzepka / Miłosz Kędziński / Ewa Kałna</b>
<b>ORGANIZATION</b>	Oil And Gas Institute – National Research Institute	
<b>TITLE OF ENTRY</b>	<b>Composition of ultra-tight slurry</b>	
<p>The invention consists in the 'composition of an ultra-tight slurry' designed for use both during the sealing of boreholes as well as in the construction sector for special applications, where the obtaining of an ultra-tight and impermeable matrix of the forming product is of priority.</p>		

<b>PL-05</b>	<b>NAME(S)</b>	<b>Grażyna Żak / Michał Wojtasik / Jarosław Markowski</b>
<b>ORGANIZATION</b>	Oil And Gas Institute – National Research Institute	
<b>TITLE OF ENTRY</b>	<b>Biofuel made of mixed rapeseed cake and dry sewage sludge</b>	
<p>There was developed solid biofuel in order to manage two types of waste biomass - rapeseed cake and dry sewage sludge, which are produced in large quantities. The fusion temperatures of ashes from this biofuel have been increased by addition of a composition consisting two compounds: magnesium carbonate and halloysite. It allowed to increase the temperatures more than 12% to about 26% in relation to the pellet made of a mixture of rapeseed cake and dry sewage sludge that does not contain this composition.</p>		

<b>PL-06</b>	<b>NAME(S)</b>	<b>Jarosław Markowski / Michał Wojtasik / Grażyna Żak</b>
<b>ORGANIZATION</b>	Oil And Gas Institute – National Research Institute	
<b>TITLE OF ENTRY</b>	<b>Pellet made of a mixture of straw and dry sewage sludge</b>	
<p>There was developed solid fuel in the form of pellets in order to manage two types of waste biomass - straw and dry sewage sludge, which are produced in large quantities. The mechanical strength of the pellets has been increased by addition of a composition consisting two calcium compounds: calcium oxide and calcium lignosulfonate. It allowed to increase the durability from more than 11% to about 30% in relation to the pellet made of a mixture of straw and dry sewage sludge that does not contain this composition.</p>		

<b>PL-07</b>	<b>NAME(S)</b>	<b>Jacek Matusik</b>
<b>ORGANIZATION</b>	Oil And Gas Institute – National Research Institute	
<b>TITLE OF ENTRY</b>	<b>Method of reading the indication of gas volume</b>	
<p>The subject of invention consists of an electronic device, which, after application to a counter of a diaphragm gas meter, generates electric impulses informing about the collected gas amount (as a standard 1 impulse = 0.2 dm<sup>3</sup> of gas). The system operation consists in an optical detection of measuring scales situated on the last drum of the gas meter counter and generation of an electric impulse for each of them. In addition, to ensure reliability of the device operation, a magnetic field sensor has been applied in the system. This sensor, due to a presence of a small magnet in the last drum, determines moments of making full rotations by this drum. A micro-controller, supervising the system operation, checks whether the required number of electrical impulses occurred per each full drum rotation.</p>		

<b>PL-08</b>	<b>NAME(S)</b>	<b>Maciej Łach</b>
<b>ORGANIZATION</b>	Oil And Gas Institute – National Research Institute	
<b>TITLE OF ENTRY</b>	<b>Device protecting against gas theft</b>	
<p>To reduce financial losses caused by gas theft a device has been developed, which informs appropriate services about an attempt to open a protected valve. Because of wireless communication, e.g. GSM, the information about such situation reaches the network operator almost instantaneously. The developed device features small dimensions, its structure is simple, it is easy to install, cheap in operation, and resistant to illegal interference. The device may also be successfully used at protecting ends of water supply systems or of technical installations that require multi-stage protection and supervision.</p>		

<b>PL-09</b>	<b>NAME(S)</b>	<b>Zbigniew Gacek / Jacek Jaworski / Jacek Matusik / Paweł Kułaga</b>
<b>ORGANIZATION</b>	Oil And Gas Institute – National Research Institute	
<b>TITLE OF ENTRY</b>	<b>Natural gas measuring and billing system</b>	
<p>The subject matter of the invention is a measuring and billing system that includes at least two measuring lines with valves, which are controlled in such a way that each of them operates within a strictly defined range of gas flow. In order to switch between the measuring lines, the valve drives are controlled by an autonomous control system based on the actual flow data of the gas meters. This solution allows to significantly increase the rangeability of measuring systems and to reduce gas losses, and may be used in places where gaseous fuel with high flow variability is measured.</p>		

<b>PL-10</b>	<b>NAME(S)</b>	<b>Stefan Ptak / Wojciech Krasodomski / Artur Antosz / Zygmunt Burnus / Agnieszka Wieczorek</b>
<b>ORGANIZATION</b>	Oil And Gas Institute – National Research Institute	
<b>TITLE OF ENTRY</b>	<b>Innovative method for production of modified fat</b>	
<p>Vegetable oils and animal fats are commonly used in the production of biofuels for diesel engines and in the production of lubricants. The use of the MEK-MIBK solvent separation process into a filtrate and a residue for fats, which are vegetable oils, hydrogenated vegetable oils, animal fats, used cooking oils, maintains the selectivity of the process while obtaining short filtration times, which is desirable in industrial processes and allows for the reduction of the cloud point, pour point and solidification point, which results in the improvement the low-temperature properties of the obtained product, including rheological properties at low temperatures.</p>		

<b>PL-11</b>	<b>NAME(S)</b>	<b>Winicjusz Stanik / Michał Janeczek / Rafał Konieczny / Tomasz Łączek / Krzysztof Sikora</b>
<b>ORGANIZATION</b>	Oil And Gas Institute – National Research Institute	
<b>TITLE OF ENTRY</b>	<b>Composition of a combustion modifier for diesel furnace oils</b>	
<p>The composition contains a combustion catalyst in a form of colloidal dispersion of trivalent iron nano-oxides in a non-polar hydrocarbon solvent. The content of dispersed phase ranges from 41.0%(m/m) to 42.0%(m/m) of colloidal iron nano-oxides, with an average hydrodynamic diameter of trivalent iron nano-oxides DH of 10 nm to 21 nm, at the PDI polydispersity index of 0.270 to 0.320. The composition is stabilised with ammonium salts of alicyclic amines and monocarboxylic acids and contains an organic oxygen carrier compatible with the colloidal carrier in the form of alpha-dodecyl-phenoxy-omega-poli(propyleneoxy) propanol or alpha-tridekanoxy-omega-poli(propyleneoxy) propanol and a friction modifier, protecting lubricating properties of fuel pumps and also the other functional additives applied in the composition.</p>		

<b>PL-12</b>	<b>NAME(S)</b>	<b>Tomasz Siuda</b>
<b>ORGANIZATION</b>	Oil And Gas Institute – National Research Institute	
<b>TITLE OF ENTRY</b>	<b>Pipe flow meter for leakage measurement</b>	
<p>The device is used to measure the leakage of elements such as air-exhaust ducts, combustion chambers, etc. The apparatus operation is based on the Darcy-Weisbach equation. In order to determine the flow value of air, the pressure drop is measured on a twisted pressure pipe with specified length, diameter and twisting radius. After using two or more pipe flow meters, the device can also be used as the basis for the construction of mixing plant for dual and multi-components gases.</p>		

<b>PL-13</b>	<b>NAME(S)</b>	<b>Katarzyna Bialik-Wąs / Dagmara Malina / Klaudia Pluta / Maigorzata Miastkowska</b>
<b>ORGANIZATION</b>	Cracow University of Technology, Faculty of Chemical Engineering and Technology	
<b>TITLE OF ENTRY</b>	<b>Advanced bio-hybrid hydrogel materials incorporated with the nanocarrier-drug system as multi-compartmental dressings supporting the treatment of Psoriasis</b>	
<p>The solution addresses issues related to the psoriasis treatment. Various types of ointments are used in the topical treatment. A significant drawback of them is the necessity of frequent application of the drug, low effectiveness and often short-lived effect. The final effect allowed to develop of the composition of bio-hybrid hydrogel materials incorporated with the nanocarrier-drug system, which release the active substance in a gradual and controlled manner. The use of such combination will provide protection against damages and adequate hydration of the skin area. A dual-release system will allow for delivery of the active substance up to 7 days.</p>		

<b>PL-14</b>	<b>NAME(S)</b>	<b>Jolanta Pulit-Prociak / Olga Długosz / Anita Staroń / Marcin Banach</b>
<b>ORGANIZATION</b>	Cracow University of Technology	
<b>TITLE OF ENTRY</b>	<b>Modified zinc oxide nanoparticles as potential vehicles in drug delivery systems</b>	
<p>The subject of the invention is a method of producing zinc oxide nanoparticles having a coating of peptides or aldohexoses. These are intended for use as carriers for medicinal substances. Nanoparticles have been used in nanomedicine as carriers of active substances for a long time. However, their toxic properties are related to the release of metal ions, which are responsible for the formation of reactive oxygen species. In response to this problem, modification of zinc oxide nanoparticles by introducing organic substances into their structure, has been developed. Thanks to that it is possible to reduce or eliminate their toxic properties.</p>		

<b>PL-15</b>	<b>NAME(S)</b>	<b>Jolanta Pulit-Prociak / Olga Długosz / Anita Staroń / Marcin Banach</b>
<b>ORGANIZATION</b>	Cracow University of Technology	
<b>TITLE OF ENTRY</b>	<b>A method of modifying titanium (IV) oxide nanoparticles to reduce their toxic properties in drug delivery systems</b>	
<p>The subject of the invention is a method of producing titanium (IV) oxide nanoparticles with a coating of peptides or aldohexoses. These are intended for use as carriers for medicinal substances. The toxic properties of bare titanium oxide nanoparticles which have been used as nanocarriers are related to the release of metal ions, which are responsible for the formation of reactive oxygen species. In response to this problem, modification of titanium oxide nanoparticles by surrounding them with organic substances, has been developed. Thanks to that it is possible to reduce or eliminate their toxic properties.</p>		

<b>PL-16</b>	<b>NAME(S)</b>	<b>Mariusz Chmielewski / Tomasz Prokopowicz / Paweł Pieczonka / Tomasz Gutowski / Damian Frąszczak / Dawid Bugajewski / Sylwia Sławińska</b>
<b>ORGANIZATION</b>	Military University of Technology	
<b>TITLE OF ENTRY</b>	<b>Clinical Trials Assistant - Sensory system for supervising clinical medical trials supporting analysis of the neurological diseases treatment efficiency.</b>	
<p>Clinical Trials Assistant is an innovative IT system offering support for neurological symptoms intensity evaluation and analysis as well as disorder diagnostics and clinical trials assistance. The system consists of a management server, a biomedical wireless multisensory (smart medical band) and a dedicated mobile application, which allows automatic daily diagnostics – including the intensity of neurological diseases symptoms, including tremors, dyskinesia, convulsions, seizures and other symptoms of myopathies or neurological pathologies. Diagnostics in correlation with the conducted drug therapy offers the assessment of the patient's health conditions and is able to support the drug and dosage recommendation in therapies by evaluating their effectiveness. The CTA system allows for configurable user survey with simultaneous sensory examination. The main purpose of the tool is to determine objective parameters of the patient's health state including drug dosage time regimes, doses, physical state - excluding the possibility of inaccurate assessment of the health condition. The use of inertial sensors and electromyography permits to develop an innovative technique for assessing the intensity of symptoms of neurological diseases (in patenting).</p>		

<b>PL-17</b>	<b>NAME(S)</b>	<b>Mariusz Chmielewski / Sylwia Sławińska / Piotr Witowski / Filip Głowacki</b>
<b>ORGANIZATION</b>	Military University of Technology	
<b>TITLE OF ENTRY</b>	<b>Neurological Environment for Recognition and Verification of Epilepsy - biomedical system for monitoring epilepsy and assessing the effectiveness of medical treatment of children suffering from epilepsy</b>	
<p>NERVE is a system composed of miniature biomedical multisensory (actigraph, electromyograph), a mobile emergency and treatment application and a central knowledge base. Neurological Environment for Recognition and Verification of Epilepsy is a sensory mobile system for the monitoring and support of epilepsy treatment for children. System provides functions for seizure monitoring, diagnosis and disease monitoring, assessment of drug therapy effectiveness. The product offers continuous child protection by monitoring possible epilepsy seizures on parents' devices with the use of wireless technology. The system offers very detailed recording and reporting of seizure characteristics and allows for a caregivers to provide postictal questionnaires and descriptions of seizure characteristics, complementing the symptomatology. Built mechanisms of sensory signal analysis and decision algorithms evaluate the intensity and type of seizure on the basis of the obtained diagnostic and symptomatological data - supporting the medical staff in the analysis and final diagnosis. The mechanisms contained in the system allow us to assess the effectiveness of pharmacological therapy, taking into account also a set of epigenic factors (mood, diet, changes in the environment), which is the most challenging aspect of children with epilepsy monitoring. As a result, NERVE is an ideal tool to support parents and caregivers in the supervision and treatment of children suffering from epilepsy as well as doctors in the correct diagnosis and selection of effective mono or polytherapy.</p>		

<b>PL-18</b>	<b>NAME(S)</b>	<b>Mariusz Chmielewski / Tadeusz Sondej / Michał Sobolewski / Jakub Sierżęga / Jakub Nowakowski / Jakub Rzepiński / Karolina Marciniak / Łukasz Skwarszczow</b>
<b>ORGANIZATION</b>	Military University of Technology	
<b>TITLE OF ENTRY</b>	<b>Intelligent biomedical clothing analyzing physiological state, endurance and training efficiency using advanced biomedical sensors, analytical methods and artificial intelligence</b>	
<p>Innovative smart clothing integrated with an advanced wireless biomedical data analysis module and a mobile application supported by analysis web portal. The system offers the first such a wide spectrum of analysis not only of endurance sports, but also strength and performance sports, giving a full picture of physiological reactions of the human body. Such a wide spectrum and accuracy of biomedical signal acquisition has been combined with the ergonomics and convenience of long-term use of specialized, breathable sportswear supervised by modern electronics and an analytical mobile application. The comprehensive monitoring system combines multi-channel electrocardiography and electromyography, motion, body temperature and sweating analysis to precisely analyze user's physical activity biochemical processes.</p>		

<b>PL-19</b>	<b>NAME(S)</b>	<b>Joanna Ortyl / Wiktoria Tomal</b>
<b>ORGANIZATION</b>	Cracow University of Technology	
<b>TITLE OF ENTRY</b>	<b>Additive manufacturing of Multiwalled Carbon Nanorubes composites via 3D-VAT printing technologies – analysis of the kinetics of the photo-curing process and the influence of nanotube content</b>	
<p>The invention includes new biphenyl derivatives, methods of their synthesis, new photoinitiation systems for photoinitiated cationic, radical, thiol-en and hybrid polymerization processes and applications of new biphenyl derivatives in high resolution 2D and 3D printing. The proposed derivatives can be successfully used as photosensitizers in a two-component initiation system containing commercially available initiators, e.g. iodine salt. By increasing the absorption range of commercially available initiators, these derivatives increase the polymerization efficiency and the degree of monomer conversion. Additionally, the proposed bimolecular systems are universal ones that enable photopolymerization occurring according to different mechanisms, thanks to which it is possible to create IPN type polymer networks. The strengths of the invention are, among other things, the increase in initiation efficiency by shortening the photopolymerization induction time and increasing the speed of the monomer crosslinking process. The development of the complete process, from the synthesis of new derivatives to the optimization of processing conditions allows to obtain 2D and 3D prints with excellent optical resolution. Additionally, the investigated derivatives efficiently co-initiate the processes of fabrication of photosensitive composites and nanocomposites, including materials containing carbon nanotubes (MWCNTs). The fabrication process of these functional multimaterials is quantitatively and qualitatively controlled, and the effect of the nanometric filler is analyzed.</p>		

<b>PL-20</b>	<b>NAME(S)</b>	<b>Andrzej Pomorski / Dominika Kuřka</b>
<b>ORGANIZATION</b>	„POLTEGOR-INSTYTUT” INSTITUTE OF OPENCAST MINING	
<b>TITLE OF ENTRY</b>	<b>The mixture based on small rock fractions fertilizing the soil and supporting the cultivation of plants</b>	
<p>The subject of the invention is a rock mixture based on fine gneiss fractions, used as a natural agent improving soil properties and supporting the cultivation of crops, intended for use in agriculture and horticulture. The most important innovative feature of the presented invention is the beneficial effect of the developed rock mixture on the yield of wheat, rape and maize crops that was confirmed by the studies carried out in pot trials. In all cases, there was an increase in the yields measured by the growth of stems, green mass and dry mass in relation to the control sample, which clearly confirms the effectiveness of the created mixtures.</p>		

<b>PL-21</b>	<b>NAME(S)</b>	<b>Paula Kielbik / Mikołaj A. Gralak / Michai M. Godlewski / Aneta Jończy / Paweł Lipiński / Julita Rosowska / Jarosław Kaszewski / Bartłomiej Witkowski / Marek Godlewski</b>
<b>ORGANIZATION</b>	Institute of Veterinary Medicine, Warsaw University of Life Sciences / Institute of Genetics and Animal Biotechnology, Polish Academy of Sciences / Institute of Physics, Polish Academy of Sciences	
<b>TITLE OF ENTRY</b>	<b>Novel iron supplementation strategy based on biodegradable iron-doped ZnO nanoparticles</b>	
<p>The key of invention is patented eco-friendly production of biodegradable nanoparticles based on zinc oxide core, doped with iron ions (Fe<sup>2+</sup> or Fe<sup>3+</sup>) for application in the novel supplementation strategy in iron-deficient patients. The final product acts as an effective iron carrier to the key tissues involved in iron metabolism and erythrocyte production. Iron ions shielded by nanoparticle core bypass the typical iron absorption pathways in the intestine (less oxidative stress), are delivered to the tissues involved in erythrocyte production and iron metabolism (bone marrow, liver and spleen), where iron is gradually released from decaying matrix, which prevents peak of iron in circulation (further reduction of oxidative stress and overdose prevention). Following supplementation, the general improvement was observed in key blood parameters (red blood cell count, haemoglobin and ferritin levels). Furthermore, no negative side-effects usually associated with iron supplementation were observed in our study (no oxidative stress in the tissues, no upregulation in hepcidin levels which would indicate iron overdose).</p>		

<b>PL-22</b>	<b>NAME(S)</b>	<b>Aleksander Łopatyński / Oleg Petruk / Marcin Kamiński / Rafał Kłoda / Marcin Safinowski</b>
<b>ORGANIZATION</b>	Łukasiewicz Research Network – Industrial Research Institute for Automation and Measurements PIAP	
<b>TITLE OF ENTRY</b>	<b>RAILWAY OVERHEAD LINE DIAGNOSTICS SYSTEM SPDST</b>	
<p>The overhead line diagnostics system is an innovative non-contact solution for the automation of measurements of the railway overhead catenary. The system measure the following parameters: height, stagger and local wear of the contact wire. The system consists of the set of the sensors and the laser scanner developed by Ł-PIAP that scan the space around the contact wires. The advanced algorithms for analyzing the measurement results allow the detection of elements connected with the contact wire - distance holders, connectors and suspensions. Developed system is innovative on a global scale due to its accuracy, sampling rate and versatility. The functionality offered by the system allows to create a digital twin of the critical infrastructure in order to predict failures and smart manage the overhead contact line maintenance.</p>		

<b>PL-23</b>	<b>NAME(S)</b>	<b>PhD Jacek Gospodarczyk / M.A. Marzena Noińska-Macińska / Andrii Skryp</b>
<b>ORGANIZATION</b>	UNIVERSITY OF ECONOMY	
<b>TITLE OF ENTRY</b>	<b>Station for digitisation with the use of photogrammetry, particularly of objects in contrasting colours and reflective surfaces</b>	
<p>Photogrammetry involves taking multiple digital photographs of a digitised object, taken from various sides and at different angles, and then the data collected that way is subjected to digital analysis. This is used to create a spatial model of the object which can be processed and visualised with the use of various methods and technologies, e.g. virtual reality goggles, augmented reality goggles or on a regular monitor screen. Achieving a desired effect requires a large amount of workload, experience in photography, repeatability, as well as concentration and focus during the whole process. It is possible to automatise the entire process of photographic data collection by building an appropriate station. It requires an optimal degree of freedom in adjusting the photographic camera, as well as precision and repeatability in alignment of the scanned object in relation to its vertical rotation axis.</p>		

<b>PL-24</b>	<b>NAME(S)</b>	<b>Ostrowski Andrzej, PhD / Skaliy Olexander, dr / Skaliy Tetiana, dr / Stanula Arkadiusz, PhD</b>
<b>ORGANIZATION</b>	UNIVERSITY OF ECONOMY	
<b>TITLE OF ENTRY</b>	<b>MULTI-PURPOSE CATAMARAN WITH REPLACEABLE DECKS</b>	
<p>Taking up physical activities and participation in social life by persons with disabilities requires considerably greater sports-related knowledge and expertise, qualified personnel and very often specifically adapted sports equipment and facilities. An extremely challenging, but in the same time attractive, environment for persons with disabilities are water areas. If they are to be used by such persons, they have to be provided with equipment that ensures full safety, mobility, easy access and versatility.</p>		

PL-25	NAME(S)	Krzysztof Tyburek / Catherine Marechal / Dariusz Mikołajewski / Katarzyna Węgrzyn Wolska / Piotr Prokopowicz / Lamine Bougueroua
ORGANIZATION	Institute of Computer Science, Kazimierz Wielki University in Bydgoszcz, Poland / École d'Ingénieur Généraliste en Informatique et Technologies du Numérique in Paris, France	
TITLE OF ENTRY	<b>AI-BASED PLATFORM FOR SEMI-AUTOMATIC SYSTEMS FOR MULTIPURPOSE EMOTION DETECTION</b>	
<p>Proposed system is a technical tool that expands and improves selected abilities of the current affective computing (AC) systems toward better emotion classification based on sound and movement recognition. It can serve as a multi-purpose emotion detection system, both in individual people and multiple objects' emotion recognition in crowded places in a way closer to natural human reasoning thanks to used advanced computational intelligence solutions. It may be probably more effective than the traditional assistance and support.</p>		

PL-26	NAME(S)	Joanna Feder-Kubis
ORGANIZATION	Wrocław University of Science and Technology, Faculty of Chemistry	
TITLE OF ENTRY	<b>Breakthrough in technology resort - new, safe, and efficient antielectrostatic product from plant raw material</b>	
<p>The subject of the invention is new surface active compound containing natural occurring terpene component having significant antielectrostatic activity. The present invention is innovative due to the production of effective substance as excellent antielectrostatic agent that is environmentally friendly, produced from naturally occurring in nature (-)-menthol, safe, and its effectiveness far exceeds the commonly used patterns. The combination of physical, economic and ecological features presented in here creates the possibility of a wide range of applications in the processes of discharging electric charge while maintaining the principles of "green chemistry".</p>		

PL-27	NAME(S)	Rafał Rychter / Adam Bosowski / Jarosław Konsek / Łukasz Filar / Jan Świtlik
ORGANIZATION	Jastrzębskie Zakłady Remontowe Sp. z o.o.	
TITLE OF ENTRY	<b>Scraper conveyor for emergency rescue operation PRJZR-400</b>	
<p>The scraper conveyor is designed to be used in all places where there is a need to quickly reach the injured or prepare the scene for a proper emergency rescue operation, i.e. in mines, construction sites, in places of natural disasters such as earthquakes. The light and modular structure of the conveyor allows for quick transport of its individual elements to the final location, and the introduced universal design of the structure enables adaptable configuration, depending on the required length (max. 40m), or the supply medium - electric voltage, compressed air, water emulsion or water under suitable pressure.</p>		

PL-28	NAME(S)	Piotr Gębara / Zbigniew Śniadecki
ORGANIZATION	Częstochowa University of Technology	
TITLE OF ENTRY	<b>Structure, magnetocaloric properties and thermodynamic modeling of enthalpies of formation of (Mn,X)-Co-Ge (X: Zr, Pd) alloys</b>	
<p>In the present work, the semi-empirical Miedema's model combined with the geometric one were used to determine enthalpy of formation of Mn-Co-Ge alloys, where partial substitution of Mn by Zr or Pd was applied. Enthalpies of formation of different structural states were determined and discussed in relation to experiment. Samples were obtained by arc-melting of high purity elements under low pressure of Ar atmosphere. Phase constitution was studied using Bruker D8 Advance equipped with semiconductor Lynx Eye detector. Thermomagnetic curves and magnetic isotherms were measured using Quantum Design PPMS (VSM option) in wide temperature range and in magnetic field of up to 5T. These measurements allowed to reveal the Curie temperature <math>T_C</math> and a magnetic entropy change <math>\Delta S_M</math>. The XRD studies confirm the presence of orthorhombic structure for parent MnCoGe alloy.</p>		

PL-29	NAME(S)	Piotr Gębara / Alvaro Diaz-Garcia / JiaYan Law / Victorino Franco
ORGANIZATION	Częstochowa University of Technology	
TITLE OF ENTRY	<b>Magnetocaloric response of binary Gd-Pd and ternary Gd-(Mn,Pd) alloys</b>	
<p>This work investigates the MCE of alloying Pd or (Mn,Pd) to Gd, which yields the formation of an extra <math>Gd_7Pd_3</math> or <math>Gd_7(Mn,Pd)_3</math> phase in addition to the Gd phase, forming a composite. The phase coexistence is observed from XRD and SEM/EDX results, whereby the phase fraction of secondary phase increases with the dopant content. The magnetocaloric behavior of the binary samples present two characteristic <math>\Delta S_M</math> peaks, attributed to the Curie transitions of the coexisting biphasic (separated by <math>\Delta T_C = 45</math> K). Two minima are observed from the exponent <math>n</math> of field dependence of <math>\Delta S_M</math>, reinforcing the presence of the Curie transitions of the two phases. The largest phase proportion of Gd<sub>7</sub>Pd<sub>3</sub> observed in Gd<sub>80</sub>Pd<sub>20</sub> sample gives rise to the largest RC value, which is also 10% increase compared to single phase Gd.</p>		

<b>PL-30</b>	<b>NAME(S)</b>	<b>Katarzyna Błoch / Marcin Nabiałek / Joanna Gondro / Bartłomiej Jeż / Kinga Jeż / Paweł Pietrusiewicz</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Modern, highly energy efficient materials for transformers cores</b>	
<p>The project presents a modern method of production, rapidly - quenched, functional amorphous materials. The iron-based alloys are soft ferromagnetic materials, which are characterized by fine magnetic properties: low values of coercivity field and core losses, high saturation magnetization and Curie temperature. Samples were produced in the form of ribbons with a thickness of about 30mm, and after appropriate preparation (winding toroids) were the perfect material for construction of special applications transformer cores. In addition, amorphous materials exhibit good mechanical properties, high microhardness and corrosion resistance. All described features of these amorphous alloys, in comparison with crystalline alloys with the same chemical compositions and commercially used FeSi sheets, make them much more attractive, for application in the electrical industry.</p>		

<b>PL-31</b>	<b>NAME(S)</b>	<b>Garus Sebastian / Sochacki Wojciech</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Acoustic energy harvesting – panel system</b>	
<p>The subject of the invention is a method of constructing panels that allow obtaining acoustic energy and converting it into electricity. A single panel consists of four types of parts: incident wave horn type panel (1), sliding module with electrical contacts (2), a locating pin (3), energy harvesting module with converter (4). Incident wave horn type panel The incident wave horn type panel (1) is constructed in such a way as to intercept the incident mechanical wave and direct it to the energy harvesting module (3), which, depending on the version, converts it using piezoelectric or electromagnetic elements into electricity. A Graetz bridge that is built into the module converts an alternating-current (AC) input into a direct-current (DC) output. Depending on the setting, the sliding modules (2) allow for parallel or serial connection of the panels. The shape of the individual panels should be such that they cover the entire surface (in the example, a regular hexagon, but you can also use squares, triangles, etc.).</p>		

<b>PL-32</b>	<b>NAME(S)</b>	<b>Feliks Kusaiev / Siergii Arestenko / Marcin Nabiałek / Bartłomiej Jeż</b>
<b>ORGANIZATION</b>	MPSTECHNOLOGY Sp. z o.o. / Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Recovery of Ti chips with gradation below 2 mm</b>	
<p>We are the only company in the world to fully recycle titanium chips. This means that our titanium recovery is almost 100%. Using the traditional and commonly used pyrolysis, it is not possible to recover titanium chips with a grain size less than 2 mm. The apparatus constructed and designed by us enables ecological recovery of titanium chips with a fraction of 2 mm - 0. As we know, such small pieces of titanium are easily flammable and even explosive. The technology used is safe and is part of the entire production line for the recovery of titanium, which can be reused in medicine. This product is sought after in the market specifically for the production of fireworks. An additional advantage is that it is a material unavailable because in traditional recycling, Ti is burned. Normally its production is very dangerous and expensive.</p>		

<b>PL-33</b>	<b>NAME(S)</b>	<b>Feliks Kusaiev / Siergii Arestenko</b>
<b>ORGANIZATION</b>	MPSTECHNOLOGY Sp. z o.o.	
<b>TITLE OF ENTRY</b>	<b>FeTi alloy produced with eco-friendly methods</b>	
<p>Our company is successfully operating in the titanium chip recycling market and is a leader in terms of the ecology of the process. The use of modern solutions makes it possible to recycle titanium chips without losses, even when it comes to small fractions. In the case of titanium chips for medical use, the chips must not be less than 4 mm. In the traditional firing process, smaller chips are largely burnt. Our technology enables ecological (without the release of hazardous gases into the atmosphere and without the risk of explosion) recovery of titanium chips with a fraction of less than 4 mm for use in the production of FeTi alloy.</p>		

<b>PL-34</b>	<b>NAME(S)</b>	<b>Feliks Kusaiev / Siergii Arestenko / Marcin Nabiałek / Jerzy Wystocki</b>
<b>ORGANIZATION</b>	MPSTECHNOLOGY Sp. z o.o. / Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Ecological, no waste, recycling of titanium chips</b>	
<p>As one of the few companies in the world, we recycle titanium chips with almost 100% titanium recovery. The titanium chip recycling line used is unique. As a company, we have ECHA registration, ISO and UDT certificates. Our shavings after the recycling process can be successfully used in medicine. Restrictive chip quality control is essential. Our company is pro-ecological and the entire cycle of cleaning titanium chips takes place in closed cycles, while adhering to the highest standards. We are proud of our activities for the protection of the environment by applying the best technology in our company.</p>		



<b>PL-35</b>	<b>NAME(S)</b>	<b>Marcin Nabiałek / Katarzyna Bloch / Bartłomiej Jeż</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>BULK NANOCRYSTALLINE IRON ALLOYS</b>	
<p>The subject of the invention is a massive nanocrystalline iron alloy classified as magnetically soft, which can be used in electronics, electrical engineering and energy and in particular as: high power transformers for switched mode power supply systems, high accuracy current transformers for energy meters or impulse transformers for communication. The massive fast-cooled nanocrystalline alloy according to the invention, the main component of which is iron, is characterized in that Si (Si: 0.25 or 0.5 or 0.75 or 1%) was introduced as a structure stabilizer. Increasing the Si content blocks the growth of Fe phase and borides by limiting the diffusion of atoms over further distances. The massive nanocrystalline alloy was produced in one production step, which means that it was not subjected to additional processing enabling its nanocrystallization.</p>		

<b>PL-36</b>	<b>NAME(S)</b>	<b>Marcin Nabiałek / Maciej Pike-Bieguński / Agata Nowakowska / Jerzy J. Wystocki</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology / NANO KOŁOID Sp. z o. o.	
<b>TITLE OF ENTRY</b>	<b>COMPREHENSIVE DISINFECTION WITH AN ANTI-INFECTIVE COATING</b>	
<p>Nowadays, protection against bacteria, fungi and viruses is very important. It is known that bacteria and fungi multiply on all kinds of surfaces and in hard to reach nooks and crannies. New viruses can survive under favorable conditions for up to several days, which means that they are easily infected. That is why comprehensive disinfection is so important. It is particularly important to subject such disinfection to all types of public transport, special vehicles (ambulances, police cars, fire trucks, military vehicles, etc.), hospital rooms, school rooms, flats, production halls and offices. Ozone treatment is the first stage of anti-infective purification. After ozonation, anti-infective nanocrystalline coatings are applied by fogging. The proposed preparations provide anti-infective coatings that last for several months.</p>		

<b>PL-37</b>	<b>NAME(S)</b>	<b>Marcin Nabiałek / Paweł Pietrusiewicz / Katarzyna Bloch / Joanna Gondro / Kinga Jeż / Bartłomiej Jeż</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>A UNIT FOR ADJUSTING LOCATION OF THE INDUCTION FURNACE HEATING ELEMENT</b>	
<p>The induction furnace heating element adjustment unit has a sealing member (4) mounted on the cylindrical holder (1) of the heating element and has an adjustment-locking nut (5) placed on the threaded end of the cylindrical handle (1) for blocking its position in the chamber opening an induction furnace, wherein the sealing member (4) forms a flanged outer sleeve (6) with an external thread (7), removably secured and sealed by a sealing element to the wall of the induction furnace, inside which the inner sleeve (8) and sealing elements (9) are arranged ) on both sides of it, and from the side of the adjusting and locking nut (5) there is a pressure ring (10), threadedly connected with a flanged outer sleeve (6).</p>		

<b>PL-38</b>	<b>NAME(S)</b>	<b>Garus Sebastian / Sochacki Wojciech / Garus Justyna</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Piezoelectric-magnetic resonators for the energy harvesting system</b>	
<p>The subject of the invention is a multi-chamber structure with elements made of vibrating cantilever beams ended with magnets. The special construction of the chamber allows to increase the frequency of the element's operation. The beam elements in the developed solution are placed radially with the magnets facing the center with the same pole. Such a solution causes that slender beams, when vibrating, cause a variable magnetic field affecting the vibrations of the remaining beams. The shift of the beam ring axis in relation to the cylinder axis causes the length of each beam to be different and thus has a different value of natural frequency of vibrations. Uneven distances between the rings additionally create resonance chambers for mechanical waves. The capped bottom of the resonance chamber creates and strengthens standing waves. The presented solutions increase the operating frequency range, and thus increase the possibility of recovering energy from mechanical waves.</p>		

<b>PL-39</b>	<b>NAME(S)</b>	<b>Przemysław POSTAWA / Piotr GÓRAK / Jarosław KRET</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Innovative composite aggregate made from recycling of ash and plastic waste</b>	
<p>The subject of the invention is a new composite aggregate made from recycling of ash and plastic waste. The product of such a reaction, while maintaining the specific conditions of the process, may be a composite lightweight aggregate (CLA). As a matrix in the created composite the flakes from recycling of a post-consumer thermoplastic polymer PET (polyethylene terephthalate) were used (any thermoplastic polymer can be used in that technology). The filler's role was fulfilled by fine-grained anthropogenic raw materials.</p>		

<b>PL-40</b>	<b>NAME(S)</b>	<b>Paweł Palutkiewicz</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>An instrument for placing processors in the LGA type socket</b>	
<p>The subject of the invention is a tool for installing processors (CPU) in an standardized Land Grid Array (LGA) socket on a motherboard of a desktop computer. The main advantages (benefits) of this solution:</p> <ul style="list-style-type: none"> <li>- prevention of incorrect processor seating in the socket,</li> <li>- an injection molded product made of polypropylene (PP),</li> <li>- monoblock construction,</li> <li>- low manufacturing costs, due to the simple design,</li> <li>- possibility of multiple use.</li> </ul>		

<b>PL-41</b>	<b>NAME(S)</b>	<b>Paweł Palutkiewicz</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Tire for vehicle wheels</b>	
<p>The subject of the invention is a tire for vehicle wheels, intended in particular for use as a spare wheel tire or for special vehicles. The aim of the invention was to develop a puncture-proof structure for vehicle wheels that would retain shape stability when damaged without losing its load-bearing properties. The essence of the tire for vehicle wheels according to the invention consists in the fact that under the covering layer, which is a tread connected to two sides with bead ends, the tire has a tight, toroidal chamber with centrally arranged partitions on which a layer of material reducing friction is placed. Between the baffles there is a monolithic layer of filling material with separate chambers filled with gas at atmospheric pressure. The tread-side filler material layer has convex-shaped chambers, while the filler material layers above have at least one toroidal chamber around the axis of rotation of the wheel and have convex-shaped chambers on the sidewall side of the tire.</p>		

<b>PL-42</b>	<b>NAME(S)</b>	<b>Kryszyna MALIŃSKA / Przemysław POSTAWA / Tomasz STACHOWIAK / Agnieszka PUDEŁKO / Danuta DRÓŻDŹ / Dorota NOWAK</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Completely biodegradable bio-based derived plastic mulch foils with a functional inner layer</b>	
<p>The subject of the invention is an innovative structure of a biodegradable bio-based mulch foil used in conventional and organic agriculture for growing plants.. This is an alternative for conventional plastic mulches and is applied to suppress weeds, and thus reduce the use of pesticides. The presented invention aims at solving the problem with on-farm waste generated from the use of conventional non-biodegradable foils. The most pressing issue with the use of thermoplastic polymers is associated with the elevated costs of recycling. The idea of the presented invention is to use the biodegradable mulch foil on the fields and after vegetation season let it decompose in soil or collect it and compost in on-site.</p>		

<b>PL-43</b>	<b>NAME(S)</b>	<b>Damian Jończyk / Marlena Rajczyk / Bartłomiej Stachecki / Malwina Tubielewicz-Michalczuk</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Construction building element</b>	
<p>In the bottom of the glued laminated timber beam (1), in the tension zone, there are longitudinal openings (2), in which the reinforcement of the beam in the form of aramid fiber cords (3) is stabilized with resorcinol glue. The ends of the ropes (3) on both sides of the beam (1) are placed in supporting them metal sleeves (4) filled with resorcinol glue. Metal sleeves (4) are embedded in the box openings of the metal fittings (5), which embrace the ends of the wooden beam (1). The box fittings (5) have venting lugs (7) on the underside of the beam that enable micro-ventilation in the longitudinal direction. Additionally, the sheet of the box fitting (5) is fixed with screws to the corners of the beam's front wall (8). The structure of the building element allows to increase the length of the beam and reduce its cross-section.</p>		

<b>PL-44</b>	<b>NAME(S)</b>	<b>Anna Derlatka, Ph.D. / Piotr Lacki, Prof.</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Construction elements</b>	
<p>The aluminum beam has an I-profile cross-section. It was made with aluminum alloy 6061-T6 sheets. The beam was made with two cold bent channels with a thickness of 0.8 mm. The channels were joined by along the webs. The flanges were reinforced by flat bars with 2.0 mm thick sheets. The metal sheets components were connected by Refill Friction Stir Spot Welding (RFSSW). All the RFSSW spots had a diameter of 9.0 mm.</p>		

<b>PL-45</b>	<b>NAME(S)</b>	<b>Adamczyk Izabela / Major Maciej</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Openwork wall block</b>	
<p>The subject of the invention is an openwork wall block made mainly of ceramics or concrete, used in construction, in particular for the construction of walls exposed to external dynamic effects, e.g. machine foundation walls or external load-bearing walls of buildings located near railway tracks, trams or communication routes with heavy traffic of wheeled vehicles. The aim of the invention was to develop such a block structure that would allow for the construction of walls that would dampen external dynamic effects (i.e. vibrations and waves) and limit their impact and propagation inside the wall structure itself - both load-bearing ground walls and foundation walls.</p>		

<b>PL-46</b>	<b>NAME(S)</b>	<b>Maciej Major / Izabela Major / Judyta Niemiro – Maźniak</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Elastomer shock absorber</b>	
<p>The subject of the invention is an elastomer shock absorber which is used in engineering steel structures and industrial machine structures where high dynamic loads occur. The aim of the invention is to develop an elastomer shock absorber with increased vibration damping capacity and resistance to dynamic interactions acting on the shock-absorbed structure and harmful external factors during the shock absorber's operation. With the new solution was increased durability elastomer shock absorber and reduced have harmful the dynamic interactions acting on structures in which the shock is applied. The developed structure of the shock absorber thanks to a porous rubber damping layer with spherical microporous rubber elements is characterized by high internal damping and the ability to absorb sound, which improves the comfort of work of people staying nearby.</p>		

<b>PL-47</b>	<b>NAME(S)</b>	<b>Robert Cierniak</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Ultrafast statistical reconstruction method for medical image tomography techniques</b>	
<p>This invention is closely related to the originally formulated statistical model-based iterative reconstruction algorithm for spiral cone-beam x-ray tomography (CT) and for positron emission tomography (PET). The conception proposed here is based on a continuous-to-continuous data model, and the reconstruction problem is formulated as a shift invariant system. This algorithm significantly improves the quality of the subsequently reconstructed images, so allowing a reduction in the x-ray dose absorbed by a patient and/or improving of resolution of these images. This form of reconstruction problem permits a reduction in the computational complexity in comparison with other model-based iterative approaches. Computer experiments have shown that the reconstruction method presented here outperforms standard and other statistical methods with regard to the image quality obtained and are competitive in terms of time of calculation.</p>		

<b>PL-48</b>	<b>NAME(S)</b>	<b>Maciej Major / Jarosław Kalinowski / Mariusz Kosin</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Stiffening insert, preferably of thin-walled C-type sections</b>	
<p>The invention relates to a stiffening insert, especially thin-walled C-profiles used in the construction industry in light steel constructions, applicable in particular for fixing wall ties and wherever there is a need to stiffen profiles. The insert has a width and height to match the closed inner space of the thin-walled profile. The insert is characterized by the fact that it is composed of three elements. In practice, many methods are known for stiffening thin-walled profiles with lacings, diaphragms or lattices. These methods can be problematic when it comes to their implementation in existing facilities, as it is in the case assumed by the authors. Therefore, an alternative solution has been created for this type of stiffener enabling efficient installation in the field. The proposed method of stiffening allows for an increase to the bending – torsional stiffness of the profile in the place of ties mounting.</p>		

<b>PL-49</b>	<b>NAME(S)</b>	<b>A. Zieliński / H. Purzyńska / M. Sroka / A. Śliwa</b>
<b>ORGANIZATION</b>	Sieć Badawcza Łukasiewicz- Instytut Metalurgii Żelaza im. St. Staszica	
<b>TITLE OF ENTRY</b>	<b>Atlas of changes in the microstructure of new-generation ferritic steels for high temperature operation</b>	
<p>The essence of the invention is the ability to obtain a high level of reliability and maintenance free. It enables also precise diagnostic of boiler elements with the determination of material usability for further exploitation and also to determining residual life which defines save the time of secure element work beyond the time of calculation. The developed atlas of changes in the microstructure of the new-generation ferritic matrix steel is an original scientific study, which is used by numerous scientific and industrial institutions for forecasting the safe operation time of power units.</p>		

<b>PL-50</b>	<b>NAME(S)</b>	<b>Bogdan Garbarz / Jarosław Marcisz</b>
<b>ORGANIZATION</b>	Lukasiewicz Research Network – Institute for Ferrous Metallurgy	
<b>TITLE OF ENTRY</b>	<b>Armour panels with plates of nanostructured bainitic steel</b>	
<p>Nanostructured bainitic or nanobainitic steel is a new structural material with the strength in the range of 1.9–2.2 GPa and good plasticity. One of the main applications of ultra-strength nanobainitic steel plates are armour systems. ŁUKASIEWICZ-IMŻ develops a technology for producing ULTRA-PAN armour panels made of ultra-strength nanobainitic steel (tensile strength min. 2.0 GPa, plasticity A min. 12%). The optimised perforation system of the panel combined with the innovative material cause destabilisation of the projectile trajectory during impacting on the armour, diminishing the penetration efficiency, while reducing the surface mass of the armour shield by at least 25%. The achievable level of ballistic protection for ULTRA-PAN panels with a thickness of 4-8 mm is comparable or higher than the best currently offered solutions. Level 2 ballistic protection requirements according to the Stanag 4569A standardisation document were met by 7.5 mm thick ULTRA-PAN plates. Industrial technology production of the nanobainite steel plate was developed, including smelting and casting into ingot moulds, preparation of the rolling mill charge, hot rolling, post-rolling plate processing as well as intermediate and final heat treatment.</p>		
<b>PL-51</b>	<b>NAME(S)</b>	<b>Marcin Nabiałek / Katarzyna Błoch / Jerzy J. Wyslocki</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>FILTERS IMPROVING PROTECTION AGAINST MICROORGANISMS AND PREVENTING INFECTIONS</b>	
<p>Nowadays, protection against bacteria, fungi and viruses is very important. It is known that bacteria and fungi multiply on all kinds of surfaces and in hard to reach nooks and crannies. New viruses can survive under favorable conditions for up to several days, which means that they are easily infected. That is why comprehensive disinfection is so important. It is particularly important to subject such disinfection to all types of public transport, special vehicles (ambulances, police cars, fire trucks, military vehicles, etc.), hospital rooms, school rooms, flats, production halls and offices. Ozone treatment is the first stage of anti-infective purification. After ozonation, anti-infective nanocrystalline coatings are applied by fogging. The proposed preparations provide anti-infective coatings that last for several months.</p>		
<b>PL-52</b>	<b>NAME(S)</b>	<b>Sochacki Wojciech / Garus Sebastian</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Mechanism of power transmission to the entomopter wings</b>	
<p>The essence of the invention is the use of a simple yoke and slide mechanism to impose specific movement of the wings of an entomopter. The movement of an insect wing consists (simplified) of the movement of the flapping and the movement of changing the angle of attack of the wing. These two movements take place in different planes and take place in a strictly defined position of the wing. The angle of attack of the wing changes in the extreme positions of the wing flapping. The proposed mechanism allows to obtain just such a movement in a mechanical object. A special feature of the invention is the use of a sliding mechanism with a two-way slider, which, in combination with the wing swing lever and a suitably shaped guide of the wing swing lever, ensures a sequential change of the mechanical wing in the respective phases of its movement.</p>		
<b>PL-53</b>	<b>NAME(S)</b>	<b>Marcin Knapieński / Paweł Rajczyk</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Abrasive disc</b>	
<p>The subject of the invention is a new constructional and material solution for an abrasive disc for mechanical treatment of the surface of mineral materials, particularly granite surface treatment. The new structural solution in terms of form and geometric proportions of abrasive segments, used for given kinematic parameters, for a given type of material determined by its hardness, allows to increase the machining efficiency, guaranteeing an even distribution of roughness of the machined surface at one blade transition on the workpiece. The new solution allows you to shorten the machining time at one blade transition on the workpiece for a given cycle of operations, which is determined by the grain size of the abrasive. The technical and economic efficiency of the 40/45 # diamond abrasive powder abrasive tests allowed to shorten the machining operation time by 27% in relation to the commonly known and practically applied disc solution for the above-mentioned group of granules.</p>		
<b>PL-54</b>	<b>NAME(S)</b>	<b>Marlena Rajczyk / Jarosław Rajczyk / Damian Jończyk / Paweł Rajczyk / Bartłomiej Stachecki / Karolina Bednarczyk / Kamil Ryndak</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>An agitator, especially for homogenizing liquid composites</b>	
<p>The agitator, particularly for homogenizing the flowable composites of the invention, comprises a circular ring and a hub for connecting a rotating shaft. The stirrer is characterized in that it has a three-arm base element joined to the circular ring and situated inside it, with edges formed by arcs of circles with centers located at a distance from the center of the stirrer being from 0.65 to 0.75 of the outer diameter of the circular ring and the diameter of each being from 0.9 to 1.1 of the outer diameter of the circular ring. The axes of symmetry of the base element coincide with the heights of the equilateral triangle on which the outer circular ring is described. On each of the arms of the base element, the stirrer has joined thereto, preferably three, circular stirring elements, each with a thickness equal to the thickness of the circular ring and the diameter of which decreases radially from the center of the stirrer. Each of the mixing elements is positioned perpendicular to the base element and parallel to the axis of symmetry of the next counterclockwise arm of the base element.</p>		

<b>PL-55</b>	<b>NAME(S)</b>	<b>Jacek Michalczyk / Sylwia Wiewiórowska</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>New unconventional process and tool of plastic forming of the internal toothing of coupling spline sleeves</b>	
<p>The abstract proposes the implementation of a novel method of plastic forming of internal toothing in flange spline sleeves. A method being the subject of Polish patent PL232713 has been used for this purpose, which involves a combination of the scheme of the direct extrusion of a cone hollow with the die press forming of the wall to obtain a flange. The entire process takes place in a single technological sequence. The operations come one after another, so that there is no need for reheating the stock or carrying out intermediate soft annealing. The proposed method is assumed to be an alternative to the operation of press forming of internal spline sleeve toothing in a conical die [ ] and to the operation of swaging on rotary swaging machines [ ]. It is assumed that this method, too, is alternative to other technologies known from the literature and industrial practice.</p>		

<b>PL-56</b>	<b>NAME(S)</b>	<b>Marek Warzecha / Artur Hutnyt</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Self reducing mixtures of iron based recycling materials</b>	
<p>The subject of the invention is the development of a technology for the production of a self-reducing material that can be used in steel production processes, especially in electric arc furnaces (EAF). The iron-bearing material is scale milled to a specific fraction, combined with a specific reducing material and other components. Initial laboratory tests were carried out on selected mixtures with very positive results. After smelting the samples, the yield of the resulting metal was determined, which turned out to be promisingly high. A positive scale effect is expected, the much greater heat capacity of the furnace on an industrial scale – compared with laboratory furnace - should compensate for the energy effect of the process. The process is part of ecological activities as it allows the management of industrial waste materials (both scale and reducer) and processing them into a feedstock for steel production. The prepared mixture can be used directly in the industrial process.</p>		

<b>PL-57</b>	<b>NAME(S)</b>	<b>Józef Iwaszko / Krzysztof Kudła</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>A method of modifying the surface layer of metallic materials showing a strong affinity for oxygen</b>	
<p>The surface remelting treatment of metallic materials can be done using the GTAW (Gas Tungsten Arc Welding) technology. However, when machining metals or alloys showing a high affinity for oxygen, effective remelting of the surface layer of these materials is difficult and often impossible. This is because the oxide layer that is forming obstructs the flow of current, causing the arc bending and hence disturbing the remelting process. The aim of the invention was to develop a method enabling modification of the surface layer of metallic materials showing a high affinity for oxygen without the need to use preliminary chemical or mechanical treatments for cleaning the surface of the material from the non-conductive layer.</p>		

<b>PL-58</b>	<b>NAME(S)</b>	<b>Dawid Cekus / Radosław Krawczyk / Bogdan Posiadała</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Wheels made in additive manufacturing</b>	
<p>The subject of the invention is the use of additive manufacturing (3D printing) to make wheels, which adapt to each obstacle, have the proper weight and are reliably and esthetic. The wheels are characterized by high impact strength and resilience, the least susceptibility to temperature, and the tire tread is adapted to sandy and stony terrain. The designed and made wheel is divided into rim and tire. Both elements can be made of different materials and then combined with each other. The tire module is a multifaceted spatial body with open and closed zones reinforced with internal ribs that allows for greater rigidity and weight reduced as well as during collision with an obstacle reduces part of the vibration. The outer circumference of the tire has tabs that act as a tread. The rim module consists of two detachable parts, each of them has five holes, which allows you to keep all modules complete.</p>		

<b>PL-59</b>	<b>NAME(S)</b>	<b>Feliks Kusaiev / Siergii Arestenko / Marcin Nabiałek / Katarzyna Błoch</b>
<b>ORGANIZATION</b>	MPSTECHNOLOGY Sp. z o.o.	
<b>TITLE OF ENTRY</b>	<b>Recycling of Ti chips for use in medical products</b>	
<p>Our company is one of the few in the world to recycle titanium chips for reuse in medical devices. Additionally, the recycling process is ecological and very efficient. The designed and used production line gives a capacity of 10 tons per day, of which nearly 8.5 tons are reused for the production of medical products. A complex technological process involving several stages of segregation, washing and drying ensures the appropriate quality of titanium chips. Before each recycling process, the chip distribution is tested and its composition is analyzed. Such an approach to recycling ensures obtaining the highest quality products. We are proud of our achievements in chip recycling and willing to cooperate with any company that has titanium waste.</p>		

<b>PL-60</b>	<b>NAME(S)</b>	<b>Krzysztof Sokół</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Guillotine for cutting miniature profiles</b>	
The subject of the invention is a guillotine for cutting miniature profiles, especially made of wood, various types of polymers and paper. This product is addressed to architects and scale modelers who require even and sharp edge during cut when creating dioramas.		

<b>PL-61</b>	<b>NAME(S)</b>	<b>Krzysztof Sokół</b>
<b>ORGANIZATION</b>	Częstochowa University of Technology	
<b>TITLE OF ENTRY</b>	<b>Hydraulic jack with adjustable base</b>	
The subject of the invention is a hydraulic jack with adjustable base. The aim of this invention is to provide a jack that can be used in places with limited working space. The use of an adjustable base increases safety and equipment stability during workshop works.		

## PORTUGAL

<b>PT-01</b>	<b>NAME(S)</b>	<b>Fernando Maldonado Lopes</b>
<b>ORGANIZATION</b>	Inventarium-SRD	
<b>TITLE OF ENTRY</b>	<b>SHOCK4SHIELD</b>	
Is essentially an electrified riot control shield, designed to provide added protection for Police and military personnel in hazardous crowd control situations. It can be used like any normal shield or activated to provide a less-than-lethal immobilizing shock by the user.		

<b>PT-02</b>	<b>NAME(S)</b>	<b>Fernando Maldonado Lopes</b>
<b>ORGANIZATION</b>	Inventarium-SRD	
<b>TITLE OF ENTRY</b>	<b>JET4BATON</b>	
Professional Police & Army Anti-Riot Tactical Batons Exclusively designed to: *Peace Maintenance *Law Enforcement & Prison Control With incorporated Red Pepper or Tear Gas canister and Front Impact Shock Absorber System; extra protection for police and military personnel in hazardous crowd control situations, able to reach 10 meters of effective defensive range.		

## QATAR

<b>QA-01</b>	<b>NAME(S)</b>	<b>Baina Saeed Al-marri / Hemalatha Parangusan / Enas Fathy Elhawary</b>
<b>ORGANIZATION</b>	Qatar University Young Scientists Center (QUYSC)	
<b>TITLE OF ENTRY</b>	<b>Novel Electrospun Nanofibers scaffolds for Tissue Engineering applications</b>	
Tissue engineering is a multidisciplinary approach to the reconstruction of damaged or destroyed tissues and organs that seeks to provide creative solutions. Due to their structural resemblance to the native extra cellular matrix of tissues, electrospun nanofibrous scaffolds are proper candidates for tissue engineering applications. We have prepared PLA/Fenugreek nanofibrous scaffolds by Electrospinning technique, which showed very promising results in wound healing, and of good mechanical strength and biodegradable. The materials were characterization is done using scanning Electron microscope analysis of the prepared samples, Phosphate Buffered saline (PBS) solution for studying the biodegradability of the samples, and the tensile stress-strain testing.		

<b>QA-02</b>	<b>NAME(S)</b>	<b>Dr. Noora Jabor Al-Thani / Shahad Alkhair</b>
<b>ORGANIZATION</b>	Qatar University	
<b>TITLE OF ENTRY</b>	<b>Ingenious methodology for digitizing learning models by creating a real-world lab-like environment at home</b>	
Qatar University Young Scientist Center (QUYSC) focuses on increasing the interest of youth to pursue specialization in STEM fields (Science, Technology, Engineering, and Mathematics), through various workshops and research activities to students from K-3 to K-12. QUYSC workshops and the research activities cover various scientific topics integrating STEM and project-based learning in their curriculum. The center has constructed an innovative methodology to transform student's homes to real-world lab like environment, using various learning approaches, to improve student's knowledge and competencies.		

## ROMANIA

<b>RO-01</b>	<b>NAME(S)</b>	<b>NIȚAN Ilie / MILICI Laurențiu-Dan / POIENAR Mihaela / CERNUȘCĂ Dumitru / PAȚA Sergiu Dan / PIANIȚ Alexei / PENTIUC Radu Dumitru / POPA Cezar / RAȚĂ Mihai / UNGUREANU Constantin</b>
<b>ORGANIZATION</b>	Stefan cel Mare University of Suceava	
<b>TITLE OF ENTRY</b>	<b>Interlocking system</b>	
According to the invention, the interlocking system consists essentially of two Nitinol springs, attached to one end of the fixed plate, and at the other end of the movable plate with the locking element, whose bi-directional displacement obtained by heating the springs, controls the position of two cams by means of guiding grooves and leads to the locking or unlocking of the mobile element.		

<b>RO-02</b>	<b>NAME(S)</b>	<b>TOADER Eusebiu / NIȚAN Ilie / PAVĂL Mihaela / MILICI Dan Laurențiu / CERNUȘCĂ Dumitru / MILICI Mariana Rodica / GRAUR Adrian / DIMIAN Mihai / UNGUREANU Constantin</b>
	<b>ORGANIZATION</b>	Stefan cel Mare University of Suceava
	<b>TITLE OF ENTRY</b>	<b>Pumping system</b>
<p>The pumping system according to the invention consists of a cylindrical container, provided with a piston which is moved by means of a rod, terminated with a T-shaped profile, provided at the lower end with a support fixing two nitinol springs, and the upper part of the rod profile acts at the ends of the stroke the double microcontacts, which controls the closing and opening of the electrovalve.</p>		

<b>RO-03</b>	<b>NAME(S)</b>	<b>Kamel EARAR / Andrei Victor SANDU / Dragoș Ioan VIRVESCU / Ion SANDU / Gheorghe G. BĂLAN / Ioan Gabriel SANDU / Dragoș Nicolae FRĂȚILĂ</b>
	<b>ORGANIZATION</b>	Romanian Inventors Forum
	<b>TITLE OF ENTRY</b>	<b>Process for obtaining mouthwash</b>
<p>The invention relates to a process for obtaining mouthwash, with multiple implications in the sanitization of the oral cavity, especially for the formation of dental caries and dental tartar, with use in the pharmaceutical and cosmetic industry. The invention uses a hydroethanolic solution of extracts of essential oils from aromatic plants (mint, basil, rosemary and / or cardamom), chamomile flowers and green tea, in the form of clear supernatants, obtained after extraction, filtration and centrifugation at 15,000 rpm, in which disperse thymol, pineapple juice supernatant, sea salt, sodium dicarbonate, and after pasteurization add an aqueous solution of perhydrol (3%), after which the mixture is stabilized with disodium glycerol phosphate and a natural emulsifier, in good ratios default.</p>		

<b>RO-04</b>	<b>NAME(S)</b>	<b>Andreea Hegyi / Elvira Grebenișan / Adrian-Victor Lăzărescu / Henriette Szilagyi / Vasile Meitã / Mihaela Sandu / Cornelia Baerã</b>
	<b>ORGANIZATION</b>	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development URBAN-INCERC
	<b>TITLE OF ENTRY</b>	<b>PROCESS FOR PRODUCINDG WHITE PORTLAND CEMENT-BASED CEMENTITIOUS TILING MATERIALS, WITH SELF-CLEANING CAPACITY</b>
<p>The innovativeness consists in the development of new cementitious mixtures and prefabricated elements that, by design, have self-cleaning capacity, under the effect of solar light radiation or artificial UV radiation and allow the preservation of the aesthetic appearance of buildings for a long time, reduce the degree of their degradation due to corrosion by microorganisms and have the ability to contribute to the reduction of air pollution by reducing the concentration of oxides of type NOx, SOx and water and soil pollution by substantially reducing the need for the use of substances intended for cleaning and maintenance of construction surfaces.</p>		

<b>RO-05</b>	<b>NAME(S)</b>	<b>Andreea Hegyi / Henriette Szilagyi / Vasile Meitã / Adrian-Victor Lăzărescu / Mihaela Sandu / Cezar Bulacu</b>
	<b>ORGANIZATION</b>	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development URBAN-INCERC
	<b>TITLE OF ENTRY</b>	<b>Ecological Alternative to Classic Thermal Insulation Products, by Recycling with Waste Energy Recovery of Post-Industrial Textile Waste and the Use of Vegetal and Sheep Wool Fibres</b>
<p>The aim of the project is to integrate and fully capitalize the postindustrial textile waste, natural plant fibers and sheep wool, in the framework of thermal-insulation products, as an ecological alternative to the classical thermal insulation products (polluting both when they are produced and also post-production and utilisation by their lack of biodegradability), usable in the construction field, with beneficial effects on population health, environmental protection and also to create new materials with high added value. This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS/CCCDI – UEFISCDI, project number PN-III-P2-2.1-PED-2019-0463, within PNCDI III.</p>		

<b>RO-06</b>	<b>NAME(S)</b>	<b>Tudor Panfil TOADER / Carmen-Silvia DICO / Gabriela CĂLĂȚAN / Brăduț Alexandru IONESCU / Mihail CHIRA</b>
	<b>ORGANIZATION</b>	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development URBAN-INCERC
	<b>TITLE OF ENTRY</b>	<b>Cementitious Composite Materials with Self-Healing Properties</b>
<p>This paper shows the performance recorded for two cementitious composites with self-healing capacity induced by the use of an inte-gral waterproofing admixture by mass crystallization. The experimental results obtained indicate a good self-healing capacity, quantified by a degree of healing of at least 57% after 192 hours of conditioning, respectively, total closure of cracks after 336 hours of conditioning. This work contributes to the increase of knowledge in the field of cementitious materials with self-healing capacity, indicating a possibility of obtaining this effect through the use of a waterproofing admixture by mass crystallization.</p>		

<b>RO-07</b>	<b>NAME(S)</b>	<b>Dinu-Pîrvu Cristina Elena / Popa Lăcrămioara / Ghica Mihaela Violeta / Anuța Valentina / Prisada Răzvan-Mihai / Velescu Bruno Ștefan / Talianu Marina-Theodora</b>
<b>ORGANIZATION</b>	<b>"Carol Davila" University of Medicine and Pharmacy, Bucharest</b>	
<b>TITLE OF ENTRY</b>	<b>Biocompatible oil in water microemulsions with hyaluronic acid and salicylic acid and method for obtaining thereof</b>	
<p>The invention refers to a biocompatible oil in water (O/W) microemulsion, with hyaluronic acid and salicylic acid, designed for topical application in dermatologic therapy of acne and a method for obtaining thereof. The technical issue solved by the invention consists in: (i) designing a topical system as oil in water microemulsion, (ii) selection of two phases, an aqueous and an oil phase, a surface active mixture formed by two surfactants and a cosurfactant, the selection of a biopolymer and an antiacne active, combined in various ratios in order to obtain stable systems characterized by adequate physico-chemical parameters, which can ensure the topical application and the obtaining of a superior action in acne treatment.</p>		
<b>RO-08</b>	<b>NAME(S)</b>	<b>Tintelecan Marius</b>
<b>ORGANIZATION</b>	<b>Technical University of Cluj-Napoca (TUCN)</b>	
<b>TITLE OF ENTRY</b>	<b>Wiping device of surface of the steel wire after galvanizing</b>	
<p>The patent relates to a device for wiping the surface of steel wire after galvanizing, which will finally create a thin but strong zinc layer shiny appearance. It is known that by immersing a steel wire in a molten Zn bath, on its surface are formed seven concentric layers of Fe-Zn alloy having a matte appearance; the phases formed differing by micro- hardness, by mode of crystallization and (of course) by their chemical composition. This device refer to: 1. Proper wiping of the wire on which the zinc is deposited, this being still in liquid phase; 2. Sudden cooling of the whole assembly. In these moments is used to wipe the surface of the steel wire after galvanizing, a different technique variant, in a horizontal version where some pills of asbestos are pressed on the outer surface of the wire, the wire following an ascending path after its exit from the molten zinc bath.</p>		
<b>RO-09</b>	<b>NAME(S)</b>	<b>Florin Nicolae JURCA / Razvan Alexandru INTE</b>
<b>ORGANIZATION</b>	<b>Technical University of Cluj-Napoca (TUCN)</b>	
<b>TITLE OF ENTRY</b>	<b>Variable reluctance motor with outer rotor and modular construction for e-bike applications</b>	
<p>The patent refers to a variable reluctance synchronous motor with outer rotor and modular construction. The rotor is made up of 6 modules, between modules is an element of non-magnetic separation. Each module is made up of three separate magnetic elements fixed to each other by a dovetail joint. The connecting elements are made of non-magnetic material. Each pole rotor is provided with holes that allow attachment of 3 different lengths of spokes on the same module. Each spoke is fixed by means of safety spring pin.</p>		
<b>RO-10</b>	<b>NAME(S)</b>	<b>Calin Vaida / Nicolae Plitea / Doina Pisla / Giuseppe Carbone / Bogdan Gherman</b>
<b>ORGANIZATION</b>	<b>Technical University of Cluj-Napoca (TUCN)</b>	
<b>TITLE OF ENTRY</b>	<b>Spherical robot for the rehabilitation of the proximal area of the upper limb</b>	
<p>The invention presents a spherical robotic structure for the rehabilitation of the proximal zone of the upper limb, containing three active couplers to reproduce the abduction/adduction and flexion/extension of the shoulder in the horizontal and vertical plane and the forearm pronation /supination in the vertical plane. The robotic structure has 3DOF, achieved through three active revolute joints having the axis intersection in a single point, more specifically the center of a sphere, which relative to the patient can be positioned over the rotation center of the shoulder, for the first two rotations, the third rotation being carried on around the midline of the upper limb.</p>		
<b>RO-11</b>	<b>NAME(S)</b>	<b>Ungureanu Miorita / Marina Marian Gabriel / Stoicovici Dinu Ioan / Ungureanu Nicolae Stelian</b>
<b>ORGANIZATION</b>	<b>Technical University of Cluj-Napoca (TUCN)</b>	
<b>TITLE OF ENTRY</b>	<b>System for fixing plastic bottles in rotary tightness testing apparatuses</b>	
<p>The invention relates to a system for fixing plastic bottles in rotary tightness testing apparatuses while maintaining the bottles in vertical position in transport means and ensuring their transfer from one transport means to the other.</p>		
<b>RO-12</b>	<b>NAME(S)</b>	<b>TĂMAȘ-GAVREA Daniela-Roxana / IȘTOAN Raluca / TIUC Ancuța Elena</b>
<b>ORGANIZATION</b>	<b>Technical University of Cluj-Napoca (TUCN)</b>	
<b>TITLE OF ENTRY</b>	<b>Multilayered composite panel and the method used for obtaining it</b>	
<p>The invention relates to a multilayered composite panel and the method used for obtaining it. The panel has two rigid perlite-based boards, reinforced with natural flax fiber nets, with a compact layer of flax fiber between them, using white cement as a binder. The purpose of the panel is to improve the quality of life and human health in buildings' environment by providing optimum acoustic comfort based on users' requirements. The acoustic absorption coefficient of the non-perforated composite panel was high at medium frequencies. To optimize the sound absorbing properties of the multilayered composite panel, perforations were made on one of the rigid boards of the panel.</p>		



<b>RO-13</b>	<b>NAME(S)</b>	<b>BORLEA (MUREȘAN) Simona Ioana / TIUC Ancuța Elena / NEMEȘ Ovidiu</b>
<b>ORGANIZATION</b>	Technical University of Cluj-Napoca (TUCN)	
<b>TITLE OF ENTRY</b>	<b>Innovative use of sheep wool for obtaining new materials with sound-absorbing properties</b>	
<p>The aim of this study is to obtain new materials with sound absorbing properties using the sheep's wool as raw material. Seven new materials were obtained by hot pressing (60 ÷ 80 °C and 0.05 ÷ 6 MPa) of wool fibers and one by cold pressing. Results shown that by the simply hot pressing of the wool, a new product is obtained which can be processed and easily manipulated. The obtained materials have very good sound absorption properties with acoustic absorption coefficient values over 0.7 for the frequency range 800 ÷ 3150 Hz; the results prove that the sheep wool has a comparable sound absorption performance to that of mineral wool or recycled polyurethane foam. Hot pressed materials have a much higher density than cold pressed materials. The density of materials made from hot pressed sheep's wool increases with increasing pressure.</p>		

<b>RO-14</b>	<b>NAME(S)</b>	<b>Mircea-Iosif Rus / Adrian-Victor Lăzărescu / Larissa Margareta Bătrâncea</b>
<b>ORGANIZATION</b>	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development URBAN-INCERC	
<b>TITLE OF ENTRY</b>	<b>BLOCKCHAIN TECHNOLOGY AND RESEARCH &amp; DEVELOPMENT ACTIVITY</b>	
<p>The aim of the project is to study and analyze the possibility of accessing funds through European projects in order to assess the progress in the field of science and technology, by supporting cooperation and access to information and providing financing lines of activity aimed at issues related to strategies developed in industrial and technological leaders in the field of ICT.</p>		

<b>RO-15</b>	<b>NAME(S)</b>	<b>Corneliu Birtok Baneasa / Adina Budiul Berghian</b>
<b>ORGANIZATION</b>	Politehnica University Timișoara, Faculty of Engineering Hunedoara	
<b>TITLE OF ENTRY</b>	<b>AIR by CORNELIU intake manifold insulation layer</b>	
<p>AIR by CORNELIU intake manifold insulation layer is dedicated to the reduction of heat transfer on the intake system, mainly in the case of the aluminum alloy intake manifold. One method of reducing the heat loss of the intake manifold is to implement thermal protections on its outer surface. The main goal is the development of a new thermal insulation composite material, based on polyurethane foam, silicone, and cork in different proportions named SPTI (Silicone Polyurethane Thermo-Insulating).</p>		

<b>RO-16</b>	<b>NAME(S)</b>	<b>Kamel Earar / Anamaria Zaharescu / Oleg Solomon / Gabi Topor</b>
<b>ORGANIZATION</b>	Dunarea de Jos University of Galati	
<b>TITLE OF ENTRY</b>	<b>Process for decontamination of the endodontic space and that with pathogenic periodontal microorganisms</b>	
<p>The invention relates to a process for decontamination of the endodontic space and that with pathogenic periodontal microorganisms, which uses the coexistence of two unconventional treatment systems: injection of 5% hydrogen peroxide, chemically stabilized and antimicrobial laser photodynamic therapy type DENMAT - SOL.</p>		

<b>RO-17</b>	<b>NAME(S)</b>	<b>ȚÎȚU Aurel Mihail / OPREAN Constantin / MĂRGINEAN Ion / ȚÎȚU Ștefan / MOLDOVAN Alexandru Marcel / BOGORIN-PREDESCU Adrian</b>
<b>ORGANIZATION</b>	Romanian Association for Alternative Technologies Sibiu – A.R.T.A. Sibiu	
<b>TITLE OF ENTRY</b>	<b>ELECTRICAL PERSONAL INDIVIDUAL CAR (Patent pending: A2015 00552)</b>	
<p>The invention, namely this automobile is meant to be an economical and environmentally friendly mean of transport in the city, where most of the time you are driving alone, so this car is replacing the classic 5 seat cars with 1 seat car, but keeping a personal comfort similar to that provided by above mentioned classic cars.</p>		

<b>RO-18</b>	<b>NAME(S)</b>	<b>Denisa FICAI / Ioana ARDELEAN / Cornelia ILIE / Manuela CĂLIN / Elena-Valentina FUIOR et al.</b>
<b>ORGANIZATION</b>	University POLITEHNICA of Bucharest	
<b>TITLE OF ENTRY</b>	<b>Vertical (electro)magnetic separator of isomagnetic nanoparticles A/01055/05.12.2018</b>	
<p>The invention "Vertical (electro) magnetic separator of isomagnetic nanoparticles" refers to obtaining an electromagnetic device that allows the separation of magnetic particles from non-magnetic ones and the separation of isomagnetic particles by classes. The separation technology consists of passing a magnetic fluid flow/ suspension of magnetic particles through an (electro)magnetic field of predetermined characteristics. From a constructive point of view, the magnetic separator involves one or more magnetic zones in which the separation of isomagnetic particles takes place. In this sense, the flow parameters and the magnetic field related to the separation zones can be optimized.</p>		

<b>RO-19</b>	<b>NAME(S)</b>	<b>ULMEANU Mihaela-Elena / DOICIN Cristian-Vasile / DAVIȚOIU Dragoș / TUNSOIU Daniela / TUNSOIU Nicolae / MURZAC Roman / PARASCHIV Alexandru / DOICIN Irina-Elena / SEMENESCU Augustin / COSTOIU Mihnea / MATEȘ Ileana Mariana</b>
<b>ORGANIZATION</b>		University POLITEHNICA of Bucharest
<b>TITLE OF ENTRY</b>		<b>BIOCOMPOSITE MEDICAL DEVICE FOR EXTENSIVE RECONSTRUCTION OF SOFT TISSUE AND ITS METHOD OF MANUFACTURING</b>
<p>The invention relates to a biocomposite medical device that facilitates the surgical repair and reconstruction of an otherwise irreparable inguinal hernia and by a technique that alleviates the problem with a very low risk of recurrence. The biocomposite medical device consists of the reinforcement layer of silk fibre fabric and the composite material sheet composed of a mixture of silicone and silk and polyester ground fibres. The biocomposite medical device also features modular gripping elements throughout the perimeter.</p>		

<b>RO-20</b>	<b>NAME(S)</b>	<b>Catalin Marian DUMITRESCU / Marius MINEA / Ilona COSTEA / Augustin SEMENESCU / Ionut-Cosmin CHIVA / Viviana MINEA</b>
<b>ORGANIZATION</b>		University POLITEHNICA of Bucharest
<b>TITLE OF ENTRY</b>		<b>SYSTEM AND METHOD FOR DETECTING ACTIVE UNMANNED AIRCRAFT SYSTEMS (UAS) BY DEEP LEARNING ANALYSIS OF MICROPHONE ARRAY AND CAPTURE IMAGES</b>
<p>The invention relates to a system and a method for detecting, identifying and classifying Unmanned Aircraft Systems (UAS/drones), based on the concept of competition at the level of a collection of artificial neural networks with performance in identifying acoustic signals, by means of a data fusion computing unit for processing, analysis and classification of drones based on associated acoustic and image fingerprints. The system consists of the following components: the microphones array arranged in a spiral with a built-in video camera with adaptive weights of multi-channel type, for the detection of acoustic signals specific to drones; computational architecture for processing acoustic signals, extracting the characteristic features of drone (UAS) - specific acoustic fingerprint and data fusion classification.</p>		

<b>RO-21</b>	<b>NAME(S)</b>	<b>Florin MICULESCU / Andreea MAIDANIU / Mihnea Cosmin COSTOIU / Augustin SEMENESCU / Marian MICULESCU / Florentina IONITA-RADU / Marius ARGHIRESCU</b>
<b>ORGANIZATION</b>		University POLITEHNICA of Bucharest
<b>TITLE OF ENTRY</b>		<b>METHOD FOR OBTAINING HYDROXYAPATITE SCAFFOLDS WITH PREDETERMINED PHYSICO-CHEMICAL CHARACTERISTICS FOR MAJOR BONE RECONSTRUCTION</b>
<p>The proposed method consists in fabrication of scaffold structures for major bone defects repair, based on monophasic (hydroxyapatite – HAP) or biphasic (hydroxyapatite + tricalcium phosphate - <math>\alpha</math>-TCP or <math>\beta</math>-TCP) ceramics which fulfill the product requirements related to mechanical strength and biocompatibility. The technical problem solved by this invention is the need for adequate adaptation of phase order and phase parameters, and for developing a specific procedure for producing a scaffold structure for major bone repair with predictable porosity and mechanical strength. The described method solves the technical problem by obtaining a predetermined ratio of HAP/TCP, after a preliminary stage of hydroxyapatite production by deproteinisation using thermal routes.</p>		

<b>RO-22</b>	<b>NAME(S)</b>	<b>NICULESCU Marius / ANTONIAC Vasile-Iulian / SEMENESCU Augustin / DOICIN Cristian-Vasile / ULMEANU Mihaela-Elena / COSTOIU Mihnea Cosmin / MURZAC Roman / MATEȘ Ileana / DAVIȚOIU Dragoș-Virgil</b>
<b>ORGANIZATION</b>		University POLITEHNICA of Bucharest
<b>TITLE OF ENTRY</b>		<b>ACETABULAR MILLING DEVICE</b>
<p>The invention relates to an acetabular milling device used in hip joint reconstruction surgery. The acetabular milling device is made up of a cylindrical front cutter assembled with a quick-change bush and a central rod. The device allows a movement on the rods' axis direction of the milling body, limited to the distance defined by the height of the osteophyte acetabular formations. The geometry of the active edges ensures the controlled direction of the bone chips within the collecting cup through the milling tooth profile, for which the angle of alignment (<math>\alpha</math>) is greater than the angle of clearance (<math>\gamma</math>).</p>		

<b>RO-23</b>	<b>NAME(S)</b>	<b>Petre Lucian SEICIU / Valentin BARBU / Ionel MIHAI / Georgiana Ionela PADURARU / Tudor PRISECARU / Mihai BERTEANU</b>
<b>ORGANIZATION</b>		University POLITEHNICA from Bucharest
<b>TITLE OF ENTRY</b>		<b>Spastic Forearm Positioning Device for Botulinum Injection after Stroke</b>
<p>The patent presents Spastic Forearm Positioning Device for Botulinum Injection after Stroke (Armlnject) for spasticity treatment purpose. Armlnject is developed to position and block the spastic forearm to facilitate precise botulinum injection in the spastic muscle in persons after stroke. Armlnject can be attached to any kind of chair and can be used for right or left forearm. Armlnject has 11 degrees of freedom, so it is adjustable on any anatomic conformation. The allows injection to be done on any forearm side. Armlnject enhances the botulinum toxin injection accuracy and increases treatment efficiency.</p>		

<b>RO-24</b>	<b>NAME(S)</b>	<b>Niculae Nicușor</b>
<b>ORGANIZATION</b>	National Institute for Research and Development for Land Improvements, Bucharest, Romania (INCDIF ISPIF)	
<b>TITLE OF ENTRY</b>	<b>Water running engine</b>	
<p>This paper presents the necessary and sufficient details to it be making an engine mechanism what consists as main parts from an exhaust pump with flexible membrane, pump situated next to the tank and positioned below its lower surface. The exhaust pump with flexible membrane, of the water, exhaust carried out after filling the tank with water at the capacity allowed by the floating body inside it, works driven by the elastic force of some springs or by a weight/ballast. The connection between the tank with the floating body inside it and the exhaust pump with the flexible membrane located next of the tank, will be assuring by a lever, another component of the mechanism.</p>		

<b>RO-25</b>	<b>NAME(S)</b>	<b>Mircea MANOLESCU / Paul Georgian TURCU / Diana Mihaela CALOTA</b>
<b>ORGANIZATION</b>	INOVESS GROUP	
<b>TITLE OF ENTRY</b>	<b>iSentinel® EVOBUILDING - THE EVOLUTIVE DISASTER INTELLIGENT PROTECTION SOLUTIONS SAFEBUILDING</b>	
<p>An open, fully customizable, intelligent safe building, AI and IoT integrative solutions driven for life saving and assets and environment protection in case of major earthquake by triggering automatic physical protection/early warning. Structured on three levels, detection / decision / execution allowing to integrate IA assistance with collaborative inputs and outputs to any existing or future protection equipment which allows to fulfill future needs. Modular conception makes possible to add some others gradually satisfying the increasing needs of the users. A special training makes users contain their reactions in the rational zone and to became savers in stand of victims.</p>		

<b>RO-26</b>	<b>NAME(S)</b>	<b>LASCHI MIHAI</b>
<b>ORGANIZATION</b>	Romanian Inventors Forum Association, branch of BACAU, ROMANIA	
<b>TITLE OF ENTRY</b>	<b>Equipment for magnetic fluids treatment</b>	
<p>The invention refers to an installation for the magnetic treatment of fluids, intended for the use of the magnetic field in the treatment of fluids and their use in agriculture, animal husbandry, vegetable growing, fruit growing, viticulture, balneology, medicine and environment (domestic water treatment: the water passes through separated units of successive treatment and then, it can be used under the domestic proposed purposes).</p>		

<b>RO-27</b>	<b>NAME(S)</b>	<b>Marin Laurentiu</b>
<b>ORGANIZATION</b>	National Institute for Research and Development in Chemistry and Petrochemistry – ICECHIM Bucharest	
<b>TITLE OF ENTRY</b>	<b>Bl. 130245 / 2020 Wearproof and slippageproof coating on polyurethane nanocomposite structure and the process for its obtaining</b>	
<p>The invention relates to the obtaining of a polyurethane nanocomposite used for coating surfaces with heavy pedestrian traffic from inside or outside which simultaneously possess anti-wear and anti-slip properties So as to ensure adhesion and to protect against the loss of the balance of the people in the conditions in which the surface would become extremely slippery (snow debris, detergent water) as well as to have an abrasion resistance which contributes to extending its useful life. The material is on a three-dimensional cross-linked polyurethane structure modified on the surface with active elements that give it the desired properties</p>		

## RUSSIA

<b>RU-01</b>	<b>NAME(S)</b>	<b>Miroshnichenko Igor Pavlovich / Parinov Ivan Anatolievich</b>
<b>ORGANIZATION</b>	Don State Technical University / Southern Federal University	
<b>TITLE OF ENTRY</b>	<b>Complex of optical interference devices for contactless measurements of small surface displacements of control objects</b>	
<p>It is designed for contactless measurements of the small displacements of control object surfaces in the study of physical and mechanical properties and diagnostics of the state of structural materials by acoustic active methods of non-destructive testing as part of stationary and mobile diagnostic stations in mechanical engineering, instrumentation, fuel and energy complex, etc. It contains devices for measuring small spatial displacements of control object surfaces and for protection against internal and external destabilizing influences, as well as software for a priori modeling of the measurement process, preparation and performance of the measurement process, processing data and analysis of its results, as well as for computational and theoretical modeling of functional characteristics in the development of new measuring instruments. It is protected by 6 patents of the Russian Federation for inventions and 13 Russian certificates of the state registration of computer software.</p>		

## SAUDI ARABIA

<b>SA-01</b>	<b>NAME(S)</b>	<b>HANAN AL-GHAMADI</b>
<b>ORGANIZATION</b>	The Union of Arab Academics	
<b>TITLE OF ENTRY</b>	<b>The Personal wheel for managing scientific research</b>	
The design idea arose in order to fill the research faltering gap for students or teaching staff on completing their scientific career under the pretext of the difficulty of accomplishment and the lack of clarity; so the design idea consisted of five stages depending on using the design thinking to provide the researchers with the scientific research management wheel from the idea to the material publication. This can be done by using the four elements of design thinking for solving problems (What if? What is? What wow? What work?)		

<b>SA-02</b>	<b>NAME(S)</b>	<b>Dr. Mona Mohammad Zaid AL-Sharif</b>
<b>ORGANIZATION</b>	Jeddah University	
<b>TITLE OF ENTRY</b>	<b>Chromosomes Spreading Tool</b>	
The invention is a device that spreads chromosomes on a glass slide uniformly and non-randomly. It consists of a column with a base with a glass slides, an electronic dropper holder at the top and several electronic switches including: a turn-on/off switch and a switch for moving the glass slides. The fall of drops by random method (use of hands : one hand to hold the dropper and the other hand to hold the glass slide) needs enough time to adjust the balance of its falling of cells suspension solution on the glass slides, the remote distance required between the dropper and the slide until cells rupture and chromosomes spreading. Also, the use of only one drop of Cells suspension solution each time using a regular hand-dropper is not sufficient for study and examination. This Invention overcomes the above mentioned obstacles by a design that combines three important factors; namely the balance in drops fall, the distance specifying cells rupture and chromosomes spreading, and another factor, i.e. saving time and effort through distillation on a number of slides instead of one slide at a time. This device is characterized by simplicity in installation, free of complexity and mobility. The aim of the invention of this device is to find a practical low-cost, effortless and an effective way to replace the traditional method that is based on random fall of Cells suspension solution on the glass slides and cells rupture and chromosomes spreading using hands.		

## SENEGAL

<b>SN-01</b>	<b>NAME(S)</b>	<b>Etienne Thibault</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>Agglofil</b>	
Agglofil is a resistant product that can replace the chipboard wood used in the manufacture of furniture, parquet floors, thermal and sound insulation partitions, etc. It helps prevent the felling of trees. The chipboard wood used in the manufacture of certain products (furniture, parquet floors, etc.) is not very resistant. The manufacture of certain products (furniture, parquet floors, etc.) is based on the felling of trees and contributes to deforestation. Agglofil is more resistant (stronger, resistant to water, shocks and pressure) than the chipboard wood currently used. It helps to slow down deforestation for the protection of the environment and reduce production costs.		

<b>SN-02</b>	<b>NAME(S)</b>	<b>Etienne Thibault</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>Refreshing blanket</b>	
There are two types of products using the proposed technology: blankets and mattress toppers. The uses of these products are however very different since the blankets are designed to be used in hospitals in hot countries, when the mattress topper is designed to be used by an individual to refrigerate his mattress in hot weather. Cooling blankets work on a simple principle: refrigerate a fluid and circulate it in a blanket designed in a material specially adapted to easily propagate thermal energy. The invention is designed to operate on solar power or 12V direct current, and even 220V alternating current. The piping used to conduct the fluid is soft Kevlar, known for its good resistance to heat and wear. The fabric which serves as a receptacle for this thermal energy is itself adaptable to the needs of the uses. The fluid is therefore cooled in an external box, and returned to the fabric at a temperature requested by the user.		

## SERBIA

<b>RS-01</b>	<b>NAME(S)</b>	<b>Aleksandra Ivetić</b>
<b>ORGANIZATION</b>	University of Belgrade	
<b>TITLE OF ENTRY</b>	<b>Silage stabilizers</b>	
Silage stabilizers present an inventive element in the process of plants ensiling in horizontal silos, silo bags and roll bales. It makes a huge difference from present commercial additives, because only Silage stabilizers eject oxygen from silo mass. Silage stabilizers have numerous beneficial effects on the ensiling process providing a longer period of nutritive value of silage preservation. The novelties of the invention are components of organic origin that are safe for humans and animals and are approved by EU. National Serbian patent application and international WIPO PCT application done in 2020.		

## SINGAPORE

<b>SG-01</b>	<b>NAME(S)</b>	<b>MR LEOW WEE DAR</b>
<b>ORGANIZATION</b>	SINGAPORE INVENTORS DEVELOPMENT ASSOCIATION	
<b>TITLE OF ENTRY</b>	<b>AIRBORNE PATHOGENS BUSTER (APB)</b>	
The Airborne Pathogens Buster (APB) creates a suction force at an air inlet that is positioned around the mouth or nose region of a living being or person. Airborne pathogens exhaled from the person are being sucked into the APB through the air inlet. The air containing these pathogens go through a sanitization process before it is released back to the environment.		

<b>SG-02</b>	<b>NAME(S)</b>	<b>TAN Wei Kok / Joleen Seto</b>
<b>ORGANIZATION</b>	Citizen Innovation	
<b>TITLE OF ENTRY</b>	<b>Green Estate Micro-Management System (GEMS)</b>	
Green Estate Micro-management System (GEMS) changes user behavior through developing awareness of green habits. GEMS monitors energy usage from the fuse box and send it to the cloud for analysis. To communicate with the users, an AI personal assistant is connected to messenger and help users reduce their green footprint.		

## SLOVENIA

<b>SI-01</b>	<b>NAME(S)</b>	<b>Srecko Pisnik / Drago Vrhovnik / Jasmina Pisnik</b>
<b>ORGANIZATION</b>	N/A	
<b>TITLE OF ENTRY</b>	<b>EASEBelt DV - armrest with radiation protection</b>	
Prevention of carpal tunnel syndrome. The subject of the invention is a movable support for the hands, which with built-in devices for protection against electromagnetic and similar radiation reduces the possibility of harmful identical repetitive movements, while providing support and easier movement in the wrist when sitting and working with a computer. The problem solved by the invention is to prevent the occurrence of pain in the wrist, numbness of the palms and fingers and at the same time protect the user from electromagnetic and similar radiation. It is about preventing breakdowns caused by repetitive movements and overloads, which can even lead to		

## SPAIN

<b>ES-01</b>	<b>NAME(S)</b>	<b>ANTONIO SASTRE SEGÚ</b>
<b>ORGANIZATION</b>	ARTINDUSTRI MENORCA S.L.U.	
<b>TITLE OF ENTRY</b>	<b>COMPLEMENT FOR SANDALS</b>	
NEW ACCESSORY FOR THE TYPICAL AVARCA MENORQUINA. This complement of sandals designed for Menorcan avarcas in a bracelet or ankle strap that goes to the ankles and is attached to Menorcan sandals or avarcas that have, like these, a fastening strap behind.		

<b>ES-02</b>	<b>NAME(S)</b>	<b>ANTONIO SASTRE SEGÚ</b>
<b>ORGANIZATION</b>	ARTINDUSTRI MENORCA S.L.U.	
<b>TITLE OF ENTRY</b>	<b>New traction device for Sandals</b>	
New traction device for sandals. For Menorcan avarcas type sandals with back strap to the heel or similar. This new device or system allows the straps of the back strap type sandals such as the Menorcan avarcas to have traction by giving them an elastic or flexible part that makes the strap adapt to the user's foot without stretching and losing its fit. Function that is to hold the heel of the foot. Furthermore, this new traction device for sandals has the possibility or adaptability of incorporating electrical energy generation systems by taking advantage of the driving force of the user of the sandals, for example with induction energy.		

## SRI LANKA

<b>LK-01</b>	<b>NAME(S)</b>	<b>NIZAMUTHEEN MOHAMED ANEES</b>
<b>ORGANIZATION</b>	SRILANKAN GERMAN TRAINING INSTITUTE	
<b>TITLE OF ENTRY</b>	<b>RAC19</b>	
01.Body Covering : This is made up of wood the length of 33 centre metre, width of 35 centre metre and height of 39 centre metre. 02Running system : In this system ,money roller has been fixed with AC motor. Money roller that has been fixed intakes money (paper note)one by one. Money (paper note intaken by money roller will be sent to temperature supplying unit. 03Heating system : This system consists of 12Voltage 3 Ampere transformer. Using this temperature will be supplied to both sides of the money (paper not). 1. 04Liquid system: This consists of AC motor using this ,liquid rollers will be rotated . Money (paper note) will be intaken and exited by both rollers that are rotated. Sanitizer coming from liquid tank and liquid pump will be exited from holes of the liquid roller.		

<b>LK-02</b>	<b>NAME(S)</b>	<b>KUREMPALA RALALAGE CHATHURA MADHUMAL</b>
<b>ORGANIZATION</b>	SRI LANKA INVENTORS COMMISSION	
<b>TITLE OF ENTRY</b>	<b>WALKING CHARGER</b>	
<p>• Using the method of rotating discs such as CD/DVD/VCD. • Moving the dinamo clockwise and anticlockwise using the levers. • Rectifying AC generated in the dinamo in to DC. • Charging the mobile phone battery using the DC. • Reducing the friction between the leg and the ground to supply stable DC to the mobile phone. So we can charge 75% of the battery within 1.5 hours' time by normal walking speed.</p>		

<b>LK-03</b>	<b>NAME(S)</b>	<b>Wijayapala WELGAMA / W.S.A. Engineering Techniques / Meril Morayas / W.W.Dilantha FERNANDO</b>
<b>ORGANIZATION</b>	SRI LANKA INVENTORS COMMISSION	
<b>TITLE OF ENTRY</b>	<b>Anti Covid-19 Distance Keeper &amp; 5 in 1 SERVER</b>	
<p>In facing the Pandemic situation in the world, I have invented the above in order to serve Covid 19 patients while keeping the distance required in avoiding human touch to prevent spread of the virus among public to overcome the drastic present COVID 19 SITUATION IN THE WORLD. As it is a 5 in 1 tool to serve; 1. Meals 2. Medicine (tablets, liquid) Liquid (water/tea/coffee/juice etc). 4 Linen (B.sheets, pillow, face towel, etc) and Printed materials(newspapers, magazines, letters etc.)</p>		

<b>LK-04</b>	<b>NAME(S)</b>	<b>Bethmage Madusha Rangapriya Perera</b>
<b>ORGANIZATION</b>	Sri Lanka Inventors Commission	
<b>TITLE OF ENTRY</b>	<b>Land Slide Emergency Notifier</b>	
<p>Blows a loud siren to nearby residents and notify geological department if a potential land slide underneath the ground is detected.</p>		

<b>LK-05</b>	<b>NAME(S)</b>	<b>Mr/Waralla md yapa maha Vidyalaya</b>
<b>ORGANIZATION</b>	Sri Lanka Inventors Commission	
<b>TITLE OF ENTRY</b>	<b>Modified arm support</b>	
<p>The goal of invention is to be used in the event of a fracture of the lower part of the knee in an arm or leg while the patient is being taken to the hospital or treatment this consist of four wooden splints there is an inflatable balloon inside it. This is placed on the fracture site of the patient and when the balloon, the limbs remain tight and the arm or legs dose not move. What the balloon dose it put pressure on it.</p>		

<b>LK-06</b>	<b>NAME(S)</b>	<b>Anarkalie Dias</b>
<b>ORGANIZATION</b>	Musaeus college	
<b>TITLE OF ENTRY</b>	<b>Herbal sanitizer</b>	
<p>This is a herbal sanitizer, which is a body clearing pack by using after a bath including herbs. I have used turmeric, aloe vera, false calumba kohomba (neem tree leaves and rose petals. I have used an aluminum foil bags to cover herbs and market it. We have to only use it by boiling herbs in water and can use as a body cleanser and aloe vera sanitizer to clean face.</p>		

<b>LK-07</b>	<b>NAME(S)</b>	<b>Wijayapala WELGAMA / Illangage Shaveen Perera / Dhammanarachchige Don Gihan Joseph / Dhammanarachchige Don Menone Sajith</b>
<b>ORGANIZATION</b>	Sri Lanka Inventors Commission	
<b>TITLE OF ENTRY</b>	<b>Anti Covid 19 virus killer steamer</b>	
<p>Pandemic situation all over the world. Virus Killer. Covid 19 Every country in the world in a critical situation whether it is a developed or undeveloped country. Vaccination is the only solution...? At this stage We came forward to invent Covid 19 virus killer to order to develop the trust of housewives to help to fight against the virus.</p>		

<b>LK-08</b>	<b>NAME(S)</b>	<b>K.D SRIMAL CHRISANTAS CHINTHAKA</b>
<b>ORGANIZATION</b>	Sri Lanka Inventors Commission	
<b>TITLE OF ENTRY</b>	<b>POWER LIMIT TRAVELER WIRE CORD</b>	
<p>This is a current controlled Traveler extinction power cord. Only 350 watts of current can be taken out of it. If more current is taken out, the relay device mounted inside will be activated and the power will be disconnected. This is done to prevent electrical accidents. These small extension power codes for sale in the market are used to extract small currents. Especially for charging phones (less than 100 watts of current is sufficient). But unknowingly drawing more current through it can cause the power code to overheat and catch fire. That risk has been avoided with this new device I made.</p>		

<b>LK-09</b>	<b>NAME(S)</b>	<b>WARNAKULASURIYA DINESH SASIKA SRIMAL FERNANDO / BUHUTI KANKANAMLAGE NIRANJALA CHANDRASIRI</b>
<b>ORGANIZATION</b>	<b>SRI LANKA INVENTORS COMMISSION</b>	
<b>TITLE OF ENTRY</b>	<b>SELF-QUARANTINE PEOPLE MONITORING AND DISTANCE PATIENT VISITING SYSTEM</b>	
<p>A Wearable wireless device and it can automatically or remotely monitoring patient's physical conditions and his current location. With this device Possible to recognize The epilepsy. If You Sending a message for requesting body temperature of the patient, The device Check body temperature with his current location And reply to your mobile or server. when your Child's body temperature is increase (37.1 °C) , the instrument automatically alarming with beeps and sending messages to pre-saved numbers. You can Monitor the past movement track of patient. it helps to recognize the visited places of the Covid19 or other patient. This device Helps to recognize so many diseases.</p>		

## **SUDAN**

<b>SD-01</b>	<b>NAME(S)</b>	<b>OMER ALFAROUG ALONUR AHMED ALKHDR</b>
<b>ORGANIZATION</b>	<b>OMDURMAN ISLAMIC UNIVERSITY</b>	
<b>TITLE OF ENTRY</b>	<b>Diagnostic Medical Bandage (DMB)</b>	
<p>Rapid detection of bacteria and the indication of tumours in the wounds: This invention based on the interaction of enzymes with substrate and reagent by reacting all bacterial enzyme which cause wound infection separately through a small bandage applied to the wound as well as special enzymes for the most common skin surface cancer ( non-melanoma skin cancer).</p>		

## **SWEDEN**

<b>SE-01</b>	<b>NAME(S)</b>	<b>Sajad Shabanpourhaghighi / Neda Bagherian</b>
<b>ORGANIZATION</b>	<b>N/A</b>	
<b>TITLE OF ENTRY</b>	<b>METHODS AND APPARATUS FOR TREATMENT, DESALINATION AND STERILIZATION OF WATER BY BOILING AT AMBIENT TEMPERATURE WITH REDUCED PRESSURE</b>	
<p>The invention of method and apparatus for treatment, desalination and sterilization of water by boiling at ambient temperature with reduced pressure related to the mechanism, apparatus and methods to treat and sterilize the water at the ambient temperature by reducing pressure (negative pressure) and transferring it to the storage tank or urban water supply system with the simplest equipment in all critical and non-critical conditions contains a cylinder fixed in a non-potable water (sea water) from the tick open end where in the contaminated water level rises slightly above the thickness part of the cylinder and by reaching the inside water pressure of the cylinder to a pressure close to vacuum, the evaporation of water in the cylinder takes place then resulted vapor go to the vacuum pump and due to increasing pressure convert from the gas phase to a liquid phase.</p>		

## **SWITZERLAND**

<b>CH-01</b>	<b>NAME(S)</b>	<b>Ms. Francesca Melera</b>
<b>ORGANIZATION</b>	<b>Frel Solutions Sagl</b>	
<b>TITLE OF ENTRY</b>	<b>Ergonomically shaped eyewear holder designed to support eyewear temple tips holding on a wearer's neck</b>	
<p>An accessory for reading glasses (and sunglasses): a set of two end caps that can be slid over the temple tips of a pair of reading glasses, so the glasses can be worn around the neck when not needed.</p>		

## **SYRIA**

<b>SY-01</b>	<b>NAME(S)</b>	<b>AbdulRahman Hamdi</b>
<b>ORGANIZATION</b>	<b>Bright Inventors</b>	
<b>TITLE OF ENTRY</b>	<b>Educational device for checking electronic components</b>	
<p>A device designed to teach children how to check electronic elements and their functions and how they work. The device consists of a base on which a "bread board" is installed, an Avometer, and a DC and AC electric feeding device. At the end of the device's base there is a special place to install a tablet device used to display the video of electronic parts, in addition to As for circuit design programs, there is a tray with cards for each electronic component, in which there is a full explanation of the electronic component and a diagram, in addition to another tray in which all kinds of electronic components are required.</p>		

<b>SY-02</b>	<b>NAME(S)</b>	<b>Mustafa Ahmad Hamdi / Abdulrahman Hamdi</b>
<b>ORGANIZATION</b>	Bright Inventors	
<b>TITLE OF ENTRY</b>	<b>Safe removal of the employee from the client</b>	
<p>The employee's safe isolation device for the customer consists of a parallel rectangular channel open from the top and from the bottom, and the channel is provided with a turbine to pump air from the top through it to pass over a set of sterilizing lamps that work with ultraviolet rays to sterilize the air and kill any bacteria or viruses in the air, and the air exits from the bottom to form a curtain. Sterilized air isolates the employee from the client. At the bottom of the window, a special device for sterilizing documents and cash is also sterilized by means of rows of sterilization lamps located in the channel to pass the documents to exit from the other side sterile.</p>		

<b>SY-03</b>	<b>NAME(S)</b>	<b>Mustafa Ahmad Hamdi</b>
<b>ORGANIZATION</b>	Bright Inventors	
<b>TITLE OF ENTRY</b>	<b>Integrated bio digester</b>	
<p>The integrated bio-digester is a unit for producing compressed pure methane gas using normal, solid and hard organic residues, after preparing it by means of a closed preparation and cooking tank by the thermal cooking process with disassembled materials that help to ripen and sterilize them and increase their surfaces exposed to anaerobic bacteria. Thermal solar, then pumps the components to the main digester empty of oxygen using nitrogen, and the digester is air-conditioned using solar energy according to the ideal temperatures for the growth of anaerobic bacteria.</p>		

<b>SY-04</b>	<b>NAME(S)</b>	<b>AbdulRahman Hamdi</b>
<b>ORGANIZATION</b>	Bright Inventors	
<b>TITLE OF ENTRY</b>	<b>solar water drip backpack</b>	
<p>The solar water distillation backpack is a portable device for distilling salt water in trips and camps. It consists of a backpack divided into two parts, and a water bag divided into two parts. The first section contains a black bag containing salt water inside, and the second section is a bag for fresh water, and both The two sections connect to each other through a corridor, the bag is opened in reverse and placed in the sun, the sun is on the section where the salt water is, while the second section for fresh water is in the shade, helps to cool the section for fresh water, a fan powered by solar energy, while the lift is raised The temperature of the section containing the salt water by means of a foldable garage that reflects the sun's rays onto the bag of salt water to aid in vaporization quickly.</p>		

## TAIWAN

<b>TW-01</b>	<b>NAME(S)</b>	<b>TCI Co., Ltd.</b>
<b>ORGANIZATION</b>	TCI Co., Ltd.	
<b>TITLE OF ENTRY</b>	<b>Acerola Unripe Fruit</b>	
<p>The climate and environmental conditions are the most appropriate region for acerola unripe fruit. We select green acerola unripe fruit, before its turn red. We harvest green acerola unripe fruit at the special time which accumulated highest bioactivity. Acerola unripe fruit extract from green acerola unripe fruit, before acerola turn red. The flavonoids were 2.34 times higher than the ripen Acerola, and the proanthocyanidins were 13.3 times higher. Two key proteins as function of support skin are Collagen and elastin. Acerola unripe fruit can enhance 8% elastin and 21% Collagen proliferation in fibroblast. Acerola unripe fruit extract had good inhibitory activity of <math>\alpha</math>-amylase. Prevent starch digestion and to avoid absorbs excess calorie. Acerola unripe fruit extract can inhibit lipase activity, and prevent lipid digestion, reduce fat accumulation.</p>		

<b>TW-02</b>	<b>NAME(S)</b>	<b>TCI Co., Ltd.</b>
<b>ORGANIZATION</b>	TCI Co., Ltd.	
<b>TITLE OF ENTRY</b>	<b>Aronia Extract</b>	
<p>Aronia Extract can inhibit of oxidation under blue light and growth of melanin formation. Aronias are rich in anthocyanins, proanthocyanidins, polyphenols and nutrients. They are the most advanced antioxidants in all fruits and vegetables. With top-grade polyphenols, ORAC of aronia is the strongest of all berries, which is twice as much as blueberries, and 8.6 times as much as cranberries. Aronias Extract can remove free radicals and provide ultimate antioxidant activity. TCI found that Aronia Extract protects skin cells and highly resistant to oxidation decreased significantly by 93% when facing to high-energy blue light. Aronia Extract provides the skin with antioxidant capacity and completely blocks the root cause of aging. TCI found that Aronia Extract protects skin cells and highly resistant to melanin formation decreased significantly by 16% when facing to high-energy blue light. Aronia Extract provides the skin whitening power and breaks the possibility of blackening.</p>		



<b>TW-03</b>	<b>NAME(S)</b>	<b>TCI Co., Ltd.</b>
<b>ORGANIZATION</b>	TCI Co., Ltd.	
<b>TITLE OF ENTRY</b>	<b>Carica Papaya Ferment</b>	
<p>Carica Papaya Ferment can enhance skin activity, achieve breast enlargement, increase skin brightness. From 2018 to 2022, the global breast enlargement product market will grow at a compound annual growth rate of 4.02%. Rich in papain and rich in vitamin C, it can help breast enlargement, moisturize skin and anti-aging effect. Saponins have the effect of enhancing collagen proliferation. The Green papaya's total saponin increased by 5.2 times after fermentation. Carica Papaya Ferment improves mitochondrial activity and promotes skin fibroblast proliferation. Green papaya enzymes can make the chest full and firm. On average, you can increase your bust by 1.1cm! After 8 weeks of continuous drinking, the skin's luster increased significantly by 9.8%. Carica Papaya Ferment can improve premenstrual and menstrual discomfort.</p>		

<b>TW-04</b>	<b>NAME(S)</b>	<b>TCI Co., Ltd.</b>
<b>ORGANIZATION</b>	TCI Co., Ltd.	
<b>TITLE OF ENTRY</b>	<b>Golden Formula</b>	
<p>TCI's specially selected gold formula prebiotics which can help the growth of the new-generation probiotic - Parabacteroides goldsteinii (PG) in the intestines which can adjust the intestinal flora, improve intestinal leakage, weight loss, fat loss and help defecation. TCI's exclusive research formula prebiotics including fructooligosaccharides, inulin, and TCI patented IBD raw materials: kiwifruit enzyme. The three elements are blended in a golden ratio to specifically provide the nutrients needed for the growth of PG in the intestine, achieving a unique Golden Formula. The Golden formula can specifically provide the nutrients required for the growth of PG in the intestines, which can increase the growth of PG by 4 times. After taking Golden Formula for 4 weeks, the average weight loss was 1.1kgw, total body fat reduced by 0.8%, trunk body fat reduced by 0.9%, waist circumference decreased by 3.2cm, and belly fat decreased significantly. After taking Golden Formula for 4 weeks, it can improve the difficulty of defecation, reduce the time of defecation, promote the frequency of intestinal peristalsis and make bowel movements smooth and unobstructed.</p>		

<b>TW-05</b>	<b>NAME(S)</b>	<b>Chen Chin-Chu / Chen Yen-Lien / Lin Shin-Wei / Chen Yen-Po / Tsai You-Shan</b>
<b>ORGANIZATION</b>	Grape King BIO	
<b>TITLE OF ENTRY</b>	<b>Use of <i>Lactobacillus reuteri</i> GKR1 for preparing composition of reducing uric acid</b>	
<p>The present invention relates to a use of <i>Lactobacillus reuteri</i> GKR1 for preparing a composition of reducing uric acid. The composition including <i>Lactobacillus reuteri</i> GKR1 is administered to reduce the uric acid in the serum, alleviate and/or prevent hyperuricemia of a subject.</p>		

<b>TW-06</b>	<b>NAME(S)</b>	<b>Wu Chang Jer / Chen Chin-Chu / Chen Yen-Po / Chiang Lynn-Huey / Lin Jing-Yi</b>
<b>ORGANIZATION</b>	Grape King BIO	
<b>TITLE OF ENTRY</b>	<b>Use of <i>Lignosus rhinocerus mycelia</i> active substance for manufacturing an antiviral composition</b>	
<p>Enterovirus 71 is common in young children and can cause viral meningitis, polio-like paralysis and myocarditis in severe cases. Currently, there is no vaccine to prevent EV71 infection. This invention presents using the <i>Lignosus rhinocerus mycelia</i> active substances, which have the effect of preventing and inhibiting entry of the enterovirus or influenza viruses into the cells.</p>		

## TAJIKISTAN

<b>TJ-01</b>	<b>NAME(S)</b>	<b>Yaminzoda Zarrina Akram</b>
<b>ORGANIZATION</b>	Technological University of Tajikistan	
<b>TITLE OF ENTRY</b>	<b>Development and scientific justification of technology dyeing textile materials with natural dyes</b>	
<p>The presented project is aimed at solving the problem of producing environmentally friendly and safe textile materials that exclude possible negative effects on the body, such as allergic and skin diseases, which is especially important for materials intended for children's clothing, as well as for exclusive elite products. Equally important is the possibility of greening production and minimizing the damage caused to the environment by the textile industry, especially the finishing industry, during which a huge amount of wastewater contaminated with a wide variety of hazardous chemicals is released into the environment.</p>		

## THAILAND

TH-01	NAME(S)	Dr. Yuttana Sudjaroen / Dr. Kanittada Thongkao / Mr. Narin Kakatum
ORGANIZATION		Suan Sunandha Rajabhat University
TITLE OF ENTRY		<b>Klear-Throat: Traditional Thai herbal lozenges</b>
<p>Klear-Throat is traditional Thai herbal lozenges from mixture of seven Thai herbs. - Active constituents were contained phenolic compounds (188.34±2.96 mg of gallic acid equivalent/g contained with flavonoids = 19.24±1.59 mg of quercetin equivalent/g) and saponins (534.80±34.18 mg of saponin equivalent/g). - Antioxidant activities of lozenges were inhibited DPPH radicals, NO radical and lipid peroxidation (IC50 = 0.06±0.0, 1.30±0.2 and 502.4±21.97 mg/ml, respectively). - Anti-inflammation of lozenges was strong inhibited NO producing from LPS induce macrophage cells (23.0±3.19% at 0.1mg/ml). - Lozenges were inhibited <i>S. aureus</i>; and reduced oral microbials. -No cytotoxicity of lozenges against human skin fibroblasts.</p>		

TH-02	NAME(S)	Mr.Narin Kakatum
ORGANIZATION		Suan Sunandha Rajabhat University
TITLE OF ENTRY		<b>Mordia: Sunscreen gel form <i>Momordica cochinchinensis</i></b>
<p>Sunscreen gel form <i>Momordica cochinchinensis</i>. It was found in antiquities over 5,000 years in the Southeast Asia. Lycopene was biomarker in <i>Mordia</i> show non-toxic to human skin fibroblast cells, anti-inflammatory in macrophage (RAW 264.7) cell cultures, inhibiting nitric oxide generation from LPS-induced cells, anti-oxidant by DPPH assay and Nitric oxide compare vitamin C standard. Apply all over the face and clean throat regularly every day after cleanser without washing out should avoid apply around the eyes for protect UV. <i>Mordia</i> Sunscreen gel was natural product for skin care and non-toxicity.</p>		

TH-03	NAME(S)	Assoc.Prof.Dr. Jinpitcha Mamom / Assist.Prof.Dr.Bunyong Rungreungdouyboon / Mr. Chawakorn Sri-ngernyuang / Mr. Patipharn Rasarak / Mr. Supachai Rakkaew
ORGANIZATION		Thammasat University
TITLE OF ENTRY		<b>Automatic lateral repositioning bed with body pressure sensing mattress</b>
<p>The Automatic Lateral Repositioning Bed: ALRB was created by a multidisciplinary team to develop a patient bed that electrically adjusts the head and knee and left and right sides in combination with a mattress that can measure pressure and humidity via a microcontroller to process and alert nurses if the sign of pressure ulcer was shown. Pressure ulcers are a vital health care problem throughout the world. This was tested in 90 bedridden patients at home. Results showed that ALRB improved wound healing, prevent new wounds and reduce the burden of caregivers.</p>		

TH-04	NAME(S)	Patcharapak Suriwong / Khemmaphat Hooncharoen / Ploynaphat Chettakullarat
ORGANIZATION		Brother Global Co.,Ltd (Innovated by AVS Innovation Co.,Ltd)
TITLE OF ENTRY		<b>Celltuin™ - a promising natural extract for anti-aging and longevity</b>
<p>Resveratrol has been used in food supplements to reduced oxidized LDL, blood sugar levels and oxidative stress. Moreover, resveratrol has proved to have anti-aging properties, promoting longevity by enhancing SIRT1 deacetylase activity. However, the limitations of resveratrol are poor water solubility, low chemical stability and high metabolism. We have demonstrated that encapsulating resveratrol by biopolymers enhances its chemical and physical activities. We named this encapsulated resveratrol as Celltuin™. Celltuin™ has shown better antioxidant and anti-aging properties, comparing to resveratrol. Water solubility and chemical stability has improved. Therefore, the biopolymer-encapsulated resveratrol as a tradename Celltuin™ provides promising ingredient for functional food for anti-aging and longevity.</p>		

TH-05	NAME(S)	Asist. Prof. Dr. Ruttiros Khonkarn
ORGANIZATION		Faculty of Pharmacy, Chiang Mai University
TITLE OF ENTRY		<b>Soluble turmeric extract in Thai coffee product</b>
<p>The product of Thai turmeric coffee is very interesting. However, the use of turmeric extract in coffee product is limited because of their low aqueous solubility. The objective of this study was to improve aqueous solubility of turmeric extract by Self-Emulsifying Drug Delivery Systems (SEDDs) in turmeric coffee product. Our results showed that the formulation of SEDDs of turmeric extract is stable. This formulation can effectively improve aqueous solubility of turmeric extract around 40,000 times with small droplet size. These properties of SEDDs allow improved permeation and bioavailability of the formulated turmeric extract across the gastrointestinal membrane.</p>		

<b>TH-06</b>	<b>NAME(S)</b>	<b>Wanphen Jitjaroen / Lachinee Panjai / Rungtiwa Konggoen</b>
<b>ORGANIZATION</b>	Rajamangala University of Technology Lanna	
<b>TITLE OF ENTRY</b>	<b>COFFIVINO : A New Era of Coffee Fermentation</b>	
<p>Coffivino is an innovative process, to create extraordinary specialty coffee. The key principle of Semi-carbonic maceration and Yeast fermentation are integrated. The carbon dioxide atmosphere leads to intracellular fermentation, reducing foul stench and extracts the nutrients supporting the selected yeast fermentation. These degrade the mucilage of coffee bean to multiply its simple carbohydrates, leading to the production of aromatic precursors as well as enlargement the cellular structure, speeding up the drying process. This process generates and intensifies unique aromatic characteristics, creating an efficient technology for a well-balanced cup of coffee. Truly, a zero-waste process turning coffee industries into sustainable communities.</p>		

<b>TH-07</b>	<b>NAME(S)</b>	<b>Mr.Tanapat Srikarn / Mr.Anus Boothlong / Mr. Panupong Sukbanjong / Mrs. Supitchaya Puankaew / Mrs. Paninee Matthapa</b>
<b>ORGANIZATION</b>	Srinagarindra the Princess Mother School Phuket	
<b>TITLE OF ENTRY</b>	<b>The improvement of sea water by treatment materials and aeration machine</b>	
<p>The wastewater in the various resources cannot be treated by the nature and contamination in sea water. Therefore, this invention focuses on the physical-chemical process for the sea water treatment. The treatment materials used for this research are made into the slices. The water spraying from the high level increases oxygen on the water surface. Being the alternative power, the solar power is chosen for oxygen bumping in our process as well. To transfer the solar power into the electrical power, this wastewater treatment machine is designed with the automatic microplastics reducing as well as the reduction of power management.</p>		

<b>TH-08</b>	<b>NAME(S)</b>	<b>Mr. Natapon Kaewthong / Asst.Prof.Naras Kwanthong / Asst.Prof.Chayanat Buathongkhue / Mr.Torlap Kanplumjit</b>
<b>ORGANIZATION</b>	Rajamangala University of Technology Srivijaya	
<b>TITLE OF ENTRY</b>	<b>An Internet of Things Based System for Agriculture Water Resource Management Innovation</b>	
<p>The problem of climate uncertainty is becoming more severe today and it has a direct effect to the lives of people in Thailand, particularly to the amount of water used in agricultural activities. In the southern region of Thailand, where there is a large natural freshwater source, Songkhla Lake, is also the place where saline intrusion affects the agricultural water. Therefore, an innovation of automatic salinity meter that transmits real-time data to alert salinity to farmers and agencies involved in water management of the area around Songkhla Lake was developed. This innovation is a tool to tackle the water shortage for agriculture that is affected by climate change as well as to prevent climate-related problems to be mitigated.</p>		

<b>TH-09</b>	<b>NAME(S)</b>	<b>Banyat Niyomwas / Chalut Tipakornkiat / Nattaneeporn Noisangiam</b>
<b>ORGANIZATION</b>	Rajamangala University of Technology Srivijaya	
<b>TITLE OF ENTRY</b>	<b>Reducing waste volume with automatic solar-powered trash compactor</b>	
<p>Reducing waste volume with automatic-solar trash compactor consists of waste volume detector, automatic solar-powered compactor system, sniffer detector, location service, and auto alcohol cleansing gadget. The machine detects waste volume automatically, and then the above x-lift compactor system suddenly compresses waste material with solar-powered energy. Moreover, the sniffer detector will alert CO2 level of stinky garbage inside the trash machine. In addition, when capacity of trash or stinky level is over, the location service of system will alert a waste collection department comes to charge a trash. Finally, an alcohol cleansing gadget is added for sanitation of users.</p>		

<b>TH-10</b>	<b>NAME(S)</b>	<b>Dr.Pimpisa Promma / Dr.Nutworadee Kanittsuttitong / Peachya Buakaew</b>
<b>ORGANIZATION</b>	Rajamangala University of Technology Srivijaya	
<b>TITLE OF ENTRY</b>	<b>Lead-free nielloware accessories – Biker Collection</b>	
<p>This work is an innovative product design and manufacturing innovation that disrupts traditional product design and manufacturing. The design focuses on biker customers. The production uses modern machinery instead of hand-made in some steps and most importantly, lead-free filler is used. This was invented to solve the problem of the disappearance of ancient indigenous wisdom. Traditional items that are known only to the elderly and are disappearing from the lives of the new generation in Thailand. Most importantly, craftsmen are in short supply and on the verge of extinction as the younger generation is not interested in doing business.</p>		

<b>TH-11</b>	<b>NAME(S)</b>	<b>Asst. Prof. Dr. Angkana Saikour / Ms. Pattamapon Meesit / Ms. Aphitsada Robkob</b>
<b>ORGANIZATION</b>	Rajamangala University of Technology Srivijaya	
<b>TITLE OF ENTRY</b>	<b>ASTAXANTHIN OVERNIGHT MASK CREAM (Natural remedies for glowing and youthful skin under the mask pollution accumulated during a long day)</b>	
<p>Astaxanthin is a type of carotenoid which makeup the orange pigmentation in shrimp, lobster, salmon, and other marine life. In this study, the photosynthetic cell dry weight was soaked in vegetable oils for astaxanthin extraction. The optimal ratio of Sacha inchi and coconut oil of 1:1 was selected with the highest antioxidant value. The astaxanthin oil for facial skin care was produced, and the best formulation contained of resveratrol and marine plankton with the highest tyrosinase inhibition at 51.91%. The satisfaction of 30 volunteers was given the highest significant level of P-value at 95%.</p>		

<b>TH-12</b>	<b>NAME(S)</b>	<b>Mr. Dachsak Wijitphan / Miss Rungtip Rattanapon</b>
<b>ORGANIZATION</b>	Rajamangala University of Technology Srivijaya	
<b>TITLE OF ENTRY</b>	<b>Crispy Puffed Brown Job's Tears</b>	
<p>This innovation aimed to develop a manufacturing process for crispy puffed brown Job's tears from Nayong district, Trang province, Thailand. The optimum processing conditions were included, soaked with water in ratio 1:2 for 6-8 hours at room temperature, followed by boiled for 30-50 minutes and dried at 120-140 °C for 120-140 minutes. The dried brown Job's tears were kept for 12-15 hours. The fried puffing at 200-250 °C for 5-10 seconds and dried at 90-100 °C for 10-20 minutes revealed the crispy puffed brown Job's tears to have a high expansion ratio and high acceptance score.</p>		

<b>TH-13</b>	<b>NAME(S)</b>	<b>Dr. Supatcha Chooseangjaew / Prof. Dr. Suwat Tanyaros / Miss Tuanjai Piyang / Miss Kattinat Sagulawasdiapan / Mr. Pumin Inpan</b>
<b>ORGANIZATION</b>	Rajamangala University of Technology Srivijaya Trang Campus	
<b>TITLE OF ENTRY</b>	<b>3-Layers Sliding Plastic Mesh Nets for Oyster Culture System</b>	
<p>The increasing production of oyster-aquaculture heritage in Thailand has reached a constant level (1000 individual juvenile oysters/1 cage culture) with a return on investment (ROI) of 163.52, but the aquaculture project of oyster having a packaging innovation of 3-layers sliding plastic mesh nets has exclusively promoted. This innovative method showed as the large-scale production of 7200 individual juvenile oysters/ 1 cage culture with ROI of 324.24. It is indicated that this method tends to have a higher yield than traditional culture system, as reflecting an innovative approach to sustainable oyster culture industry for the future.</p>		

<b>TH-14</b>	<b>NAME(S)</b>	<b>Asst. Prof. Dr. Saowanee Chaipech / Asst. Prof. Worapong Boonchouytan / Krittaya Nusai / Asst. Prof. Jaknarin Chatthong / Dr. Sahapong Somwong</b>
<b>ORGANIZATION</b>	Rajamangala University of Technology Srivijaya	
<b>TITLE OF ENTRY</b>	<b>Alternative jar coffee roaster to produce immune boosting Thai herb-coffee drip</b>	
<p>Semi-automatic jar roaster developed from jar, a local material that is used in meat baking. Application is using technology and innovation for interior and exterior design that can control bean moving, temperature and time compare with expensive modern machines. Optimum roasting conditions for consistent quality of light, medium and dark coffee beans are 140 °C at 15, 16 and 17 minutes, respectively. It can be further produced a healthy drip coffee by blending southern native plants that have immune-boosting properties, such as roasted light brown rice, ginger and galingale.</p>		

<b>TH-15</b>	<b>NAME(S)</b>	<b>Siseerot Ketkaew</b>
<b>ORGANIZATION</b>	Ramkhamhaeng University	
<b>TITLE OF ENTRY</b>	<b>Silent Plasma – High Density Anion Generator to reduce the spread of Pathogens in the situation of Covid-19</b>	
<p>This innovation presents the silent plasma – high density anion generator to reduce the spread of pathogens in the situation of covid-19. The power supply based on mini converter comprises of a pulse generator using IC#555 at the frequency 15 kHz. The power MOSFET switching using Power MOSFET driver IRFP350 to control switching transformer to generate 2 kV<sub>P-P</sub> or more by using ozone cell set and anion cell set. The experimental results are duty cycle increasing of high voltage AC at 3 kV<sub>P-P</sub> at duty cycle 10 %, 4 kV<sub>P-P</sub> at duty cycle 20 % and 5 kV<sub>P-P</sub> at duty cycle 30 %. By adapting the stainless plates between aluminum net in ozone cell set and anion cell set, one - hour operating yields the ozone gas (O<sub>3</sub>) generating capacity of 3.25 ppm, 4.69 ppm and 5.37 ppm with negative ion 200 million/cm<sup>3</sup>. And at 3.25 ppm and negative ion 200 million/cm<sup>3</sup> enables eliminate diseases in air. Therefore, this innovation can develop an applied research industry and innovation for commercial in the future.</p>		

<b>TH-16</b>	<b>NAME(S)</b>	<b>Wiran Mankong</b>
<b>ORGANIZATION</b>	Muang Nakhon Rice Innovative Community Enterprise – THAILAND	
<b>TITLE OF ENTRY</b>	<b>SANGYOD GERM, BLACK RICE BRAN AND A. RACEMOSUS ROOT SERUM (PHUPHA PRAEWA BRAND)</b>	
<p>This innovation presents the interesting Thai products. The packaging is good for a 5-star hotel in Thailand. hotel mini bar It is the perfect organic product. Summary of results From the use of Sangyod rice bran extract 0.2%, black rice bran extract 0.2% and thirty root 10%, phrnylethylferulate, sativone, genistein, nicotinic acid, 2,3, were found. 4,7- tetramethoxy analyzed by LC/QTOF and found inhibition of tyrosinase at EC 50 357.74 #1.33 and 413.92 # at a concentration of 100 mcg/mg. no cytotoxicity It also inhibits the formation of skin pigmentation.</p>		

<b>TH-17</b>	<b>NAME(S)</b>	<b>Chutirada Santivorapong / Nittakarn Phattarachaisroj / Natthamicha Lertsrisakulrat / Rungarun Ausawalarp</b>
<b>ORGANIZATION</b>	Chulalongkorn University Demonstration School	
<b>TITLE OF ENTRY</b>	<b>Deskination</b>	
<p>Everyone can use Deskination for example :</p> <ul style="list-style-type: none"> <li>• Sometimes when your boss assigned some work but yoursear is uncomfortable for work.</li> <li>• When the kids need to eat a meal outside but it is hard to feed them.</li> <li>• The table outside your house is not clean enough and may cause bacteria and viruses.</li> <li>• When you are left-handed but lecture desks are for Right-handed.</li> </ul> <p>Deskination is therefore designed to solve this problem with :</p> <ul style="list-style-type: none"> <li>• The leg that used to stick to the chair : This stick can be outstretched and it's easy to carry.</li> <li>• the desk that use to put on the leg when he already stretched the leg: This desk is like it is easy to carry.</li> </ul> <p>This invention is targeted to everyone. For someone who don't have desk to use outside or inside your house. This desk will answer to your problems.</p>		

<b>TH-18</b>	<b>NAME(S)</b>	<b>Chayapa Srivoravilai / Prin Udomkiatikul / Puntharee Lertritcharaskit / Piyasoranee winayanuwattikun / Picha Banditchutikul</b>
<b>ORGANIZATION</b>	Chulalongkorn University Demonstration Elementary School	
<b>TITLE OF ENTRY</b>	<b>IG Talking Mask</b>	
<p>Due to COVID-19 and PM2.5, everyone has to wear mask and there are many problems when speaking under mask. 1) The voice is hardly heard by others and speakers have to shout all the time. 2) The mask is always going into the mouth when speaking. Therefore, we invented 2 versions of the talking mask, installing the small wireless microphone into the 3D designed mask. Version 1 : The mask is designed to put the small wireless microphone. Version 2: The magnetic small and wireless microphone that can attach to any mask.</p>		

<b>TH-19</b>	<b>NAME(S)</b>	<b>Thitchaya Monkong / Napassanun Sumetpimolchai</b>
<b>ORGANIZATION</b>	Chulalongkorn University Demonstration Elementary School	
<b>TITLE OF ENTRY</b>	<b>iMedicare Solution</b>	
<p>“iMedicare Solution” is the intelligence medical care innovation, it supports all who must take care many patients at the same time. It offers the best solution for both patients and caregivers. With the interconnected operation of the intelligence pill dispenser, smart pill folder and iMedicare app, the caregivers can closely monitor their valuable patients in a smarter way. It is easy to use, and it can support for multiple patients, multiple functions and give effective results in health care.</p>		

<b>TH-20</b>	<b>NAME(S)</b>	<b>Jisue Youn Kumwilaisak / Ratchapon Thammacharo / Narapat Hengarnglai / Phinyada Thanyawan / Wanich Chiowanicha / Peerawat Pannattee</b>
<b>ORGANIZATION</b>	Chulalongkorn University Demonstration Secondary School	
<b>TITLE OF ENTRY</b>	<b>INFING: iNtelligent ASL FiNGerspelling tutoring system</b>	
<p>This project presents a new AI-based ASL fingerspelling tutoring system called INFING:iNtelligent ASL FiNGerspelling Tutoring System. To learn to fingerspell in the ASL, people may have to study themselves or require experts to tutor them to master the skill. Unfortunately, this may cause extensive time and financial resources. Our intelligent learning system with deep learning plays a vital role in a new education age to solve this problem. The smart sign language tutoring system can automatically help deaf and ordinary people learn ASL, obtain learning feedbacks from AI. This learning system can access anytime, anywhere, and anyplace and soothe the issue of training personnel shortage.</p>		

<b>TH-21</b>	<b>NAME(S)</b>	<b>Waranyu Kittithawornkul</b>
<b>ORGANIZATION</b>	Chulalongkorn University Demonstration Elementary School	
<b>TITLE OF ENTRY</b>	<b>IoT Smart Health</b>	
<p><b>IoT Smart Health</b> was developed and used as a smart platform of healthcare in order to save the infected patients' life during home quarantine period and decrease the problem of public health system in COVID-19 situation. Internet of Things (IoT) technology was applied for this invention. IoT sensors (e.g., temperature, blood oxygen and Heart Rate) will work together with GPS Receiver connecting via 4G/5G internet which installed on smart wristband that added more features to check the patient's health and communicate with medical team via nurse call mode and emergency mode. All data will be linked to the control system at the hospital near home to monitor and take good care the patient during quarantine period. <b>IoT Smart Health</b> can solve the problem of entire public health system, reduce a Doctor's burden, decrease a mortality rate, lessen using hospital's bed and reduce the spread of infection. Patients and communities will be safe in COVID-19 situation.</p>		

<b>TH-22</b>	<b>NAME(S)</b>	<b>Chayapa Srivoravilai / Prin Udomkiatikul / Puntharee Lertritcharaskit / Piyasoranee winayanuwattikun / Picha Banditchutikul</b>
<b>ORGANIZATION</b>	Chulalongkorn University Demonstration Elementary School	
<b>TITLE OF ENTRY</b>	<b>MIY Coloring</b>	
<p>"MIY Coloring" is designed to unleash the color limit for both student and professional artist, when creating artwork. The color tablets are invented with the same size and weight for primary colors; together with MIY Coloring Guide Card in the Set Box. Endless color tone therefore can be created based on unlimited imagination of users and the same tone color can be remixed from the guide card that users record the portion earlier.</p>		

<b>TH-23</b>	<b>NAME(S)</b>	<b>Sirisaran Direkwatana / Panyakan Tritangkur / Harith Punnapirom / Baramate Charoenchaisombat</b>
<b>ORGANIZATION</b>	Chulalongkorn University Demonstration Elementary School	
<b>TITLE OF ENTRY</b>	<b>Shuttlecock Pro; Precision-Skills Enhancement Device for Badminton</b>	
<p>This device can be placed in various places of the court to practice various skills. The device's sensor would count the number of shuttlecocks and create a sound identifying that the shuttlecock had entered the target. The device is 40cm tall so that it is as similar to the target area on the court as possible. There are 4 slots to maximize the number of shuttlecocks and there is a motor to rotate the unit. We have different target sizes and angles for different players' capabilities according to the skillset the player must practice. The benefits of the device are that the players can tell the number of shuttlecocks and keep a statistic to see the development of the player.</p>		

## TURKEY

<b>TR-01</b>	<b>NAME(S)</b>	<b>Dr. Mehrdad Fojlaley / Arman Ghayourvahdat / Hannaneh Azimizonuzi / Mohamad Dayyan Ayoubi / Farzaneh ESMAELIAMINLOUEI</b>
<b>ORGANIZATION</b>	Turkish Inventors and Innovators Network	
<b>TITLE OF ENTRY</b>	<b>Diabetic wound healing device by nano-titanium plasma</b>	
<p>In diabetic patients, due to the fact that diabetic patients have little resistance, they cannot heal their wounds, so unfortunately, it causes a lot of infection and eventually leads to amputation. This system disinfects the wound and increases oxygenation to the tissue by producing negative auxin ions and transferring it to the wound. And it can heal wounds in less than 20 days.</p>		

<b>TR-02</b>	<b>NAME(S)</b>	<b>Dr. Mehrdad Fojlaley / Arman Ghayourvahdat / Hannaneh Azimizonuzi / Mohamad Dayyan Ayoubi</b>
<b>ORGANIZATION</b>	Turkish Inventors and Innovators Network	
<b>TITLE OF ENTRY</b>	<b>Organ anesthesia device by shortwave radio waves</b>	
<p>Overuse of systemic sensory ampoules can have detrimental effects on the brain and heart, which can lead to death. Muscle spasms, chills, and seizures can follow. In this system, low power radio electromagnetic generators are used to generate electromagnetic waves. The system has four electrolyte probes that transmit waves to the nerves. Pulse circuits with low frequency response have been used in wave generation. In the information receiving section, Super Heterodyne has been used.</p>		

<b>TR-03</b>	<b>NAME(S)</b>	<b>Mehdi Farzpourmachiani / Simin Naghibi Masouleh / Ali Farzpourmachiani Amir Berenjar / Saeed Najafi / Hamid Shatranji / Ashkan Maghsoudi Ghashghaeinejad / Behnam Heidari / Meyssem Aminkhaki / Navid Jebelli Bakht Ara / Milad Alami Safavval / Mohammad Mehdi Bisheshban / Ehsan Pourzare / Ezatollah Momennia Rankoohi / Amir Khodadadi Parashkough</b>
<b>ORGANIZATION</b>	Turkish Inventors and Innovators Network	
<b>TITLE OF ENTRY</b>	<b>A method special for adobe (Multi-Functional Adobe)</b>	
<p>Using this adobe building walls can faster in comparison with buildings walls by mean of traditional and ordinary adobes available in markets. It has been a tradition to use comment and concrete as mediator when the new adobe because of its unique design and future wall can be built without employing comment concrete and any other materials.</p>		

## UGANDA

<b>UG-01</b>	<b>NAME(S)</b>	<b>KEMIREMBE RACHEAL LOY</b>
<b>ORGANIZATION</b>	KRAFT 256 LTD	
<b>TITLE OF ENTRY</b>	<b>COWHORN PRODUCTS</b>	
<p>Cow horn products are made from natural cow horns that are sourced from slaughter houses and slaughter centers. There is lots of cow horn raw materials littered in abattoirs in different parts of the country in Uganda yet they can be used to produce beautiful products like cow horns, horn jewelry box, horn cutlery like Salad Sets, Forks &amp; spoons, Knife &amp; Cutlery Handles, Horn Toggles etc... Kraft 256 Ltd is riding on the trend of innovation and creativity where utilization of authentic local available materials can be used to produce an exquisite collection of handicraft items that are in sync with the fashion trends.</p>		

## UKRAINE

<b>UA-01</b>	<b>NAME(S)</b>	<b>Mykola Akulov</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>SOFTWARE «GRAPH» FOR RESEARCHING PHYSICAL PHENOMENA (ELECTRICAL ENGINEERING) AND MATHEMATICAL GRAPHS THEORY</b>	
<p>My work is the software «Graph». It is a powerful and, at the same time, easy-to-use application for education. It is much better and easier than analogues because it has only necessary for school functions. It allows to create, save in own format and use weighted undirected graphs. «Graph» provides modifying and bright demonstrations of main algorithms for learning and improving understanding. Graphs nowadays are based on searching, recommendation, transport and delivery systems. And electric part of the program is built on a graphs base, which works on the author's algorithm. It allows simulating electric current in various electric circles.</p>		

<b>UA-02</b>	<b>NAME(S)</b>	<b>Oleksandra Balytska</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Development of a mobile application called 'A map of plant allergens'</b>	
<p>The project is dedicated to creation the mobile application which contains a map with the availability to fill it with data on allergen plants. The main purpose of the project to provide the people who suffer from allergies with an opportunity to assist each other in the dissemination of information about locations of allergen plants. Every user encountered with a harmful plant has an opportunity to immediately add the information concerning the plant to the map embedded in the application. Hence, other users may learn about a potential risk for health and avoid contact with the allergen.</p>		

<b>UA-03</b>	<b>NAME(S)</b>	<b>OIha Borovyk</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Lens with variable optical characteristics</b>	
<p>Existing devices and materials for changing the optical power of the line are analyzed. The design of a lens with variable optical characteristics is proposed, which is created from two window films, the space between which is filled with liquid. Publicly available materials for the outer shell of the lens and liquid for its filling. The effect of the amount of liquid to be filled on the optical power of the lens was experimentally determined. The formula for experimental finding of focal length of a lens is entered.</p>		

<b>UA-04</b>	<b>NAME(S)</b>	<b>Oleksandr Borylo</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>EFFICIENT METHOD OF INDUSTRIAL EMISSIONS DISSIPATION</b>	
<p>Many plants and factories use pressure vessels in their technological process, technological emissions from which can cause significant destruction. Such emissions are extinguished with the help of special devices - flow dissipators. We developed a flow dissipator in which the flow splits and unfolds smoothly. To minimize the noise of the extinguisher itself, we abandoned the classic design of its suspension on extensions and fixed it on a hinged suspension as a pendulum. Based on our calculations, a real emission dissipator was designed, manufactured, and installed at one of the coffee factories.</p>		

<b>UA-05</b>	<b>NAME(S)</b>	<b>Olena Dashynych</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>New ternary phases of the Er-Ag-Al system</b>	
<p>An important task of modern chemistry is the creation of materials with qualitatively new physical and chemical properties, a promising source of which are intermetallics. Aluminum based alloys occupy an important place in various industries, so we decide to study ternary Er-Ag-Al system. According to the results of research, 2 new compounds have been identified that may have interesting magnetoelectric properties. If the theory is confirmed, alloys will find good application in electronics.</p>		

<b>UA-06</b>	<b>NAME(S)</b>	<b>Golosny Danylo Sergeevich</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>DESIGN AND MANUFACTURE OF ROBOTIC COMPLEX FOR PET CARE</b>	
ROBOTIC COMPLEX FOR PET CARE is an invention that is designed to facilitate the care of pets. It allows you to clean the animal waste and feed the pet automatically without the intervention of the owner. Quite often, pet owners do not have time for work or study to properly care for their pets. That is why, to solve this problem, a "caretaker robot" was created.		

<b>UA-07</b>	<b>NAME(S)</b>	<b>Ivanova Sofiia</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>System of fast heating of the gas reducer-evaporator - "Quick Start"</b>	
The project "Quick Start" is designed to reduce the amount of harmful emissions into the environment and save money on fuel. The idea of the project is an accelerated transition to the use of gaseous fuel due to the fast heating of the gas reducer. Thermal energy for heating the gas reducer is stored in a thermos from the previous trip in the form of hot coolant. The system consists of a thermos of small volume and a liquid distributor with a thermostat. Thermostat changes its state. Hot liquid from a thermos is heating the gas reducer during engine warm-up.		

<b>UA-08</b>	<b>NAME(S)</b>	<b>Olena Kovalenko</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Obtaining alternative energy from tree fluctuations</b>	
The usage of renewable energy is reliable and environmentally friendly. However, the installation of solar panels or wind turbines is not universal. To solve this problem, I decided to install sources of alternative energy on trees. During the study, I put forward a hypothesis: tree branches' mechanical fluctuations could be converted into an electric current based on the phenomenon of electromagnetic induction. The aim of the project is to create a device that obtains renewable energy from tree fluctuations. Therefore, a model of a tree-energy generator was created. The device reaches the capacity of 0.03 kW and costs about \$35.		

<b>UA-09</b>	<b>NAME(S)</b>	<b>Kozachenko Yelyzaveta</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Development of "ACTIVE ENGLISH" information educational system for learning English</b>	
Purpose of the work is the creation of the information educational system for quick and efficient self-study of English. Main tasks: 1. Compilation of an automated database of educational tasks. 2. Creating an algorithm that promotes saving of learning material in long-term memory. 3. Search for similar tasks using the algorithm for breaking words into morphemes and databases. 4. Development of system in the form of Windows application. In the process of work the essence of the principle of gradual complication of tasks and a method of rational repetition of material are developed.		

<b>UA-10</b>	<b>NAME(S)</b>	<b>Krysanov Denys Dmytrovich / Senenko Nataliia Borysivna / Litovchenko Olena Ivanivna</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>DEVELOPMENT OF IMPROVING DRINKING WATER QUALITY METHOD BY FREEZING AT HOUSEHOLD CONDITIONS</b>	
Drinking water from different world parts of centralized and decentralized water supply often don't comply with quality standards or physiological human needs. We've been developed methods to improve its quality, namely: increasing useful ions and decreasing toxic. Improving water quality possibility was investigated and experimentally confirmed to proposed freezing water hypothesis. We developed improving drinking water quality method. As a result, ionic composition concentration varies in different parts of water (Increasing useful ions concentration in unfrozen part of water and decreasing nitrate ions in melted). We've developed recommendations that should be used at household conditions to improve drinking water quality.		

<b>UA-11</b>	<b>NAME(S)</b>	<b>Nataliia Kulieshova</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Simulation of animals vision by EYETECH computer web-application</b>	
The web application EYETECH is a computer simulation of animal vision in real-time that can be used by students in zoology classes to make the learning process more exciting and visible. This application allows you to view the world through the eyes of five animals: a dog, a snake, a horse, a cow, and a sparrow. Besides, students can read a quick summary of the chosen animal's vision. And having mastered the material, students can test their knowledge on the topic of "Animal Vision" by taking a small test below on the page. You can access the platform at <a href="https://eyetech.pp.ua">https://eyetech.pp.ua</a>		



<b>UA-12</b>	<b>NAME(S)</b>	<b>Anastasiia Lishchenko / Supervisor: Vlasenko Tetyana Volodymyrivna</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Steganoling – the software for encoding and decoding hidden text messages using Linguistic Steganography</b>	
<p>We often see that personal information leaks may cause serious damage for the owners. The aim of this research is to provide a tool for hiding secret messages. Unlike Cryptography, Steganography does not encrypt a message but hides the fact of its existence. The proposed algorithms and its software implementation use Linguistic Steganography for hiding secret messages in naturally looking plain text. The main idea is using equivalent language constructions to encode information.</p>		

<b>UA-13</b>	<b>NAME(S)</b>	<b>Mykhailo Mamchur</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>The Neural Networks Constructor</b>	
<p>Existing applications, that support the construction of the artificial neural networks, provide the tools to construct networks of strictly defined, standard types, which heavily limits their usability and makes it impossible to use them as an experimental platform for the rapid testing of new models and algorithms of neural networks. The developed constructor allows building models of neural networks of arbitrary configuration using a graphical interface, as well as to perform calculations according to an algorithm adequately formed by an internal interpreter and investigate the influence of various functional parameters on the results of training and operation of neural networks.</p>		

<b>UA-14</b>	<b>NAME(S)</b>	<b>Volodymyr Marhitai / Lyubov Margitay Ph.D.</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Agroecological features of growing low-distributed new cultures chufa and sweet potatoes in polyculture by organic technology in Transcarpathia</b>	
<p>For four years the ecological preconditions, peculiarities of growth and crop formation of new for Ukraine vegetable crops chufa and sweet potato grown by organic technology in Transcarpathia, have been studied. The expediency of growing sweet potatoes in polyculture and in the warm beds was shown. Growing chufa and sweet potatoes can give a good profit. Recommendations for the production and design of energy-efficient greenhouse has been developed. Paper shows that in Transcarpathia it is environmentally sound and appropriate to grow chufa and sweet potatoes in polyculture using organic technology.</p>		

<b>UA-15</b>	<b>NAME(S)</b>	<b>Ihor Michurin</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Educational application for finding polynomial roots in the complex plane</b>	
<p>For effective assimilation, the educational material must have two important properties: be fascinating and at the same time possess sufficient scientific depth. The originality of application lies in the harmonious synthesis of these two directions and creating motivation to engage in creativity. The proposed application quite possesses these features. On the one hand, contemplation of the multi-colored graphics obtained in the program, which in its aesthetic impact is akin to visiting an art gallery. On the other hand, Newton method is the most important tool in computational mathematics when finding the roots of polynomials.</p>		

<b>UA-16</b>	<b>NAME(S)</b>	<b>Nikita Miroshnichenko</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>An innovative approach to genetic contamination and increasing the efficiency of plant breeding based on using phylogenetic mapping by the example of the genus <i>Iris L.</i></b>	
<p>Our project reveals the potential of phylogenetic mapping in the agro-industry and the derivation of ornamental plant varieties on the example of the genus <i>Iris L.</i>. The proposed concept allows to unify and increase the efficiency of the process of obtaining the desired hybrids with the necessary characteristics. The general concept includes the integration of GWAS methods, which creates favorable conditions for the commercialization of this pipeline. In addition, the proposed algorithms can be used to detect and control genetic contamination of populations of rare plant species.</p>		

<b>UA-17</b>	<b>NAME(S)</b>	<b>Anhelina Nedoshytko / Andrii Nedoshytko</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Sports timing system "SKIt"</b>	
<p>Timing system is designed to determine the quality indicators of overcoming certain distance in sports competitions and training. Until now, measurements were performed using stopwatches and walkie-talkies (that makes a measurement error). Therefore, there is a need to develop own system, as professional timekeepers are expensive and not available for municipal sports clubs. SKIt consisting of start and finish modules, which contains a sensor that allows to track the intersection of start/finish with ability to transfer data via WiFi to analyze results. Device can be used in any kind of sport, where registration of exact time is used.</p>		

<b>UA-18</b>	<b>NAME(S)</b>	<b>Hlib Nikishyn</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Mobile application for learning words «LEARN WORDS EASILY (LWE)»</b>	
<p>Today in the world there is a growing interest in learning foreign languages. Teachers often recommend using mobile applications to learn new words and phrases. A popular method of memorization is the flashcard method. A flashcard is a card bearing information on both sides, which is intended to be used as an aid in memorization. Flashcards can be physical, or virtual. Existing mobile applications do not have all the necessary features for self-learning, namely, creating your own word list, self-control, managing your learning and working offline, so the purpose was to improve the way students memorize words with this application.</p>		

<b>UA-19</b>	<b>NAME(S)</b>	<b>Illia Pastushok</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>USE OF COMPUTER VISION FOR THE PURPOSE OF CONTROLLING ACCESS TO THE PERSONAL COMPUTER</b>	
<p>The project is about using Neural networks and Computer Vision technologies in daily routine. I made a simple in-use application for a personal computer that protects your device during the whole work period. This application gives you complicated data security from 3rd person users, moreover, you don't even have to be a programmer to use this software. The application identifies and recognizes user face using Cascade Classifier, and when 3rd person tries to use a computer, the app will block your laptop and send SMS notification, and saves a 3-rd person photo.</p>		

<b>UA-20</b>	<b>NAME(S)</b>	<b>Volodymyr Pavlenko</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Development and Rescue of a Colony of Ants of the Species <i>Formica rufibarbis Fabricius, 1793</i></b>	
<p>We managed to create a method of keeping endangered ant species under laboratory conditions, which includes: self-developed diet of ants, ideas of their accommodations, instruction for the wintering, solutions to the possible problems and life hacks. We conducted an experiment: having only one weakened queen of endangered ant species successfully helped it establish its own colony of ants, provided all instincts necessary for surviving in the wild, and returned it to nature.</p>		

<b>UA-21</b>	<b>NAME(S)</b>	<b>Semenenko Andrii</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>METHOD OF RESEARCH OF HEAT-INSULATING PROPERTIES OF MATERIALS</b>	
<p>Invention is devoted to the topic of creating modern technologies for study of thermal insulation properties of materials and development of methods for measuring the thermal conductivity. The existing methods of research of heat-insulating properties of materials and allow measuring the coefficient of thermal conductivity are analyzed. The own method of research of heat-insulating properties of materials which allows to measure their coefficient of thermal conductivity, to estimate conformity of actual and declared by the manufacturer characteristics is created. An experimental sample of a device for measuring the thermal conductivity is created and the results of experimental studies are presented.</p>		

<b>UA-22</b>	<b>NAME(S)</b>	<b>Oleksandr Sharlai</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Impact of heat stress on lipid peroxidation and ascorbate peroxidase activity in <i>Nicotiana tabacum</i></b>	
<p>In plant cells high temperature causes oxidative stress. Studying the antioxidant defense system to the heat stress is important for the creation of plants that could be resistant to impact of global warming. The goal of our project is to evaluate the plant cell response upon elevated temperature. Our data show that heat stress caused the amplification of LPO processes. This concurred with the inactivation of the APX. Severe temperature conditions led to more significant changes in the parameters.</p>		

<b>UA-23</b>	<b>NAME(S)</b>	<b>Stanislav Skorobogatov Yuriyovych</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Usage of the Peltier element to recover the electric energy in the hybrid</b>	
<p>We propose the mechanism of usage of the alternative energy sources based on the Peltier element to minimize fuel consumption in the car's internal combustion engine: usage of the Peltier element in reverse process allows it to be used as an additional energy source from heating brake calipers and an air turbine hose. The energy will be collected in supercapacitors and, if necessary, transmitted to the battery or used to operate the climate control system in the car. This improvement of car's mechanism will significantly improve the environmental situation by reducing emissions and increasing the power reserve of the car.</p>		

<b>UA-24</b>	<b>NAME(S)</b>	<b>Dmytro Skorobrekha / Arthur Maximov</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>AIR QUALITY RESEARCH SYSTEM</b>	
<p>Currently, the problem of air pollution is acute - the main environmental cause of chronic allergies, cardiovascular and cerebrovascular diseases, as well as respiratory diseases and lung cancer. The aim of our research is to create air pollution warning system that uses high-precision sensors and easily assembles equipment for air quality research and a subsystem for analyzing the data obtained. To analyze the time dependences and possible sources of air pollution, analysis subsystems have been developed that use spectral representation of data and tools to help find patterns and features.</p>		

<b>UA-25</b>	<b>NAME(S)</b>	<b>Stavytska Anastasiia</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Application of autonomous probes to solve the space debris problem</b>	
<p>Quantity of space debris at low Earth orbit is growing steadily. A small angular size and high speed of debris is very dangerous for objects at the low Earth orbit. It is very hard to see small pieces of debris and control them. New of cleaning orbits from small space debris should help to minimize a possibility of collision of spacecrafts with debris particles and to make the output of satellites and telescopes on the orbit much easier.</p>		

<b>UA-26</b>	<b>NAME(S)</b>	<b>Yelyzaveta Stoliarchuk</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>WIND GENERATOR BASED ON A SEGNER WHEEL</b>	
<p>In this project we developed the new construction of the wind generator, which is based on a Segner wheel. The new developed construction allows to install wind power plants in wide range of territories, such as mountains, trenches, coasts of oceans and seas, where the access to the energy is usually limited. Moreover, our wind generator is going to work continuously unlike modern horizontal turbines, since its construction prevents blades from overload. Therefore, the amount of produced energy is going to grow by 60% and the payback period is going to reduce to 8-10 years.</p>		

<b>UA-27</b>	<b>NAME(S)</b>	<b>Karolina Susol</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Evolution of cryptography. Symmetric and asymmetric encryption</b>	
<p>One day I came across a video about RSA on YouTube. The appearance of the Euler's theorem astonished me. I decided to dig further and cryptology turned out to have maths everywhere. As a result, I have found a different way to make hashes secure. I invented new methods and threw away half of them. It will be my pleasure to tell you the best ones in the last section.</p>		

<b>UA-28</b>	<b>NAME(S)</b>	<b>Artem Yadelskyi</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Metalib - web service for organization and search for book information</b>	
<p>In today's world, people are more likely to choose to read e-books, but there is still a very large proportion of people who continue to read paper books. The aim of the project was to develop a web service that will allow you to quickly and easily view information about books and libraries.</p>		

<b>UA-29</b>	<b>NAME(S)</b>	<b>Yelyzaveta Yakovenko</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Dynamics of the temperature regime of the town of Lubny: trends of changes, consequences, adaptation strategy</b>	
<p>Global warming is a very important issue nowadays. In Ukraine the average temperature rises faster than anywhere else. That is why, the study of the dynamics of air temperature, forecasting changes for the future, as well as the development of adaptation strategies are urgent tasks. The established trends and the nature of changes in air temperature in the town for 75 years correspond to the results of research by famous scientists. The rate of air temperature increase in Ukraine and Lubny is ahead of world trends. Climate change has never been so rapid as for the last 30 years.</p>		

<b>UA-30</b>	<b>NAME(S)</b>	<b>Oleksandr Yudakov</b>
<b>ORGANIZATION</b>	"Junior Academy of Sciences of Ukraine" under the auspices of UNESCO	
<b>TITLE OF ENTRY</b>	<b>Simulation of autonomous vehicle driving systems</b>	
<p>Nowadays technological advancements spread with increasing speed to all spheres of human life, and the best example of it is artificial intelligence. Over the last decade, this technology has become one of the most important in the transport field, and huge companies started to produce their autonomous models of the market. However, along with the benefits of using these technologies, there are several threats and dangers for the lives of passengers and pedestrians when testing such vehicles. An accurate driving simulation is the best way to ensure the safety and economy of the development of intelligent vehicles.</p>		

## UNITED ARAB EMIRATES

<b>AE-01</b>	<b>NAME(S)</b>	<b>Dr. Mohammad Ibraheem Mezaal Atheab / H E Dr. Maryam Mohamed Fatma Matar</b>
	<b>ORGANIZATION</b>	United Arab Emirates Genetic Diseases Association (UAEGDA)
	<b>TITLE OF ENTRY</b>	<b>MOLECULAR INNOVATIVE METHOD FOR DETECTION DELTA VARIANT OF SARS-COV-2 WITHIN 2-3 HOURS</b>
<p>As this molecular method was designed using the tools of bioinformatics (computer genetics) available in the internet, the sequences of these microorganisms were also used through global databases. Consequently, radiation-specific primers and radioactive sequences (probes) are designed for each type and with different radioactive marking dyes, so each sample has one examination that includes the virus for 2 important genetic variation (two regions for the virus) for the purpose of increasing accuracy in diagnosis and internal evidence (IC) and through the use of ( Real Time PCR) and by using 4 different filters in the device, each filter can read a specific dye according to its wavelength and every dye associated with a specific goal (virus and internal evidence (IC)) and thus the ability to easily diagnose any target (Positive or Negative).</p>		

## UNITED KINGDOM

<b>UK-01</b>	<b>NAME(S)</b>	<b>ANDREW SMITH</b>
	<b>ORGANIZATION</b>	RAYDYNE ENTERPRISES LTD.
	<b>TITLE OF ENTRY</b>	<b>MIXED-FLOW CENTRIFUGAL PUMP</b>
<p>This recently patented Mixed Flow Centrifugal Pump introduces several new inventive concepts. These concepts deliver greater pumping efficiency and production cost efficiency to the pump industry. It increases pump design options and combinations of construction materials. The design principally utilizes the benefits of a specially engineered sinusoidal impeller within a toroid shaped pump chamber that closely mirrors the concave rotating profile of the sinusoidal impeller. This facilitates the use of double acting aqua plane technology to ensure ultra-smooth, reduced turbulence and interference, pumping efficiency and power.</p>		

## UNITED STATES OF AMERICA

<b>US-01</b>	<b>NAME(S)</b>	<b>Maddox Yu</b>
	<b>ORGANIZATION</b>	Evergreen Valley High School
	<b>TITLE OF ENTRY</b>	<b>Collaborative Machine-Learning Concussion Sensing System for Better Concussion Prediction</b>
<p>Concussion due to sports activities, especially in American football, becomes a larger and larger concern. One of the key attempts to predict concussion is to measure the impact g-force. However, due to the extremely short period and large g-force during impact, existing sensors usually are inaccurate which leads to an unreliable prediction of concussion. This inventor proposed and implemented an innovative system and method where the measurements from multiple players involved in an impact are collected and feed into a collaborative machine-learning algorithm to improve the accuracy of the measurement, and hence the accuracy of the prediction of concussion.</p>		

<b>US-02</b>	<b>NAME(S)</b>	<b>Edward Paul Laskowski / Jason Glen Squier</b>
	<b>ORGANIZATION</b>	Parking Lock Box LLC
	<b>TITLE OF ENTRY</b>	<b>Vehicle Lock Box</b>
<p>A patented and relocatable and remotely actuatable vehicle security and solar charging enclosure system service for parking lots and garage rooftops. The all-metal relocatable structure installed over a parking surface has a closable opening through which allows a vehicle to enter and exit, controlled by an iPhone app electronic actuation system configured to open and close the unit upon receipt of a remotely generated signal and payment. The purpose of the Lock Box service is to allow electric vehicle owners solar charging peace of mind and protection from break-ins, vandalism, theft, and all types of Canadian weather.</p>		

<b>US-03</b>	<b>NAME(S)</b>	<b>Grigori Lishanski / Oleg Lishanski</b>
	<b>ORGANIZATION</b>	Science & Technology Group LLC
	<b>TITLE OF ENTRY</b>	<b>Lishanski vibrating transport device and associated method for movement of objects on vertical, horizontal and inclined basic surfacets; US Patent 10, 214 398 B2</b>
<p>A device and method for moving cargo on inclined, horizontal or vertical surfaces utilizes frictional forces selectively applied through the use of induced mechanical vibrations on a loaded platform in conjunction with the force of gravity acting on the platform. The platform is vibrated to pivot or shift the platform relative to a support structure, engaging a portion of the platform secured to the platform with the support structure. At the furthest extent of this motion, the platform is pulled against the support structure by gravity, disengaging the portion from the support structure. In turn the pivot point for the device is shifted to the point of engagement between the platform and the support structure, which enables the portion of the platform to move upwardly along the support structure. The alternation of this engagement of the platform with the support structure causes the platform to move along the support structure.</p>		

<b>US-04</b>	<b>NAME(S)</b>	<b>Grigori Lishanski / Oleg Lishanski</b>
<b>ORGANIZATION</b>	Science & Technology Group LCC	
<b>TITLE OF ENTRY</b>	<b>Lishanski's Vibratoty cavitation pump, US Patent US 9,062,664 B2 and US 8,353,213</b>	
<p>The vibration cavitation pump includes a working cylinder with an inlet for a liquid and an outlet for a liquid, a cylinder, a piston attached to the rod, a plate attached to the rod at a distance from the piston, an activator, movably sliding installed on the rod between the piston and the plate, and a pumping mechanism working with the rod to move the rod in relation to the working cylinder. The slip activator creates cavitation in the pumped liquid to facilitate pumping of liquids such as high viscosity liquids. The pump may also include an outer cylinder around the slave cylinder to impart a rotational motion to the incoming fluid, thereby enhancing the cavitation created in the fluid by the pump, facilitating the displacement of the fluid.</p>		

<b>US-05</b>	<b>NAME(S)</b>	<b>Giuseppe Del Giudice</b>
<b>ORGANIZATION</b>	Wheel Potential, LLC	
<b>TITLE OF ENTRY</b>	<b>B-posi+ive</b>	
<p>B-posi+ive is designed to help a person improve their attitude by improving feeling and emotional intelligence. It detects feeling by using mobile phone camera/flash, and allows a person to track thoughts, feelings and behaviors. Tracks feedback about thoughts, feelings and behaviors. B-Positive has helped hundreds of people feel better and offers 30 day FREE trial to help improve a person's attitude. Currently 100 subscribers and counting! B-posi+ive has the potential to help millions of people by improving attitude.</p>		

## UZBEKISTAN

<b>UZ-01</b>	<b>NAME(S)</b>	<b>Matyakubova Paraxat Mayliyevna</b>
<b>ORGANIZATION</b>	Tashkent State Technical University	
<b>TITLE OF ENTRY</b>	<b>Development of software for monitoring and measuring physical and chemical parameters of groundwater</b>	
<p>This problem is solved by measuring the water level in the system of observation wells at a given frequency (in seconds, hour, day, decade, month, etc.). Wells located in critical areas can be measured more frequently. The total number of remote complexes (wells) is 66 across the territory of Urgench, with a total of 91 observation wells. Information on the groundwater level from wells is transmitted via GPRS data transmission channels.</p>		

## VIETNAM

<b>VN-01</b>	<b>NAME(S)</b>	<b>Mai Quoc Huy / Dao Thi Hai Anh / Tran Bich Huong</b>
<b>ORGANIZATION</b>	Lao Cai High School for Gifted Students, Lao Cai province	
<b>TITLE OF ENTRY</b>	<b>System of automatic rescue and alarm</b>	
<p>Although there has been a decrease in the number of fatal cases, a hefty drowning accidents are still depriving Vietnamese children's lives on a daily basis. Meanwhile, the availability of in-water rescue equipment in Vietnam is limited. The lack of viable and timely rescue measures is a major account for the tragic consequences. Thus, the research team decided to carry out the research project "<b>System of automatic rescue and alarm</b>" in an attempt to develop a fully automatic rescue system, which could approach the victims timely, and manage to save their lives in emergencies.</p>		

<b>VN-02</b>	<b>NAME(S)</b>	<b>Tran Ngoc Nhat Minh</b>
<b>ORGANIZATION</b>	Ngo Si Lien Secondary School	
<b>TITLE OF ENTRY</b>	<b>Self-Made Virtual Assistant</b>	
<p>The assistant can perform much more complicated tasks, for instance, advanced calculations, at insane browsing speeds, including currency conversion, converting different measurement systems, playing music from many platforms such as YouTube, Soundcloud, smart auto correcting and completing user's speech, running chatbot. Users can use the software easily to make their lives more interesting and inspire users to develop further into other applications. Using only Python and its existing packages and features to code and create AI enabling English improvements and communications.</p>		

<b>VN-03</b>	<b>NAME(S)</b>	<b>Nguyen Minh Tu / Nguyen Dinh Dung</b>
<b>ORGANIZATION</b>	Phan Dinh Phung High School, Hanoi / Kim Lien High School, Hanoi	
<b>TITLE OF ENTRY</b>	<b>Cost effective and anti cross-contamination automatic temperature measurement system</b>	
<p>This invention focus on design an automatic and cost effective forehead temperature measurement robot and release the hardworking of medical staff and reduce the cross-contamination capacity for them.</p>		

<b>VN-04</b>	<b>NAME(S)</b>	<b>Vu Huu Khanh / Nguyen Thi Mai Anh / Nguyen Binh Giang / Le Tri Duc / Nguyen Ngoc Nhi</b>
<b>ORGANIZATION</b>	TPCircle	
<b>TITLE OF ENTRY</b>	<b>Increase the enhancement immune system ability of <math>\beta</math>-1,3-glucan by hydrolytic enzyme from the liquid culture of shiitake <i>Lentinus Edodes</i></b>	
<p><math>\beta</math>-1,3-glucan in shiitake (<i>Lentinus Edodes</i>) has great ability to treat cancer and enhance immune system. However, its huge molecular weight (1-4x106 Da) makes difficult for human body to tolerate. The liquid culture of shiitake contains <math>\beta</math>-1,3-glucanase, a hydrolytic enzyme which can be used to efficiently cut <math>\beta</math>-1,3-glucan into short polymers or oligomers but still ensuring the bioactivity. Thus, the present study investigates the time and environment of liquid mushroom culture to obtain the highest active <math>\beta</math>-1,3-glucanase, purifying and testing the activity of enzyme in different pH and temperature conditions and its hydrolysis ability.</p>		

<b>VN-05</b>	<b>NAME(S)</b>	<b>Le Nhat Minh</b>
<b>ORGANIZATION</b>	TPCircle	
<b>TITLE OF ENTRY</b>	<b>Study the targeting inhibitory efficiency on cancer-stem-cell of nanopiperine – monoclonal antibody complex (PMC)</b>	
<p>In this study, the obtained piperine was encapsulated in liposomes and conjugated with anti-CD133 monoclonal antibody to create a new material (PMC) to inhibit cancer stem cells targetedly. PMCs suppressed the proliferation of NTERA2 cell line but were not toxic to healthy cells, reduced the expression CD44/CD133 markers, arrested the NTERA2's cell cycle as well as increased the level of caspase-3 and inhibited <i>in vitro/ in vivo</i> tumors (P &lt;0,05). Thus, the PMCs proved their enhanced potential biomedical and pharmacological applications in targeted cancer therapies.</p>		

<b>VN-06</b>	<b>NAME(S)</b>	<b>Do Quang Truong</b>
<b>ORGANIZATION</b>	TPCircle	
<b>TITLE OF ENTRY</b>	<b>Early prediction of thrombotic stroke using machine learning models of newly detected genomic mutations</b>	
<p>Most people with thrombosis are detected quite late, making it difficult to treat, thus, early detection of thrombosis is essential. With today's developed technology, 12 mutations on 11 genes related to thrombosis have been discovered. In this project, Real-time PCR technique was used to survey 12 genetic mutations in 200 Vietnamese people and discovered new mutations also related to thrombus formation by WES technique. Not only stopping at the survey, the project has found a method to predict the disease probability of test subjects using gene bank data built from Real-time PCR and WES techniques, processed through different algorithms.</p>		

## YEMEN

<b>YE-01</b>	<b>NAME(S)</b>	<b>MOMEN MUSTAFA MOHAMMED AHMED</b>
<b>ORGANIZATION</b>	The Union of Arab Academics	
<b>TITLE OF ENTRY</b>	<b>Phone battery pack charging system via a telecommunications company</b>	
<p>The invention consists of a small connection installed at the mobile's electrical charging entrance to provide its battery (OTG) with electric charging, when the mobile battery is exhausted, as a minimum of 5%, where the mobile is charged in the case of failure to charge with the electric wire by linking it to the composite connection that will connect the mobile to the company providing the telecommunications service. Where the telecom company will be able to charge the cell phone battery by one of the two options 50% or 100% by filling the electric charging battery in exchange for a deductible amount from the user's balance, through a code that will be determined between the service company that provides the communication and the mobile user.</p>		

<b>YE-02</b>	<b>NAME(S)</b>	<b>MOMEN MUSTAFA MOHAMMED AHMED</b>
<b>ORGANIZATION</b>	The Union of Arab Academics	
<b>TITLE OF ENTRY</b>	<b>Facilitated liquid system for choppers to put out the brown dust</b>	
<p>The invention is related to a "natural liquid substance" that consists of a mixture of this substance is then mixed with a red mucilaginous substance so it's possible to see the airplane spot from as far as one can see. The substance is placed after that to cool for some time and next it's kept in a tank on the chopper to be ready for use in an environment with soil and thick dust or something like that. The substance is to be sprayed over the soil using an installed system on the chopper composed of pipes. It is sprayed shortly before takeoff which gives the soil stiffness for a longer period of time when the engine of the chopper is turned on for takeoff and landing.</p>		

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Holly Beverly, Vice President Marketing

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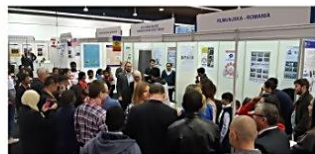


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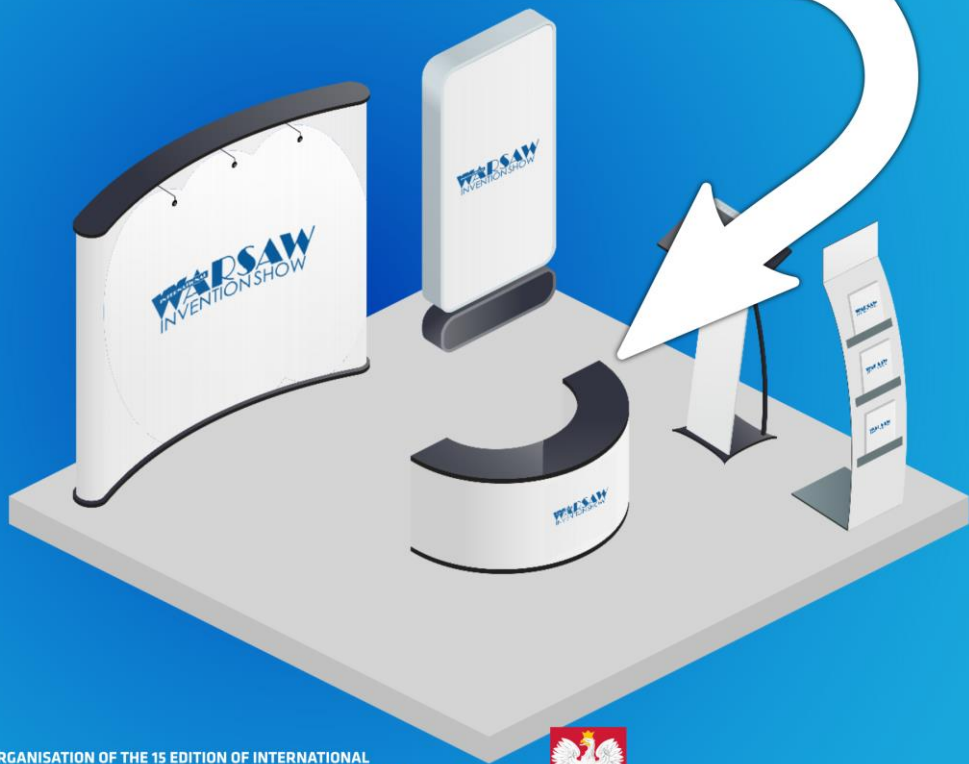
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發明比賽，發明家交易、交流，免費知識產權講座

Invention Contests, Inventors exchange, Free IP seminar

2021.12.10-12 10:00a.m.~19:00p.m.

展會地點：澳門科學館展覽中心

Venue : Macao Science Centre

指導單位

Guidance unit



中國發明協會

China Association of Inventors

主辦單位

Organizer



澳門創新發明協會

Macao Innovation and Invention Association

協辦單位

Co-organizer



世界發明智慧財產聯盟總會

World Invention Intellectual Property Associations



HKFII

香港發明創新總會

Hong Kong Federation of Invention and Innovation



香港發明協會

Hong Kong Invention Association

支持單位

Supporting unit



INTERNATIONAL FEDERATION OF INVENTORS' ASSOCIATIONS



澳門科學館  
CENTRO DE CIÊNCIA DE MACAU  
MACAO SCIENCE CENTER

線上協辦單位

Online Co-organizer



Huala 7IPR National Intellectual Property Operation Platform

電郵 / Email: [miixmacao.info@gmail.com](mailto:miixmacao.info@gmail.com)

網址 / Website: <http://miimacao.org>



# 15<sup>th</sup> Anniversary International Invention and Innovation Show



**11-12 May, 2022 Poland**

Katowice, Spodek / International Congress Centre



**INVENTIONS, NEW PRODUCTS,  
TECHNOLOGICAL SOLUTIONS  
AND SOCIAL INNOVATIONS  
FOR INDUSTRY, ENVIRONMENT,  
HEALTH AND MEDICINE, EVERYDAY LIFE**

International support:



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# JOIN US



## WIIPA Family

### World Invention Intellectual Property Associations

#### Introduction

In 2010, it was founded by Mr. Hsieh Hsin-Ming. At the moment, 50 member countries and partners have joined the "WIIPA Family" with the goal of promoting invention, innovation and intellectual property rights around the globe.

#### Founder

Since 1993, Mr. Hsieh Hsin-Ming has formed "TIPIPA" Successfully, opened up a way for Taiwan's products to be in line with international standards and also laid the foundation for the establishment of WIIPA.

#### History

In 2000, Mr. Hsieh Hsin-Ming felt that the main axis of TIPIPA is limited to Taiwan. With a vision to gain access in the international stage, he dedicated his time and effort to gather transnational forces to put his vision at work.

Fueled with a vibrant ideology, he continued to open doors of opportunities for young and talented inventors to a global level and thrived on gaining international attention for the establishment of WIIPA as a multinational organization.

#### Our Goal

WIIPA upholds the spirit of globalization and extends its vision across the globe. With technology, using network interface allows a fluid communication pattern for a more innovative exchange of ideas and information among stakeholders.

#### Members

WIIPA member states span across continents. The member countries in the "WIIPA Family" currently has 50 member states and partners.

WIIPA put great emphasis on "common concept" and "substantial participation". WIIPA members have certain privileges other associations aspire for. One of them is taking part in WIIPA meetings, conferences as well as exchange activities from time to time to have a full understanding and mastery of the development and complexity of international inventions.





World Invention Intellectual Property Associations

# WIIPA Family Create Your Minds Explore Your Life



[www.wiipa.org.tw](http://www.wiipa.org.tw)



# VI



**TISIAS**  
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