IEEE
SL SECTION
NEWSLETTER

JULY
2020

Corona is not the
only virus

Robots- During and
after COVID 19

Electronic Noses or
Artificial olfactory sensors

What is visible Light Communication?

Boost your family financial immunity
during a crisis

◆IEEE

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Message from the Chairman

It is my pleasure to provide a message in the first E-newsletter of the IEEE Sri Lanka Section in the year 2020. I am glad to see that the newsletter consists of timely related articles on different important topics. Even with the current COVID 19 pandemic situation, members of the IEEE Sri Lanka section are working towards the betterment of the society. This newsletter provides clear evidence of the untiring efforts of the IEEE Sri Lanka section community. I am sure with such an effort of active IEEE volunteers in Sri Lanka section, we will soon be able to become one of the best sections of IEEE.

This newsletter contains informative articles titled; Corona is not the only virus, Robots- During and after COVID 19, What is visible Light Communication?, Electronic Noses or Artificial olfactory sensors, in addition to the news articles of activities carried out by the IEEE Sri Lanka section and its other organizational units.

The quality of the newsletter is excellent and I take this an opportunity to thank the diligent effort of the editorial team of the newsletter. Furthermore, I congratulate and thank the efforts of Dr. Pradeep Abeygunawardhana, Editor of the section.

Please follow the guidelines of health professionals, stay safe, and gather with the IEEE Sri Lanka section to work toward advancing technology for humanity

Ruwan Gopura
Professor
Chair/IEEE Sri Lanka Section

Message from the Editor

Helen Keeler has said "Alone we can do so little, Together we can do so much". IEEE Sri Lanka section provides its members to work together for innovation, knowledge sharing and to serve the motherland. Elbert Einstein has said "Imagination is more important than knowledge". IEEE Sri Lanka is the collection of knowledgeable people. IEEE Sri Lanka Section Newsletter is a little effort that we took to direct it's member to imaginative path.   I am proud be an IEEE Sri Lanka section newsletter editor for July 2020. It is great effort by IEEE Sri Lanka section and editorial team.

This version of newsletter was edited with two purposes. First, this is providing its members to share their expert knowledge among members and interested communities. Second this provides a platform to share members memories and achievements. As editor of IEEE Sri Lanka Section Newsletters, I believe this will improve the members motivation to engage more and more IEEE activities while enhancing bond between current members.

I would like to take this opportunity to thank all IEEE members who provided the articles, information about events and members achievements. Also, I must thank Chair person of IEEE Sri Lanka section Prof. Ruwan Gopura and its executive committee for supporting me. Further, I would like to express my gratitude to Mr. Tharindu Dharmasena who helped me for formatting.

Dr Pradeep Abeygunawardhana
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Corona is not the Only Virus

by Savini Abayaratne – Lead, Editorial and Content Writing Team, LETs talk Organizing Committee

LETs talk by IEEE Young Professionals Sri Lanka, saw its successful conclusion of the 2nd LETs talk session, a panel discussion on the 19th of May 2020. Addressing a timely issue, since workplaces across the world have shifted towards the use of online platforms in fulfilling their professional responsibilities, a cybersecurity awareness session was held under the topic, "Corona is not the Only Virus". Due to the current restrictions imposed to curb the global outbreak of COVID-19, this panel discussion was conducted as an online session via Zoom in partnership with ISACA Sri Lanka. Mr. Kavinga Abeywardena, a lecturer in cybersecurity, Department of Computer Systems Engineering, Sri Lanka Institute of Information Technology joined the discussion as the moderator while Mr. Sujit Christy, Director of Layers-7 Seguro Consultoria Private Limited, both Founder and President of Information Security Professional Associates (EPA), Mr.Kanishka Yapa, an Assistant Manager (Information Security) at Mobitel (Pvt) Ltd and a visiting lecturer at the Informatics Institute of Technology and Mr. Mohan Chathuranga, a Deputy General Manager - IT Governance at

IEEE YP SL LETs talk Indulges the Audience in an Insightful Panel Discussion on Cybersecurity Awareness

MAS Holdings and a visiting lecturer at the CICRA campus (Pvt) ltd contributed to the discussion as panelists.

The discussion was focused on three sub-areas, security precautions and safety measures that should be followed before going online, online security threats that an individual should be aware of while using the Internet, and the steps that should be taken following a cyber-attack. Kicking off the session Mr. Sujit Christy explained what is at stake by bringing out a recent incident of a world-famous celebrity's legal information being leaked by a gang of cybercriminals and how employees around the world have been moved to an unprotected environment from a protected environment concerning cybersecurity and secured networks at workplaces due to the COVID-19 outbreak. Mr. Abeywardena directing his next question at Mr. Mohan Chathuranga stimulated a

Payments that attackers have demanded from their victims have reached USD 2.5 – 4.5 million in the US

discussion about the precautions companies should take in order to reassure the safety of corporate data and how the employees should adhere to these guidelines as the traditional security boundaries are being blurred due to the working from home concept. As the panelist pointed out, identifying the devices and the security needed for each device, securing the home routers, activating the software firewalls at the home end and use of encrypted tunnels from home devices to the data source the employees are connecting to at the workplace end are main tasks that should be conducted in securing the connections. Elaborating on the present cyber threats people should be aware of, Mr. Kanishka Yapa described how already existing threats are on the rise at a higher magnitude given the current circumstances. Sharing their personal experiences, the panel focused on social engineering attacks, how attackers exploit human emotions and weaknesses rather than attempting to change the bits and bytes. They went on to discuss

how a user can identify that he or she has been attacked and the strategies that can be adapted to either reverse or minimize the damage. According to a report released for the first quarter of 2020, the payments that attackers have demanded from their victims have reached USD 2.5 – 4.5 million in the US only. As the panel described, the weakest link that has been enabled in allowing cybercriminals to attack is formed as a result of working from home. According to their analysis, some indicators of being attacked or compromised are unusual outbound traffic,

> *"more than 22,000 domain names were registered under the subject COVID-19 and from which more than 2000 websites have been confirmed to be malicious"*

suspicious register, and file changes, and as Mr. Sujit revealed, more than 22,000 domain names were registered under the subject COVID-19 and from which more than 2000 websites have been confirmed to be malicious. As they continued to elaborate, the manifestation of the virus being infected to the device may not occur until it is connected to a corporate network and that the user should be vigilant of anything that is given for free. Further emphasizing on the fact that taking precautions is much easier than making an effort to control the damage and the debris left after an attack, the panel enumerated the steps one can take to reassure the safety and security of one's data and connections, namely, enabling multi-factor authentication, restraining from using a single password for all applications and changing the passwords frequently. The main problem highlighted at the session was the habit that the people have of prioritizing convenience over security and

as described, security is a moving target. Therefore, cybersecurity should be scrutinized.

Sri Lanka Computer Emergency Readiness Team (SLCERT) and the Cybercrime Department of Criminal Investigation Department (CID) were enumerated by the panelists as the authorities that a victim should reach out to when an attack takes place. The Q&A session was followed up as the session reached its end.

With the session being aired via Zoom and Facebook, altogether around 110 participants joined the live discussion while a whooping number of over 3900 participants have viewed the live recording.

Boo␣ your family financial immunity during a crisis

by Dinithi Rambukwella – Member, Editorial and Content Writing Team, LETs talk Organizing Committee

IEEE Young Professionals, Sri Lanka is dedicated to helping its members shape their careers not only from a technical perspective but also in terms of leadership, entrepreneurship and sustainability. IEEE Young Professionals Sri Lanka - Launched LETs talk series in 2017. From then until 2020 LETs talk team will continue its successful streak for the 4th consecutive year. IEEE YP Sri Lanka has been able to recognize youngsters in these sectors throughout the

LETs talk by IEEE YP SL

year 2019 and IEEE YP Sri Lanka continues its efforts in 2020.Due to the current restrictions imposed to curb of COVID-19 pandemic, LETs talk will be going digital and will conduct webinars through tele conferencing tools.

"Mani Talks Money" was the first event of LETs talk online series for the year conducted by Mr Manosh Kulasena, lead trainer at Mani talks Money an expert of personal finance management. The session was conducted under the theme "Boost your family financial immunity during a crisis", topic on expense management in crisis through a fixed salary. Held on the 8th of April 2020 the session boasted registrations of over 80+ through RSVP.LK and a participation of 41 off 50 limited seats. The topic was organized to give an overview of effective financial planning to manage monthly income wisely during a crisis such as the one the world faced in the early months of 2020 and to effectively plan long terms considering the financial impact on the economy.

financial planning may allow individuals to meet their life goals by prudent management of money and finances

Mr Manosh Kulasena is the lead trainer at Mani talks Money, which is recognized for interactive and activity-based personal finance workshops. Mani talks Money has coached more than 3,200 fixed salary earners in leading corporations on how to manage their wealth effectively. He is also a guest columnist on personal finance and macroeconomics.

Mr Manosh is a member of the Chartered Institute of Management Accountants (UK) and a member of the Institute of Chartered Accountants of Sri Lanka and holds a B.Sc. Accounting (Special) degree awarded by the University of Sri Jayewardenepura. He is a Senior lecturer for advanced financial management subjects. He is also a Guest columnist on personal finance and macroeconomics.

The event started with the welcome speech of Mr Pasan Pethiyagoda (former YP Chair) and the speaker was introduced by him. After that Mr Manosh Kulasena started his online session with a brief introduction about how to boost your family financial immunity during a crisis.

Then he continued the session mainly with these interesting topics.

•**Prudent planning and budgeting?**

Under this topic, Mr Manosh Kulasena explained how to plan and budget a fixed salary in a critical situation. He mentioned mainly how to be more prudent with money and how to create a monthly budget. He mentioned financial planning may allow individuals to meet their life goals by prudent management of money and finances, it may be observed that learning to manage money wisely could be the first step towards the bigger goal. Furthermore, he said that both these areas call for ascertaining the need, efficiency and time frame before getting started.

• **What's in it for Fixed Salaried Professionals?**

In this area, Mr Manosh mentioned how to set goals to diversify investments especially he mentioned this area benefits of the amount saved and the avenues where save makes a smart saver. Overall, He said if save by means that multiply saving is always a smart move.

• **Managing Investment in challenging times.**

This is the most important topic area in this online session. He describes how to invest in the critical time. He mentioned When the economy slows, such times are never comfortable, investors need not worry. He said

in difficult times, the employer should constantly analyse the financial condition of employer income, as its financial position determines whether revenue is viable and positioned for future growth.

Money talk's money received a fairly good response from its participants. Mr.Manosh Kulasena spent an additional 30 minute answering all the questions and explaining them the necessary problems well. Finally, the program ended with good feedback from participants. The enthusiasm and participation of the participants showed how important this session was for them. In the limited time, the main conclusion of the topic was well discussed. We believe that this effort by IEEE Young professionals contributed to help young employers manage their monthly fixed salary in a crisis.

Down the memory lane of Term 2019/20 IEEE IAS SBC University of Moratuwa

Founded on 28th July 2015, the IEEE IAS Student Branch Chapter of University of Moratuwa has always strived to realize the vision and mission of IAS, by enhancing the knowledge and skills of future engineers to serve humanity through technology.

A novel chapter unfolded in this journey on 16th August 2019, as the term 2019/20 began with new aspirations, laying the very foundation to becoming one of the "Most Happening Chapters" of the world this year! Here's a stroll down the memory lane to celebrate the achievements and extend gratitude to everyone who supported along the way.

At the very beginning of the year 2019/20, a campaign was launched to recruit new volunteers to support in the multitude of student branch chapter's activities. Volunteers were openly called for by spreading the message about IAS SBC through social media. Accordingly, 40 volunteers were recruited for the organizing committees, and they are constantly being mentored, trained and updated about the benefits of being a part of IAS.

The formation of "IAS Videography Team" was a milestone this year. It is the Student Branch Chapter's very own of videography team responsible for recording, post-production and publishing of events organized by the Student Branch Chapter. Training sessions were constantly held for the crew.

As a result, the very first video produced by the team, the recording of the "Internet of Things Workshop", was released on 23rd February

2020 in the official YouTube Channel of IEEE Student Branch - University of Moratuwa.

The IAS SBC completed 4 Workshops and 2 Guest Lectures in several areas vital for an engineering professional's survival in the modern world. The workshops covered Computer Networking, Internet of Things, PCB Design and PCB Printing, while the Guest Lectures covered the topics "Industrial Aspects of Lightning Protection Systems" and "Transformers and Transformer Protection."

Initiation of the project "IAS Comrades" is another milestone this year. The project is a collaborative effort with IEEE IAS Sri Lanka Chapter and focuses on membership development, building fellowship between Sri Lankan IAS Student Branch Chapters, creating awareness on IAS Competitions for undergraduates and encouraging more Student Branches to initiate an IAS Chapter. The first and second phases of the project were held at University of Peradeniya and University

of Moratuwa respectively, and the project will continue further after the prevailing situation in the country settles down. Special thanks go to Mr. Lakshitha Gunasekara - Chairman of IEEE IAS Sri Lanka Chapter, Mr. Tharindu Suraj - Research Engineer at University of Moratuwa, without whom the project would not have reached its success.

The collaborative Social Service Project, IEEE for the Countryside ("ගම්මැද්දට IEEE අපි") was also initiated this year. This is a collaborative effort of IEEE PES, IAS and RAS Student Branch Chapters of University of Moratuwa hand in hand with IEEE Student Branch University of Moratuwa with the hope of lending a helping hand to aspire school students from areas far away from the capital city. Under Phase 1, a workshop on Robotics, Arduino, Sensors and Actuators was conducted with the participation of over 70 secondary students of Anuradhapura Central College.

As recognition of the multitude of impactful activities carried out this year, IEEE IAS SBC of University of Moratuwa emerged the "Best Performing Chapter" within IEEE Student Branch University of Moratuwa for the months of October and November 2019.

The shimmering beacon among the highlights this year is securing third place in the IAS CMD Most Happening Chapter Contest 2020, a glorious reflection of the commitment and hard work of our enthusiastic members. The team's heartfelt gratitude goes to Dr. Upuli Jayatunga, Advisor of IEEE IAS SBC - University of Moratuwa, for her constant encouragement and guidance.

Our alma mater was also made proud through a number of achievements in IEEE IAS CMD Competitions 2020.

- K. A. T. C. Kumara - Runner-up at IEEE IAS CMD Myron Zucker Undergraduate Student Design Contest 2020 for the project "AC Self-Switching Power Supply"!
- Kithmini Kaumadi Herath, Ramith Udara Hettiarachchi & Hasindu Piyumantha Kariyawasam - Second Runners-up at IEEE IAS CMD Humanitarian Contest 2020 for their project "Real-time Sign Language Translation to Speech"

- Naveen Harshitha Karunanayake, Yasiru Achintha Wijesinghe & Chameera Jananjaya Wijethunga of Team El-Tirador ("Autonomous Carrom Robot") and W. L. G. Dilshan, H. A. H. I. Perera & M. I. Jayawardana of Team TALRO - Finalists at IEEE IAS CMD Robotics Contest 2020

Our heartiest congratulations go out to them!. The Term 2019/20 was a remarkable year filled with many memories to cherish and significant milestones. IEEE IAS SBC UoM is ready to continue their efforts to realize the vision and mission of IAS in the upcoming years as well!

Global win for IEEE DAY 2019

by Randima Hasanthi – Secretary IEEE Student Branch University of Moratuwa

Inspired by *Passion* to *Transform beyond* *Excellence*
#Term19/20
PHOTOGRAPHED BY : KULUNU CHAKSHANA

IEEE Day was successfully organized by IEEE Student Branch, University of Moratuwa on 6th of October 2019 at MJF Centre, Moratuwa with a participation of more than 150 young IEEE members around the country. This event was initiated upon remembrance of IEEE's origin and to celebrate its worldwide membership. Theme was "Leveraging technology for a better tomorrow". Ms. Nayomi De Silva, CEO of Burgundy Consultants and Mr. Susara Thenuwara, PHD student of Shibaura Campus in Tokyo were the guest speakers of the event. They lightened up the event with an Entrepreneurship session and a Technical session Respectively.

"Leveraging technology for a better tomorrow"

Most highlighted part which took part in this event is launching a new Student Branch logo, new YouTube channel, new Instagram account for IEEE Student Branch University of Moratuwa. All participants were made aware on how to volunteer with IEEE, advantages of getting IEEE membership, opportunities in IEEE and how to be a giant in IEEE. During the event, the 10th anniversary of IEEE was celebrated by cutting a specially made cake.

Due to the recent fires occurred in the amazon rainforest and Ella forest areas during that

period, reforestation has become a global issue. In order to encourage the younger generation in this aspect the Student Branch has decided to donate some plants for the Nature Team of University of Moratuwa as an effort to fulfill our social responsibility, along with the celebration.

The event ended up with a DJ. The celebration was fun filled and knowledgeable with a bunch of cherished memories. This event was submitted for the "IEEE Day Global Photo Contest 2019" and won the 1st place in social category with a $500 Cash Prize. Event Managers of IEEE Day were Janith Randima, Vice Chairman of the Student Branch and Randima Hasanthi, Secretary of the Student Branch.

Electronic Noses or Artificial olfactory sensors: n introduction

by Thanihaichelvan Murugathas

Imagine you are capable of detecting a COVID-19 patient using a mobile phone with a blower, you can test your meal before you eat for any allergens using the smell or you can detect any cancer at its very early stage and all what you need is a small surgery for cure. This seems fantasy but not too far from reality. Engineers and scientists around the world are working hard to fabricate a bio-inspired electronic nose for detecting chemical molecules at extremely low quantities.

> *"there is no cost-effective device to accurately and sensitively detect either smell or taste"*

Of the five major senses, smell and taste remain the last to be developed into easy-to-use real-time sensors or detectors. Science and technology have advanced hearing, vision and touch sensors enormously, and we can readily capture and transmit high definition images or even image a single molecule. We can detect sound from black holes trillions of kilometres away from us, and touch sensitive components are now commonplace in phones and computers. However, there is no cost-effective device to accurately and sensitively detect either smell or taste.

An electronic sensor is a device which converts a physical quantity like sound, light or motion into a measurable electrical current or potential. The source of smell is chemical molecules. Detecting these molecules and converting them into an electrical signal is a challenging process. However biological olfaction is an efficient process to detect order and molecules. The modern day electronic olfactory sensors are inspired by biological olfactory system.

One approach to detect the odorant molecules is to exploit the incredible sense of smell exhibited by animals. Highly sensitive animal noses are already widely used as detection methods in many different applications including drug-detection, biosecurity, search and rescue and medical diagnostics. However, there are drawbacks to using animals, such as the cost and time associated with training and handling, the risk of both false positives and negatives, and environmental and behavioural variation. These can be overcome by

incorporate their exquisite sense of smell in an electronic device.

Before going into the artificial olfactory systems, it is essential to understand the biological olfactory system. The biological olfactory system is a unique and complicated system and is not completely understood. The important part in the biological olfaction is the first step in which chemical molecules converted into an electrical signal to the brain. This conversion is performed by special proteins called odorant receptors (OR) which are placed in the nose. The OR proteins generate a small electrical signal when they are binding to an odorant molecule. This electrical signal will initiate the signal relay towards the brain, and it will be identified by the brain from multiple signals.

The OR proteins have unique properties. An OR protein can detect a combination of odorant molecules.

> *The biological olfactory system is a unique and complicated system and is not completely understood*

In human olfactory system, we have about 400 different ORs. At the same time the number of receptors is about 1700 in dogs. The selectivity of the ORs can be explained by using the following figure. Consider arbitrary ORs named with numbers 1 to 5 and arbitrary odorant molecules named with alphabets A to F.
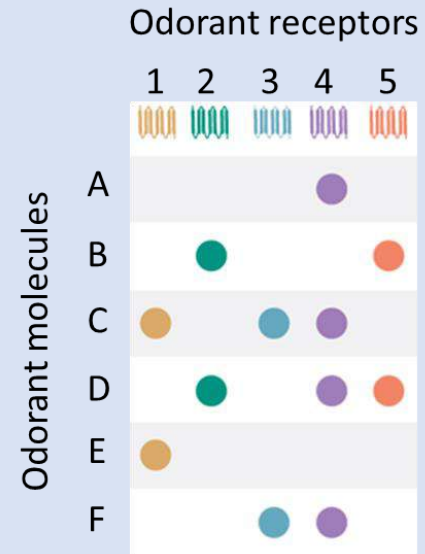
Figure 1: Sensitivity diagram of multiple ORs

OR1 respond to odorant molecules C and E while OR4 respond to odorant molecules A, C, D and F. Hence, if the brain received signals from 1, 3 and 4 then the odorant molecule detected must be C.

The state-of-the-art artificial olfactory systems made in laboratories are heavily rely on ORs. The small electromotive force generated in the OR proteins during odorant binding will produce the necessary primary signal for the sensor.

To detect these small electrical changes in the ORs, carbon nanotubes (CNT) being used [1]. CNTs are tiny tube-like structurers which are made up of carbon atoms have diameter

approximately 1 to 5 nanometres and lengths of up to millimetre range. CNTs can be mainly divided into two different categories. CNTs with a single wall, the single-walled carbon nanotubes (SWNT) and with more than one wall which are classified as multi-walled carbon nanotubes (MWNT). MWNTs are conducting materials like metals. But statistically one third of the SWNTs are semiconducting materials. These semiconducting SWNTs are highly sensitive to their immediate environment due to its smaller diameter. Especially the electrical conductivity of the semiconducting SWNTs are highly sensitive to any changes that occur in its surface region. The semiconducting SWNTs are used as the transducers to detect the small electrical changes in the ORs.

Recent development in the biotechnology provide us facilities to extract the OR proteins from the animals and keep them alive (or active) in atmospheric conditions. Most of the animal ORs are encoded and their properties are studied. The artificial odorant sensors are made by immobilising the extracted OR proteins in the sidewalls of SWNTs. The current through the protein immobilized SWNTs modulated by the small electrical changes in the order and receptors. By measuring the change in the current through the SWNT we can measure the presence of

odorant molecules. Figure 2 (a) shows image of a protein anchored SWNT and figure 2(b) shows the basic OR and CNT based artificial odorant sensor.
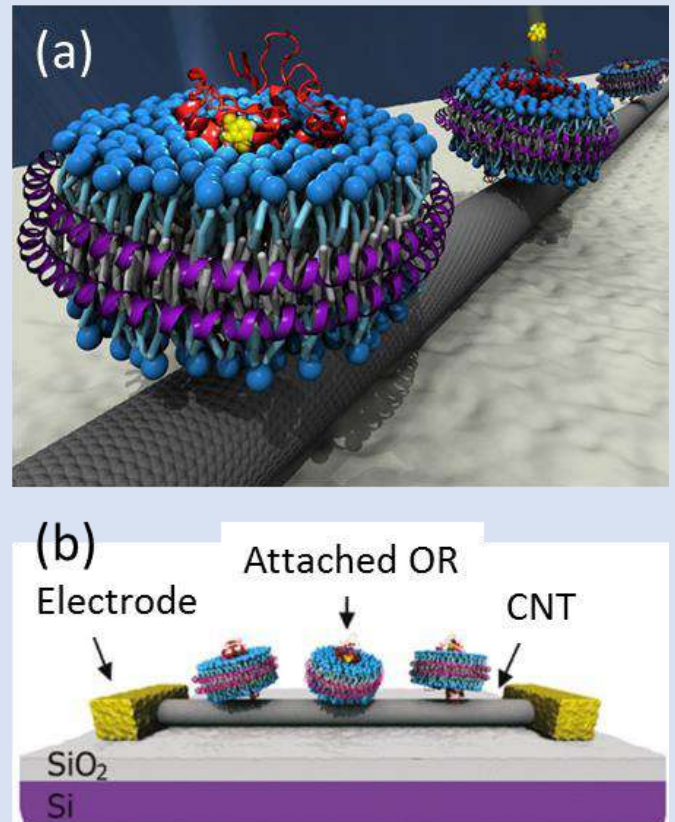
Figure 2: (a) OR protein anchored CNT and (b) schematic of a complete OR protein immobilised CNT based sensor[2]

The current through the SWNT can be measured by applying a small voltage across the electrodes.

The application of odorant sensors is immense. Real time detection of odorant molecules is a critical challenge in health-care diagnostics, environmental monitoring as well as food safety and water quality management. Recent works found that the ORs can be used to detect the molecules emitted by cancer cells at very low concentrations. This will help us to detect

cancer at early stage and to plan the treatment which could save millions of lives in the earth.

The OR based sensors are still in its infancy and a long way to go before the commercial use. However, we can expect that our lifestyle will be completely changed with the advanced and portable electronic odorant sensors in the near future.

Reference

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[2] B. R. Goldsmith *et al.*, "Biomimetic chemical sensors using nanoelectronic readout of olfactory receptor proteins," ACS *Nano*, vol. 5, no. 7, pp. 5408–5416, Jul. 2011.

IEEE OPEN DAY 2020

by Randima Hasanthi – Secretary IEEE Student Branch University of Moratuwa

"IEEE Open Day 2020" the annual IEEE awareness day and Recruitment for the newbies of University of Moratuwa was organized by the IEEE Student Branch, University of Moratuwa was successfully held on 5th of March 2020 from 4.30 pm onwards with over 300 participants. The event managers for IEEE Open Day 2020 were Mr.Janith Wijesinghe, Ms.Randima Hasanthi, the chairman and Secretary of the Student Branch while Ms.Awishka Thuduwage and Mr.Kulunu Chakshana held co-chair of the event.

Mr.Chanuka Sudesh who is formally known as "Chanux Bro", a well-known Educational Youtuber, Instagram Influencer and a Cinematographer was the Guest Speaker who enlightened the young minds with his inspirational thoughts and a worthwhile Give

away of valuable gifts for winning newbies. Prof.Ruwan Gopura, Chairman of IEEE Sri Lanka Section, Dr.Tharaka Samarasinghe, Treasurer of IEEE Sri Lanka Section, Prof.Sisil Kumarawadu, Student Branch Counselor and Mr.Peshan Sampath, Chairman of Student Activities Committee of IEEE Sri Lanka Section gave their insight for newbies on how to volunteer with IEEE, advantages of getting IEEE membership, opportunities in IEEE including Travel Grants and how to be a giant in IEEE. Additionally, newbies got the opportunity to know more about Student Branch Chapters by visiting the stalls arranged.

IEEE StuPro 4.0 Step to your Career

IEEE StudPro is an annual event organized by IEEE Young Professionals Sri Lanka for all the fresh graduates and undergraduates throughout the Sri Lanka to expose their talents to the corporate world exactly after their degree or during final stages of the degree. IEEE StudPro was started back in 2017 with the intension of creating a platform for undergraduates/graduates job seekers and companies to interact at a same place. StudPro indirectly achieves the core purpose of IEEE , foster technological innovation and excellence for the benefit of humanity.

Over the three years, participation has been increased drastically shows the impact of the event to the young professionals. Among the advantages for the participants:

- Opportunity to get overall understanding about the organizations in the relevant industry and career opportunities available
- Opportunity to career guidance from corporate representatives
- Opportunity to select an organization according to the individual preferences which best suit the exercising area

- To face interviews for the internship opportunities from top rated tech companies
- Career mentoring

Not only the participants, organizations who has been partnered up with StudPro keep on increasing tremendously giving more wider spread of opportunities for the participants. Companies get the opportunity to seek the exact talent which required for their companies among different backgrounds since the participants are from all over the country from different institutions.

Among the initiatives which were taken by IEEE YP Sri Lanka section with respect to StudPro, matching the candidate profile with the industry requirement and setting up interviews prior, development of a portal to maintain the sustainable interaction between industries and candidates got highlighted because it develops the opportunity to blend with the industries. Moreover, it provides the opportunity for the undergraduates to identify their weaknesses and lagging points to enter the corporate world before they complete the degree. Most importantly under the advices given by the corporate leaders.

The success of the event can be observed by the feedbacks given by both participants and organizations. Due to the impact created on undergraduate careers StudPro was awarded as the best Young Professionals awards at IEEE Sri Lanka section for two consecutive years. With the memories of career changes and with the proud of winning two awards consecutively under the guidance of IEEE Sri lank it is truly honored to organize StudPro 4.0 2020 for the fourth consecutive time.

StudPro 4.0 is definitely going to be a new version of StudPro compared to previous years. Event is planned to conclude in mainly three stages.

As the first stage, a survey is carried out to understand the supply and the capacities of universities both private and government. Preferences of undergraduates and fresh graduates with respect to the job/internship opportunities are planned to observe in order to study the current requirements of internship/job seekers and prospective employers and compile as an analytical report for all the stakeholders. This will give the opportunity to identify student dynamics who are planning to enter the corporate world in foreseeable future.

Link for Survey -
https://docs.google.com/forms/d/e/1FAIpQLScAur8Yk4_z2eO6vk4Rbq6wuXnvEo1BMH5Jei5Kq1XW16fuOw/viewform

As the second stage it is expected to carry out few awareness session based on the current status of the world. Mainly targeting the world pandemic covid 19 and how to face the post covid era as young professionals. Moreover to groom young professionals based on the organization's expectations is one of the other sessions that are planned to be covered as a part of StudPro 4.0.

StudPro 4.0 is planned to conclude from a career fair in order to create the platform for interactions for both participants and organizations. The information gathered from the survey will be used to organize a career fair which matches with participant expectations and preferences

Studpro 4.0 is eagerly waiting to provide many opportunities to enrich the transition of undergraduate to an employer with the support of industry well reputed companies and to deliver StudPro 4.0 in the most successful manner.

International experiences in participation IEEE

by W.M. Dev Sugandhika Jayalath

W.M. Dev Sugandhika Jayalath is an energetic volunteer with an outstanding character who has obtained so many national as well as international experiences in IEEE. His international experiences in participation are actually a result of his outstanding performances within the Sri Lanka Section. His top most international positions are as below.

Dev has contributed at the IEEE YESIST12 Maker Fair 2019 which was held at Stamford University, Thailand. He was the Lead of Communication and Documentation. There he has communicated with all the finalists who participated to final event of Maker Fair and solved all the issues related their travelling and accommodations. His duty was a huge pillar

which ensured the maximum number of participants to that year Maker Fair. As a result of his remarkable performances in 2019 this year also he got the opportunity to serve as the Lead of Communication and Documentation in IEEE YESIST12 Maker Fair 2020, Malaysia (https://ieeeyesist12.org/yesist-committee/w-m-d-sugandhika-jayalath).

He was the IEEE R10 PES Day Country Representative 2020 (https://site.ieee.org/pes-day/r10-pes-day-country-representatives).

The most splendid fact is that this year IEEE PES Day remarked as the time when the greatest number of events were organized behalf of an IEEE PES Day in Sri Lanka Section. He did such a good job with the help of all the IEEE PES Student Branch Chapters, PES Day Ambassadors, and IEEE PES Sri Lanka Chapter.

Dev is the Regional Representative for the Asia and Pacific Islands of IEEE PES Young Professionals (https://pes-yp.org/pes-ieee-yp committee/regional-representatives/). There he is fulfilling his duties of tracking YP activities in Sri Lanka and other South East Asian Islands region, seeking sponsorships and promoting PES and PES YP.

And also, he is the IEEE Day 2020 Regional Lead - R10 (Sri Lanka, India, Bangladesh, Pakistan) (https://ieeeday.org/regional-leads).

He is playing his role to ensure the contacts between Directors, Affinity Groups and Societies, assist in marketing campaigns in IEEE Day, promoting IEEE and develop more memberships while introducing the benefits of IEEE.

Dev is also contributing as a committee member of IEEE PES E-News to bring the IEEE PES closer to the benefactors who are looking for the opportunities in IEEE and IEEE PES.

Furthermore, he has followed and successfully completed the IEEE Collabratec Ambassador Training Program and became a Lead Ambassador of IEEE Collabratec. Currently he is doing his best to promote IEEE Collabratec in the Sri Lanka Section as well as in the Region 10.

And also, this guy as a member of Global IEEE PELS Student Subcommittee gives his maximum contribution to the development of IEEE PELS membership. With these all precious experiences with IEEE he is waiting to go a long distance on IEEE pathway.

What is Visible Light Communication (VLC)?

by Dr.S.A.H.A.Suraweera – Department of Electrical and Electronic Engineering University of Peradeniya

Proliferation of wireless communication devices and services demands high capacity, ubiquitous coverage, low latency and high data security requirements. However, radio frequency signals used for wireless transmission have a limited bandwidth and suffer from interference and security issues since such signals can easily pass through indoor and outdoor obstacles such as walls, floors, ceilings and external objects in the environment. A promising solution that can overcome these limitations is the visible light communication (VLC) technology.

VLC systems use visible light for transmission and reception of information in the frequency spectrum of 430 THz to 790 THz. Therefore, VLC can make use of the huge bandwidth to provide high speed data services. Further, light waves cannot penetrate walls in a room and as a result, receivers located outside will not receive signals. This makes VLC secure and immune to external eavesdropping attempts by malicious third parties. Also, light can be used for both illumination purposes as well as for data transmission, making VLC an energy efficient technology.

> *VLC can make use of the huge bandwidth to provide high speed data services*

History of VLC

The history of VLC dates back to several centuries. In ancient times, light was used to deliver messages using smoke and polished mirrors. The optical semaphore line was discovered in 1792 while in 1880, Alexander Graham Bell and his assistant invented the photophone that allowed transmission of speech on a beam of light. More recently, introduction of Gallium Arsenide (GaN) light emitting diodes (LEDs) and white light emitting phosphors stirred renewed interest for the use of VLC. As a result, development of VLC systems using LEDs began at the Nakagawa Laboratory, Japan in 2003.

How does VLC work?

A VLC system consists of a transmitter, a channel and a receiver(s) [cf. Figure 1]. A VLC transmitter uses a fast switching LED to launch on-off signals to the channel. The receiver consists of a photodiode (PD) to convert the
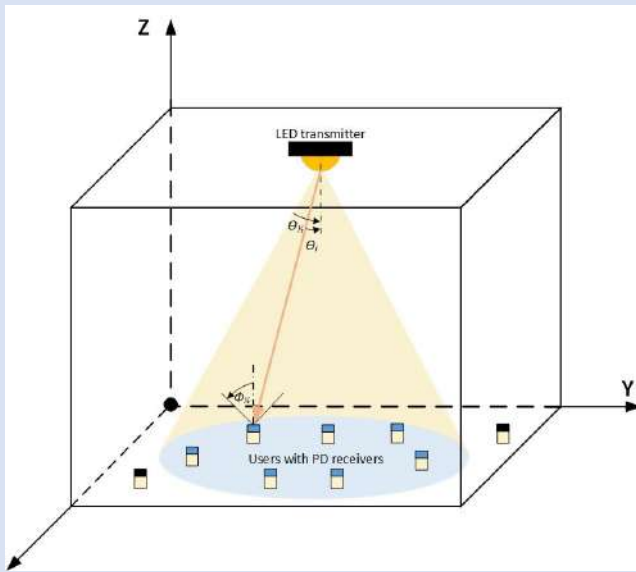
Figure 1: VLC system model. Image credited to K. W. S. Palitharathna

irradiance of the incident light into an electric signal followed by a trans-impedance amplifier to convert the electrical current into a voltage signal. Also, sources such as sunlight, fluorescent lamps, and flashlight generate ambient noise that must be filtered within the receiver circuitry. Finally, a demodulator is used to recover the original transmitted signal. In addition, optical camera communication (OCC), a form of VLC uses lighting systems such as LED arrays or liquid-crystal displays (LCDs) as the transmitter. However, instead of the PD receiver used in VLC, OCC employs standalone or embedded digital cameras on smartphones as the receiver. The coverage distance of OCC systems varies from few meters for hand held devices to tens of meters in the case of intelligent transportation systems.

What will it enable?

Potential applications of VLC include Li-Fi, aviation, intelligent transport systems, healthcare and underwater communication [cf. Figure 2]. Li-Fi technology which is similar to Wi-Fi uses light instead of radio frequency to transmit data between devices. The term Li-Fi was coined by Prof. Herald Haas in 2011. Since then several companies have developed the technology to support Gbit/s data rates. Inside airplanes, VLC can also provide high speed media services to passengers without interfering with flight systems. Transportation is another sector that can benefit from VLC where vehicles and road side equipment can exchange high speed traffic information in road safety applications. Moreover, traffic
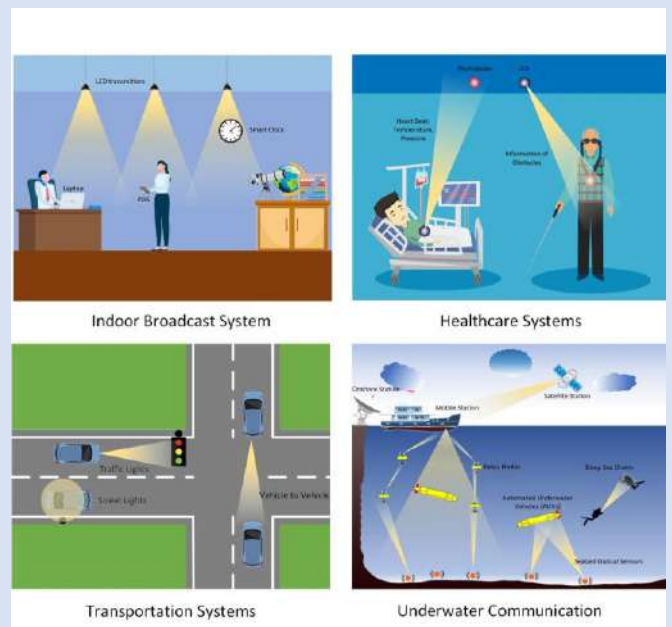

Figure 2: Applications of VLC. Image credited to K. W. S. Palitharathna

lights and billboards can be fitted with VLC transmitters to share road and weather conditions. Underwater communications too can benefit from VLC. So far, acoustic and RF signals have been used for underwater communication. However, both types of signals suffer from issues such as high attenuation, low bandwidth, and high latency. Underwater VLC can be considered as an alternative solution that can overcome these issues and achieve high data rates for underwater imaging, sensor network and video transmission applications. Hence, monitoring fisheries, pollution mentoring, Tsunami detection, off-shore explorations etc. could exploit underwater VLC technology.

Standardization of VLC

Already several active VLC standards exist. In 2007, Japan Electronics and Information Technology Industries Association introduced the JEITA CP-1221 standard. IEEE Std 802.15.7-2011 standard on short-range wireless optical communication using visible light was completed in 2011. Revision of the IEEE Std 802.15.7-2011 began in 2014 led to the IEEE 802.15.7m standard for OCC. Work on IEEE 802.15.13, a standard that can deliver data rates up to 10 Gb/s for multi-gigabit per second optical wireless communication started in 2017. Further, ITU-T G.9991 is a new recommendation for high-speed indoor optical wireless communication transceivers using visible light. All standards are expected to play an important role in future large scale deployment of VLC enabled mobile devices, dongles and Internet of Things (IoT). In addition, VLC has been identified as one promising technology for 6G.

Research Challenges

Although we have witnessed theoretical advances and continuing innovations in the field of VLC, several challenges remain to be addressed so that the technology can be implemented in emerging systems such as 6G. Downlink VLC can achieve very high data rates; however, uplink has some issues. For example, uplink generates unusual lighting conditions. Researchers have proposed hybrid RF or infrared with VLC systems to alleviate the issue.

> *Downlink VLC can achieve very high data rates; however, uplink has some issues*

However, such heterogeneous uplink/downlink solutions are difficult to coordinate and so far successful solutions remain elusive. Managing inter-cell and intra-cell inference is another important challenge

in VLC systems since VLC transmitters should be densely deployed to increase the network coverage. Moreover, VLC access points should be connected to the Internet using a cost efficient solution. Hence, efficient backbone network designs are required.

Presently, researchers across the world are working on different VLC solutions with the clear objective of making ubiquitous VLC deployment popular. Therefore, VLC technology will continue to revolutionize the future of wireless communications and IoT landscape by enabling new applications.

The UoM Wins the 1st Runner Up Award in the SP Cup 2020

The UoM team won the **1st runner up** award in the signal processing cup (SP Cup) 2020 competition attached to the International Conference on Acoustics, Speech, and Signal Processing (ICASSP), virtually held in Barcelona, Spain, from May 4 to 8, 2020. The winning team comprised of six undergrads of the Department of Electronic and Telecommunication Engineering (ENTC), and four undergrads of the Department of Computer Science and Engineering. Mr. Dumindu Tissera (a PhD candidate of the ENTC) tutored and the team, and Dr. Chamira Edussooriya (ENTC) supervised the team.

The SP Cup competition is an annual event organized by the IEEE signal processing

society to encourage students to solve real-world problems using signal processing techniques. It is held as a sub event of the ICASSP, which is the world's largest and most comprehensive technical conference focused on signal processing and its applications, with more than 1500 research paper presentations in each year.

This year's SP Cup challenge was on "*unsupervised abnormality detection by using intelligent and heterogeneous autonomous systems.*" The UoM team employed a blend of signal processing techniques and state-of-the-art machine learning techniques, such as long short-term memory and conditional generative adversarial networks, to detect abnormalities (i.e., unusual or suspected events) using inertial measurement unit (IMU) sensor data and video data captured by the cameras of autonomous systems, e.g., drones. The proposed solution by the UoM team achieved 98% accuracy with IMU sensor data and 95% accuracy with video in detecting anomalies in the dataset provided for the competition. In the first round, the UoM team scored the highest among the participated teams from all around the world. In the final presentation, the team from the Technion - Israel Institute of Technology, Israel surpassed the UoM team.

Unsupervised abnormality detection by using intelligent and heterogeneous autonomous systems

Code with WIE   Let's Rise Together

IEEE WIE Sri Lanka Section Affinity Group in collaboration with IEEE HAC & SIGH

The unexpected global pandemic, COVID-19, has brought about complications for many countries that are unique to their local communities. In Sri Lanka, the local communities in different geographical areas suffer from day to day social issues other than the health issues caused by COVID -19. Identifying the current problems that each local community is facing can be very challenging with the limited infrastructure available. Code with WIE -Let's Rise Together organized by the IEEE WIE Sri Lanka Section Affinity Group in collaboration with IEEE HAC & SIGHT was aimed at inspiring the creation of cost-effective, user friendly and easy to implement ICT solutions that will help to improve the quality of life for people in such communities as well as save those in vulnerable conditions due situations like

COVID -19. This will encourage University students to develop products that solve the critical problems arising due to the COVID-19 pandemic. Students are spread over various regions of Sri Lanka and they are the best individuals to analyze the local issues and find innovative solutions using the information they can gather. The applications were opened for IEEE and WIE members together with other individuals for collaborative projects as teams. The best project ideas were directed to industrial members who gave support and guidance to the teams to improve and implement the solution as part of a mentor unit which consisted of such professionals from the industry and members of the WIE Sri Lanka Section Affinity Group. The variety of issues arising in a crisis will be significant in this as the applicants will be IEEE members and WIE

members coming from every corner of the country. The proposal call was advertised among 19 student branches and 7 WIE affinity groups in Sri Lanka and other interested parties. We received around 12 proposals from teams consisting of undergraduates from various universities. The teams went through an initial prototype/design submission stage where they presented their ideas to a selection board and six teams were selected to proceed with their work to the final stage which will be held on the 28th June 2020. At the final stage, an evaluation will take place wherein the teams will be judged based on the final product or prototype which they have come up with. During the final evaluation the three best products will be selected and they will receive financial aid from IEEE HAC & SIGHT to continue their work for the benefit of their communities.

IEEE Innovation Nation Sri Lanka Steps into its Third Year with New Prospects

by Savini Abayaratne – Secretary Innovation Nation Sri Lanka

With the successful completion of its second edition, IEEE Innovation Nation Sri Lanka is back again to inspire young innovators to become successful entrepreneurs by marking new beginnings as it steps into its third consecutive year in 2020. Backed by its triumphant previous two installments, this year's edition will see the likes of a few additions to its highly esteemed program outline.The introduction of a side competition for the generation of a problem pool is one such novel inclusion. During these unprecedented times resulted by the global outbreak of COVID-19, we have arrived in troubled waters and are facing several dilemmas as individuals as well as a nation.

Difficulties are piling up and people are frustrated. As a project initiated to let young minds of Sri Lanka innovate groundbreaking state of the art solutions for problems, Innovation Nation Sri Lanka will be launching a problem pool consisting of ideas submitted by Sri Lankans themselves. Anyone can submit problems and the most pressing problems will be selected while the idea holders of such problems will be rewarded with a free getaway to our Innovation Nation Sri Lanka awareness program, Hustle Story where the urge and need to innovate will be scrutinized under the lights of entrepreneurship.

Since the main goal of Innovation Nation Sri Lanka is to release at least 50 undergraduates to the startup ecosystem, the inclusion of almost every university and institute is a necessity. Revisiting the Innovation Nation Sri Lanka 2018 concept of project endorsers, the 2020 edition introduces the notion, Student Outreach Partners who would be advocating and promoting Innovation Nation Sri Lanka amongst the student communities of their respective university or institute and whom in turn will be recognized and rewarded by the Innovation Nation Sri Lanka. After being thoroughly educated about Innovation Nation Sri Lanka, undergraduates who participate in the main competition will be evaluated and the top 20 teams with the best innovative solutions

for a problem they have identified on their own or for a problem they have selected from the

*The grand finale will see the likes of future prospective startups*

problem pool INSL has created will be invited to the training workshop series conducted according to the acclaimed Innovation Nation curriculum. In parallel to this workshop series, private mentoring sessions will be organized for the teams and this year, the teams will be able to request for private mentoring sessions using a profile compiled by the Innovation Nation Sri Lanka which will consist of prominent industrial and academic professionals. Therefore, the contesting teams will be able to address issues specific to their ideas and concepts. At the end of this rigorous training and mentoring process, the teams will be facing a qualifier pitching round, where the top 10 teams will be filtered and who will be able to proceed to the IEEE Innovation Nation grand finale. The grand finale will see the likes of future prospective startups. The winners, 1st runner up and the 2nd runner up teams will be awarded at the award ceremony held at the IEEE Sri Lanka Section Student/YP/WIE Congress.

Robots   During and after COVID 19

by Prof. Ruwan Gopura – Chair/IEEE Sri lanka Section

T he word "robot" originates from a Czech word, 'robota', meaning forced labor. The first reference to the word robot is made in a play by Czech writer Karel Capek in 1921. In the play, the robot is defined as "a worker of forced labour". After this play, electromechanical automatons were referred to as robots. However, the idea of putting machines to work for humans to perform routine tasks on command is credited to great thinkers like Aristotle. In 1941, Isaac Asimov first used the term 'robotics' to describe the technology of robots. With the progress in robotics in the last two decades, a robot can be identified as an intelligent machine resembling a person and capable of replicating some human activities automatically. Robots from their origin were applied in the environment that humans cannot reach due to the danger of the environment and also used to carry out risky tasks. Throughout history, robots have been broadened their applications and recently they have been using various applications with the integration of other areas such as artificial intelligence and industrial automation to serve the main kind more than ever before. At present robots can be seen all over the society in many countries. Various types of robots are working in the society including industries, households, and personal levels: Industrial robot, field robots, aerial robots, underwater robots, humanoid robots, and many more.
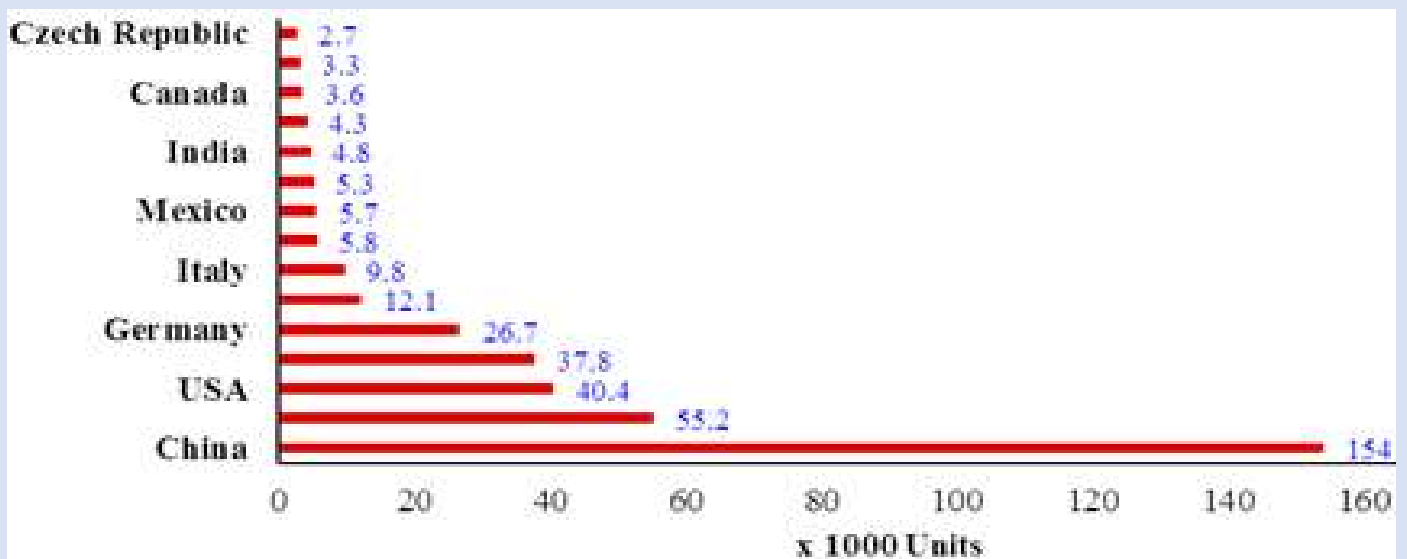
The annual installation of industrial robot in different countries in 2018

Use of Robots (* Estimated values in 2018)			
	Category of Robot		
Year	Industrial Robot Installations (x 1000 units) [growth Rate]	Domestic Service Robots (x 1000 units) [Growth Rate]	Professional Service Robots (x 1000 units) [growth Rate]
2018	422 [+6]	16300 [+59]	271.1 [+61]
2019*	421 [0]	22100 [+35]	361.3 [+33]
2020*	465 [+10]	30400 [+40]	495.5 [+41]
2021*	522 [+12]	42600 [+40]	700.1 [+41]

Industrial robots have their own features and they are defined by ISO 8373:2012 as an automatically controlled, reprogrammable, multipurpose manipulator programmable in three or more axes, which can be either fixed in place or mobile for use in industrial automation applications.

Service robots can mainly be divided into two categories: domestic service robot and professional service robot. Domestic service robots are primarily used for households in personal uses and they are autonomous. They may also be used for education, entertainment, or some other applications. Professional service robots have a wide range of industrial and commercial applications and they have unique abilities to work in diverse industries.

The current COVID 19 pandemic has created a forum for a discussion on how robots and automation technologies can be used to prevent spreading it. Robots can be used for a variety of tasks during the pandemic and post-pandemic society. Futurists have predicted that there will be a boom in the robotic industry in post-COVID 19 society. New opportunities will be created for robotics technology. A significant growth rate can be identified in the use of industrial robots, domestic service robots, and professional service robots. The use of domestic service robots and professional service robots in 2018 was 16.3 million units and 271100 units respectively. The 2018 estimation for the same is 42.6 million units and 700100 units respectively. It can be reasonably predicted that the numbers will be drastically improved in the post-COVID 19 society.

The robots will also be used in domestic services and professional services than ever during and after COVID 19. The following are some of the identified robots that will be used significantly during and after COVID 19.

- Social distancing assistant
- Customer care and shopping assistant robots
- Service robot at hospitals
- Assisting robot at households
- Aerial robots

Social distancing assistant

Social distancing is the physical distance between two persons. According to the Centers for Disease Control and Prevention of the USA to practice social distancing an individual should stay at least 6 feet from another individual. Individuals should not gather in groups, should get away from crowded places, and avoid mass assemblies. Robots can help to maintain social distancing by been an intermediate to keep the space between persons and replacing humans from certain employments. In some other employments, the robot can control certain tasks to avoid contacts. Robots can be used to make awareness of social distancing and they remind if a person violates social distancing guidelines.

Spot, the Boston Dynamics robot dog employed in a public park at Singapore to enforce social distancing

Customer care and shopping assistant robot

Robots can perform a wide range of tasks by preparing orders, performing inventory checks, bagging, delivering groceries in supermarkets. They help with a faster and more efficient shopping experience for the customer. In the USA retailers are testing self-driving machines to deliver groceries to customers who cannot arrive at the store for shopping.

Service robot at hospitals

Robots are helping disinfect hospitals, medical centers, and nursing homes. They will assist in the routine monitoring of patients and lifting and repositioning patients. Furthermore, medicine, laboratory samples, medical reports, and other necessary items can be delivered inside the hospitals using robots. Especially robots will be essential to the hospitals where COVID 19 patients or suspected patients are admitted.

Labor-intensive businesses, such as retail, food, manufacturing, and logistics which are the worst hit of COVID 19 will increase the use of robots for sorting, shipping, and packing

Assisting robot at households

Robots can extensively be used in households to make personal life more comfortable, safe, and easy. They obviously can help to keep social distancing even inside your house. Different types of robots will be developed for cleaning, food preparation, and many other service activities in households.

A fully automatic robot vacuum cleaner

Aerial robots

Aerial robots, usually known as drones can heavily be used during the COVID 19 pandemic and post-pandemic society. Drones can be used spraying disinfection, temperature sensing of humans in crowded places, controlling traffic and crowd movements, broadcasting, cargo delivery, and many more activities. Many Chinese cities use drones to patrol areas and observe traffic and crowds more efficiently. Aerial robots are also used to broadcast information to a larger area than the traditional public-address system can. They are also serving officials with crowd management and to identify people with higher body temperatures through thermal sensing.

The application of robots during and after COVID 19 will not be limited to what is presented above. They can be used in many industries than ever and even in most of the restaurants, robots will increasingly be used for the service of the customers to eliminate health concerns. Robots can be seen in and around the home, on most factory floors, in hospitals, in railways, bus stands, and your towns. Robots will be handled by some of the services in the transportation sector. Groceries, supermarkets, and fast-food chains will utilize robots for their day-to-day activities frequently. Most fast-food chains will use robots as chefs and servers. In warehouses, the use of robots will gradually be increased to improve their efficiency. Automated workstations are speeding up the work of pharmaceutical companies. Labor-intensive businesses, such as retail, food, manufacturing, and logistics which are the worst hit of COVID 19 will increase the use of robots for sorting, shipping, and packing. COVID-19 generated a strong momentum to the use of robots and research on robotics. As the world continues to battle with the Covid-19 outbreak, it is clear that humans should work together with robots to safeguard themselves.

ICIPRob2020 Concludes Successfully

ICIPRob2020 (International Conference on Image Processing and Robotics) conference was held at Goldi Sands Hotel, Negombo from 6th-8th March, 2020.The IEEE Sri Lanka Section, IEEE Computer Society Sri Lanka Chapter, IEEE Robotics and Automation Society, Sri Lanka Chapter and IEEE Systems, Man, and Cybernetics Society (SMC), Taipei Chapter served as technical co-sponsors for the conference. The conference was organized by Image Processing and Robotics Lab, Shibaura Institute of Technology, Japan.

The conference received a total of 90 submissions. 38 papers were selected for presentation and submission for IEEE Explorer. A further five papers were accepted as position papers. Due to the Coronavirus outbreak, the number of foreign participants was reduced, and a few overseas papers were withdrawn. The conference consisted of three keynotes:

- "Fuzzy Logic for Artificial Intelligence: Contributions and Advantages" by Prof. Atsushi Inoue, Professor of Information Systems and Business Analytics, Eastern Washington University, USA.

- "Machine Learning for Socially Assistive Intelligent Robots Operating in Human Environments" by Prof. Genci Capi, Department of Mechanical Engineering, Hosei University, Japan.

- "AIoT Systems and their Applications" by Prof. Yo-Ping Huang, Department of Electrical Engineering, National Taipei University of Technology, Taipei, Taiwan

The Best paper award was presented to the paper titled "Constant-Time Gaussian Filtering

for Acceleration of Structure Similarity" authored by Tomohiro Sasaki (Waseda University); Norishige Fukushima (Nagoya Institute of Technology); Yoshihiro Maeda (Tokyo University of Science); Kenjiro Sugimoto (Waseda University); Sei-ichiro Kamata (Waseda University).

Three best student paper awards were chosen. They are "SLAM-Based Autonomous Indoor Navigation System For Electric Wheelchairs" by Tharindu Lakmal Ihalage (Wayamba University of Sri Lanka), "An Autonomously Guided Differential Drive Robot Base Using Asus® Xtion Pro Live" by Isanka A P Diddeniya (University of Sri Jayewardenepura) and "Development of simulator for efficient aquaculture of Sillago japonica using reinforcement learning" by Haruki Kuroki (Fukuyama University, Japan)

Prof. Chinthaka Premachandra, General Chair of ICIPRob2020 expressed his gratitude to IEEE Sri Lanka section and for technically co-sponsoring the conference.

"SLAM-Based Autonomous Indoor Navigation System For Electric Wheelchairs"

"An Autonomously Guided Differential Drive Robot Base Using Asus® Xtion Pro Live"

"Development of simulator for efficient aquaculture of Sillago japonica using reinforcement learning"
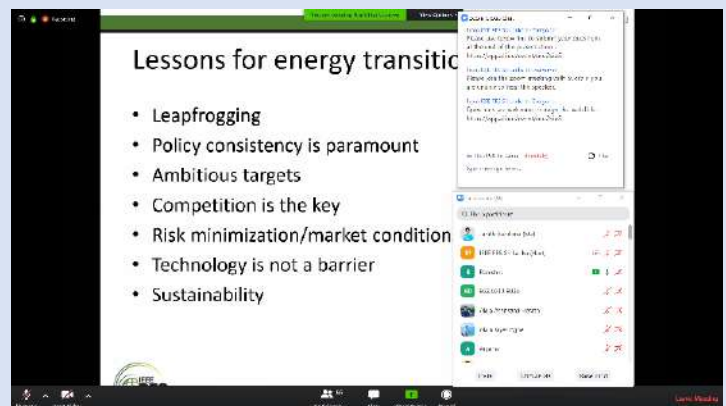
Webinar on "Renewable Energy for Developing Countries"

by Akila Wijethunge – Secretary IEEE PES Sri Lanka Chapter, PES DAY 2020 Section Ambassador

IEEE PES Sri Lanka Chapter proudly presented the first webinar on "Renewable Energy for Developing Countries" as a part of the IEEE PES DAY 2020 on 19th of April 2020 from 6.00pm to 7.00 pm IST (GMT +5.30) via the online platform ZOOM. It was successfully held with both the international and local audiences of around 70 participants.

Mr. Ranishka Wimalasena, who is an Energy Specialist attached to Asian Development Bank (ADB) currently stationed in Fiji at the ADB South Pacific Regional Office covering energy sector work in six pacific island nations conducted the webinar. He shared his experience and insights to lead the participants on an unprecedented journey in the Renewable Energy Field. At the end of the session, Q and A session was moderated by Secretary. IEEE PES Sri Lanka chapter.

Mr.Ranishka answered the questions asked by the participants with his experience in the power sector and project management. The information delivered on the topic was helpful for both professionals and students in the power sector.
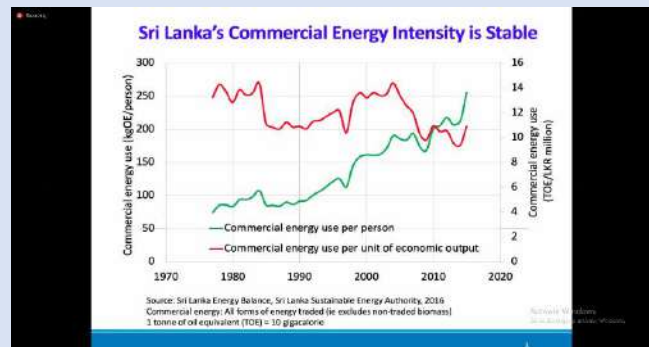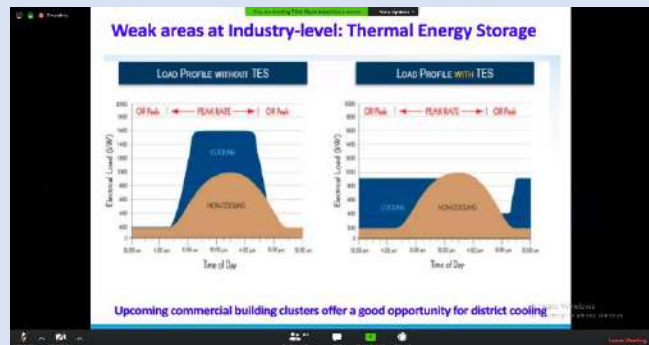
Webinar on " Status of Implementation of Energy Efficiency Initiatives"

by Akila Wijethunge – Secretary IEEE PES Sri Lanka Chapter, PES DAY 2020 Section Ambassador

IEEE PES Sri Lanka Chapter proudly presented the second webinar on "Status of Implementation of Energy Efficiency Initiatives" as a part of the IEEE PES DAY 2020 on 24th of April 2020 from 6.00pm to 7.00 pm IST (GMT +5.30) via the online platform ZOOM. It was successfully held with both the international and local audiences of around 100 participants.

Dr. Tilak Siyambalapitiya, the Managing Director of Resource Management Associates (PVT) Limited conducted the webinar. He has worked on promoting and teaching energy efficiency since 1983. Dr. Tilak is an accredited energy auditor in Sri Lanka, and has taught energy efficiency at numerous university courses and at energy management training programs. He shared his experience and insights to lead the participants on an unprecedented journey. At the end of the session, Dr. Tilak gave his ideas to the questions asked by the participants and Q and A session was moderated by Secretary, IEEE PES Sri Lanka chapter. The information delivered on the topic was helpful for both professionals and students in the power sector.

Webinar on " How to be a Good Researcher "

by Akila Wijethunge – Secretary IEEE PES Sri Lanka Chapter, PES DAY 2020 Section Ambassador

IEEE PES Sri Lanka Chapter proudly presented the third webinar on "How to be a Good Researcher" as a part of the IEEE PES DAY 2020 in collaboration with IEEE Young Professionals Sri Lanka and IEEE WIE Affinity Group of Sri Lanka Section on 30th of April 2020 from 6.00pm to 7.00 pm IST (GMT +5.30) via the online platform ZOOM. It was successfully held with both the international and local audiences of around 200 participants.

Prof. Janaka Ekanayaka, Fellow of IEEE(USA) , IET(UK) and IESL(Sri Lanka) conducted the webinar. Prof. Ekanayake is the Chair Professor of Electrical and Electronic Engineering of the University of Peradeniya. He is also a visiting professor at Cardiff University, UK and Universiti Tenaga Nasional, Malaysia. He shared his experience and insights to lead the participants on an unprecedented journey in the Research Field. At the end of the session, Prof.Ekanayake gave his ideas to the questions asked by the participants and Q and A session was moderated by Secretary, IEEE PES Sri Lanka chapter. The information delivered on the topic was helpful for both professionals and students in the power sector.