20th IEEE Student Conference on Research and Development

IEEE 2022 SCOReD
Students Conference on Research and Development

8 - 9 November 2022
Bangi Resort Hotel

2022 SCOReD

Organized

IEEE UNIVERSITI KEBANGSAAN MALAYSIA STUDENT BRANCH

IEEE MALAYSIA SECTION

Supported

IEEE ELECTRON DEVICES SOCIETY UNIVERSITI KEBANGSAAN MALAYSIA STUDENT BRANCH

UNIVERSITI KEBANGSAAN MALAYSIA The National University of Malaysia

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CONFERENCE BACKGROUND

The 2022 Students Conference on Research and Development is an annual event that provides a platform for local and international researchers, engineers, and scientists from academia and industry to present and discuss the most recent technological advances and research advances in the fields of electrical, electronic, communication, and biomedical engineering, materials, and other related fields. 2022 Students Conference on Research and Development will be held physically from 8th-9th November 2022 at Bangi Resort Hotel, Bandar Baru Bangi, Selangor.

The topics of interest for this conference include Control, Signal Processing & Engineering Intelligent Systems, Electrical Power Engineering, Next Generation Communication & Network Technologies, Photonics Technologies & Semiconductor Devices, and Recent progress in Electrical Electronic Engineering. Although these are the main themes, the conference is not only limited to these main themes.

The conference program will run for two days with the regular tracks, and industrial visit trip. Prospective authors are invited to submit original technical papers for presentation at the conference and publication in the conference proceedings.

The 2022 Students Conference on Research and Development is organized by the IEEE Malaysia Section, IEEE UKM Student Branch and supported by The National University of Malaysia and IEEE EDS UKM Student Branch Chapter. Accepted papers will be published in the 2022 Students Conference on Research and Development Proceeding. The conference and publication information are stated as below:

FOREWORD BY DEAN OF FACULTY OF ENGINEERING & BUILT ENVIRONMENT, UNIVERSITI KEBANGSAAN MALAYSIA

It is an honour to be invited to address and officiate the 2022 Students Conference on Research and Development. In my position as the Dean of the Faculty of Engineering & Built Environment, allow me to extend a warm welcome to all participants to join our conference.

Congratulations to IEEE Malaysia Section, IEEE UKM Student Branch IEEE EDS Student Branch Chapter for organizing this conference. Given the participation of excellent individuals from students, I am confident that the conference will be significant and productive. Through its successful graduates and outstanding research papers, the Faculty of Engineering & Built Environment at UKM has consistently contributed to the creation of new technologies in both academia and scientific research.

The 2022 Students Conference on Research and Development enables discussion and development of idea in different field including Control, Signal Processing & Engineering Intelligent Systems, Photonics Technologies & Semiconductor Devices, Electrical Power Engineering, Sustainable Embedded Technologies, and Next Generation Communication & Network Technologies and others.

The latest topics related to signal processing include mobile broadcasting, mobile broadband Internet, 5G and beyond, mobile cloud, navigation is one of the key enablers in Industrial Revolution 4.0. While the photonics enables transmit information over the internet, with the next-generation high-speed optical network with easy integration, and high output powers.

The development of Control, Signal Processing & Engineering Intelligent Systems, Photonics Technologies & Semiconductor Devices, Electrical Power Engineering, Sustainable Embedded Technologies, and Next Generation Communication & Network Technologies and others requires significant effort in research and development, industry-academia collaborations and the resources necessary to support this effort.

2022 Students Conference on Research and Development is a top platform for academics, researchers, engineers, and students to communicate and disseminate knowledge on the most recent advancements in communication and technology in electrical and electronics engineering field. By the attendance of local and

international delegates will further benefit us as their inputs can be crucial in our efforts to collaborate, strategies and creates opportunities for more research in the emerging technologies in the fields of electrical, electronic, communication, and biomedical engineering, materials, and other related fields.

We are firmly devoted to the growth and improvement of both low-tech and high-tech fields because Malaysia aspires, through its Shared Prosperity Vision 2030 framework, to become a developed country by the year 2030. By concentrating on high-tech employment that demand specialist knowledge rather than labor-intensive low skill jobs, this will help Malaysia become a nation with a high standard of living.

Finally, I hope the distinguished speakers and participants who are present here for the conference will have a productive and meaningful session. On that note, I hereby officiate the 2022 Students Conference on Research and Development.

Prof. Ir. Dr. Mohd Syuhaimi Ab Rahman

Dean
Faculty of Engineering and Built Environment
Universiti Kebangsaan Malaysia

FOREWORD BY GENERAL CHAIR

On behalf of the IEEE Malaysia Section and IEEE SCOReD 2022 Organizing Committee, it is our great pleasure for us to welcome you to the 20th edition of the 2022 IEEE Student Conference on Research and Development (SCOReD). The conference was first initiated in 2001 and jointly organized by IEEE Malaysia Section and IEEE Student Branch. SCOReD is focusing on students at higher learning institutions in Electrical and Electronics Engineering and other related field. It provides a unique platform for students and researchers to share their experience and views in their latest research and breakthroughs. It is created upon the idea of promoting Asia Pacific as the centre of Electrical and Electronics excellence in this region and to prompt the research development activities amongst student researches. This year's edition, SCOReD is hosted by the IEEE Universiti Kebangsaan Malaysia (UKM) Student Branch.

For the past two years, the COVID-19 pandemic has disrupted almost every aspect of our lives and the conference has migrated to a virtual platform. This year, we are excited to return to face to face conference. In-person meetings provide a sense of intimacy and connection that is difficult to replicate via virtual platform. We hope that you will use this opportunity to exchange knowledge and idea as well as expanding your professional networks.

I would like to express my deep appreciation to the SCOReD2022 organizing committee members for their effort and hard work in making the conference a success. My sincere appreciation also goes to the authors for their respected research work contributions.

Once again welcome to IEEE SCOReD2022 and enjoy the conference!

Assoc. Prof. Ir. Dr. Md Pauzi Abdullah (*Chair, IEEE Malaysia Section*)

FOREWORD BY CONFERENCE CHAIR

Welcome and greetings to all participants. First and foremost, allow me to congratulate the organizers of for hosting this successful international event. On behalf of IEEE UKM Student Branch, I would like to thank all of you for attending this premier event. I would also like to take this opportunity to welcome the official delegates, guest of honor, academician, researchers, lecturers, student, who are present at today ceremony.

IEEE Malaysia organizes the highly successful SCOReD conference series, an Asia Pacific regional conference aimed at students in higher education institutions studying electrical and electronic engineering and other related fields. It was developed with the intention of highlighting Asia Pacific as the region's epicenter of excellence in electrical and electronic engineering and to encourage student researchers to engage in research development activities. Several Student Branch co-organize the IEEE SCOReD. The earlier version was jointly organized by IEEE UMS Student branch virtually due to the covid-19 pandemic. It is an honor to said that the IEEE SCORED has comeback physically this year.

It gives me great pleasure to announce that our IEEE SCORED conference has received more than 50 papers from various fields of electrical and electronics engineering, including control, signal processing and engineering intelligent systems, photonics technologies and semiconductor devices, electrical power engineering, sustainable embedded technologies, and next-generation communication and network technologies. We hope that scientists, researchers, and those with an interest in industry can work together, collaborate, and be inspired to advance societal sustainability goals.

I believe that it is a great opportunity for students and academia to present their papers and to expose their excellent ideas to the community. Finally, I would like to express my sincere appreciation to the IEEE SCORED 2022 committee members for their dedication and labor of love in putting this conference together. My sincere gratitude also goes out to the conference's sponsors, Keynote Speakers, reviewers, and everyone who has taken part in this conference for their endless support.

Thank you.

Prof Ir Dr Norhana Arsad *(Chair of IEEE SCOReD 2022)*

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KEYNOTE 1

Prof Dr. Brian Yuliarto
Bandung Institute of Technology

Bio — Prof. was graduated by receiving degree from Engineering Physics Department, Bandung Institute of Technology. He is currently Professor at Advanced Functionals Materials Bandung Institute of Technology. His research focusses on analytical chemistry materials, chemistry, nanotechnology, engineering physics, and environmental engineering. He is performing research collaboration with ITB and others top-level laboratories from university and research institute such as UC Berkeley, NIMS Japan, and KAIST Korea. Hence, he has been recognized as the subject experts around the world.

Title research: **Synthesis of Modified Nanostructure MOF for Hepatitis Biosensors Applications**

***Abstract*—** Biosensor is actually consisted of three parts, the biorecognition layer, the transducer layer, and the data acquisition system. The performance of the biosensor is highly determined by the biorecognition layer supported by the nanomaterial as the active site for attaching biorecognition elements. In addition to various types of nanomaterials, Metal Organic Frameworks (MOFs) have been emerging in sensors application for their excellent properties including high surface area and tunable porosity. The many possible coordinations between the ligands and the metal centers give it also an tunable structural property. One-dimensional (1D), two-dimensional (2D), and three-dimensional (3D), MOFs have been developed as active biosensors. For example, 3D Cu-NH_2BDC spheres have been successfully fabricated by a simple solvothermal method. As a Hepatitis B immunosensor, the Cu-based MOF displays linear detection and the LoD of 1-500 ng/mL and 0.73 ng/mL, respectively.

KEYNOTE 2

Prof. Ir. Dr. Hazlie Bin Mokhlis
Universiti Malaya

Bio — He is currently a Professor at the Department of Electrical Engineering, University Malaya. He had involved in more than 300 publications the author and co-author in international journals and proceedings in the area of Power Systems and Energy. Besides, he is also taking part in reviewing journals and international conferences in power and energy system. In 2021 he was awarded Top Research Scientist Malaysia by Academic Malaysia. Currently, he is chairman of IEEE Power Energy Society and editor of IEEE Access Journal. His research focuses on improving the efficiency and resiliency of power system operation. His latest article in academic journals was "Optimized Gated Recurrent Unit for Mid- Term Electricity Price Forecasting.

Title research: **Climate Change: Impacts and Potential Solutions for Electric Supply Systems**

***Abstract*—** Climate change due to high pollution triggered extreme weather such as hurricanes, floods, and earthquakes. Extreme weather not only causes loss of human life or impacts economics, but also significantly damages critical infrastructures such as electric supply, water and gas supply, healthcare, communication, and transportation systems. Among these critical infrastructures, the electric supply system, which is referred to as the power system, is one of the most crucial infrastructures in this modern day. Electric supply failure will disrupt the functionality of every other infrastructure. For instance, a disturbance in the electric supply at a hospital may result in the loss of human life. Realizing the importance of electrical supply systems, remarkable efforts are continuously being made by power utilities and researchers to achieve a resilient electric supply system. The aim is to ensure the system can resist sudden extreme weather events and quickly recover the electric supply after the events. A distribution system has great potential for resiliency improvement in a power system network. This talk will discuss the current climate condition and how extreme weather impacts the functionality of electric supply systems. Some potential solutions for a distribution system for making a resilient electric supply system against extreme weather will also be presented**.**

KEYNOTE 3

Prof. Dr. Mohammad Tariqul Islam
Universiti Kebangsaan Malaysia

Bio — He is currently a Professor in the Department of Electrical, Electronics and Systems Engineering, Universiti Kebangsaan Malaysia, Bangi. He is the author and coauthor of about 500 research journal articles, nearly 175 conference articles, and a few book chapters on various topics related to antennas, metamaterials, and microwave imaging with 22 inventory patents filed. In 2021, he was listed the Top 10 Electrical and Electronic Engineering Scientist in Malaysia by Research.com. His research focuses on Antenna technology telecommunication, engineering RF and Microwave communication and radio astronomy instrumentation.

Title research**: Based Stroke Diagnosis Techniques with Metamaterial Antenna**

***Abstract*—** Uberization of healthcare allow patients to instantly access and tracking their health as well as their rehabilitation performance at clinical environment. Not only patient knowing their health condition at their fingertips, but the health practitioner can also understand and prescribed next level of intervention program to the patients. The last two decades has proven that not only stroke remains top three health burden worldwide, the age of first stroke occurrence has become younger (54.5 – 62.2 years) compared to 75.2 years old in the last decade. Incomplete intervention reporting would be difficult for the physiotherapist to evaluate its effectiveness later. Current imaging technologies like computed axial tomography (CAT), magnetic resonance imaging (MRI), positron emission tomography (PET) and ultrasound CAT are commonly used to monitor hemorrhagic stroke. However, CAT, MRI and PET scan are not available outside the hospital environment due to their large and bulky structure. Moreover, they are characteristics with invasive and elevated cost. However, to avoid death or possibility of disabled it is necessary to monitor stroke immediate after onset of symptoms so that proper rehabilitation process can be initiated. The difficulties motivate us to develop a new simplified portable imaging system that is noninvasive and less expansive and will be able to provide medical facility to the patients on onset of the stroke symptoms. Therefore, researcher continue to search for accurate, safe, reliable, non-ionizing, portable and cost-effective imaging systems, which will be helpful to guide clinicians and therapists in individualizing further rehabilitation intervention. Researchers are trying to find alternatives to conventional diagnosis systems to the microwave-based healthcare diagnosis solution. Microwave signal contrast between the electrical characteristics of human tissues can easily be distinguished by microwave antenna sensors. In microwave imaging, one or more antenna sensors receive the radiated and scattered power. Microwave-based portable medical diagnosis tools have the potential to save lives

by utilizing microwave sensor antennas that perform well. The scope of this talk is to highlight the research work performed by the speaker on planar antenna technologies which is suitable for healthcare solution. Metamaterial can successfully miniature the antenna size which is a prime requisite of modern portable communication devices. In this talk, I will discuss metamaterial loaded patch antenna focusing on imaging sensing capabilities and present exciting new ways of capturing backscattered signal from the phantom to see the imaging property. The presentation also introduces the basic principles of metamaterial loaded patch antennas prototype development and the integration to microwave imaging system to evaluate the unwanted tumor detection in the head tissue. Microwave imaging (MI) is an ideal candidate for the stroke and head tumour detection. The difference between the electrical properties is identified with the microwave sensors.

KEYNOTE 4

Ts. Amiruddin Bin Zahamail
Siemens Malaysia Sdn. Bhd.

Bio — He was graduated with Electrical Electronics Engineering focused in VLSI from University of Lincoln, UKHe is the Director of the Training Program SITRIAN, Digital Industry Academy. Skilled in Factory Automation, Process Automation Control, control System Design, Drive Technology, Industry Communication, SCADA and Distributed Control Systems (DCS). In 2017, he had won Service Excellence Awards 2017 - Winner for "Trustworthy Cooperation" for SITRAIN Team in Malaysia and a few several awards.

Title research: **Electronics Final Assembly**

***Abstract*—** How can you use virtualization to eliminate errors at an early stage? It is possible by using Virtual Commissioning in the project planning and engineering phases. How to optimally combined individual machine into synchronous line? Via Line Integration supposed to run synchronously and behave identically. How do you integrate different kinematics in your plant? Also possible by software that run Integrated Engineering of Kinematics with one controller with all automation tasks via technology objects. How to exchange planning data digitally and platform-independent? Using software that able to do Automation Planning with open and standardized exchange format based on AutomationML where exchange plant planning data between hardware planning, electrical planning and hardware engineering are possible.

CONFERENCE PARALLEL SCHEDULE

Date	Time (MYT = UTC+8)	Event			
08 November 2022 Tuesday		Main Room			
	8.00 am – 9.00 am	**Registration**			
	9.00 am – 9.15 am	**Welcoming Remarks** Chair IEEE Malaysia Section **Opening Speech** Dean Faculty of Engineering & Built EnvironmentUniversiti Kebangsaan Malaysia			
	9.15 am – 10.00 am	**Keynote 1: Prof. Dr. Brian Yuliarto** *Bandung Institute of Technology* **Chair: Dr. Iskandar Yahya (UKM)**			
	10.00 am – 10.45 am	**Keynote 1: Prof. Ir. Dr. Hazlie Mokhlis** *Universiti Malaya* **Chair: Ts. Dr. Nor Azwan Bin Mohamed Kamari (UKM)**			
	10.45 am – 11.00 am	**Group Photo and Tea Break**			
		Melati Room	Dahlia II	Dahlia III	Dahlia IV
	11.00 am – 11.15 am	**Session 1-1** ***Nasharuddin Zainal*** *(Universiti Kebangsaan Malaysia)*	**Session 1-2** ***Noor Syazwana*** *Abd Aziz (National Defence Foundation Studies & Centre for Defence Foundation Studies)*	**Session 1-3** ***Ahmad Ashrif A Bakar*** *(Universiti Kebangsaan Malaysia)*	**Session 1-4** ***Afida Ayob*** *(Universiti Kebangsaan Malaysia)*

	11.15 am – 11.30 am	***Aminu Zimit*** *(Universiti Teknologi Malaysia)*	***Muhammad Adib Zaini Jemani*** *(Universiti Teknologi MARA)*	***Fatinah Mohd Rahalim*** *(Universiti Sains Islam Malaysia)*	***Siti Nursyafiqah Abdul Ghani*** *(University Malaysia Perlis)*
	11.30 am – 11.45 am	***Sadaqat Ali*** ***(****Universiti Sains Malaysia)*	***Leslie Buli Edwin*** (*Universiti Tenaga Nasional)*	***Wan Ying Loh*** *(Universiti Malaysia Perlis)*	***Babangida Modu*** *(Universiti Teknologi Malaysia)*
	11.45 am – 12.00 pm	***Syed Mohd Zahid Syed Zainal Ariffin*** *(Universiti Teknologi MARA)*	***Siti Salasiah Mokri*** ***(****Universiti Sains Malaysia)*	***Muhammad Naziiruddin Hamzah*** *(Universiti Teknologi Malaysia)*	***Ahmad Asrul Ibrahim*** *(Universiti Kebangsaan Malaysia)*
	12.00 pm – 12.15 pm	***Nabilah Ibrahim*** *(University Tun Hussein Onn Malaysia)*	**Mostafizur Rahman** **(**Universiti Kebangsaan Malaysia, Malaysia)	***Zhi Shuang Lee*** *(Universiti Teknologi Malaysia)*	***Nor Azwan Mohamed Kamari*** ***(Universiti*** *Kebangsaan Malaysia)*
	12.15 pm – 12.30 pm	***Noor Azlinda Ahmad*** *(Universiti Teknologi Malaysia)*	***Mimi Diana Ghazali*** *(Universiti Teknologi MARA)*	***Wan Ying Loh*** *(Universiti Malaysia Perlis)*	***Noor Azlinda Ahmad*** *(Universiti Teknologi Malaysia)*
	12.45 pm – 2.00 pm	**Tea Break**			
		Melati Room			
	2.00 pm – 2.45 pm	**Keynote 3: Prof. Dr. Mohammad Tariqul Islam** *Universiti kebangsaan Malaysia* **Chair: Assoc. Prof. Dr. Gan Kok Beng (UKM)**			
	2.45 pm – 3.30 pm	**Keynote 4: Ts. Amiruddin Zahamail** *Siemens Malaysia Sdn. Bhd.* **Chair: Prof. Dr. Sawal Hamid Md. Ali (UKM)**			

	3.30 pm – 3.45 pm	**Tea Break**			
		Melati Room	**Dahlia II**	**Dahlia III**	**Dahlia IV**
	3.45 pm - 4.15 pm	***Mahidur R Sarker*** *(Universiti Kebangsaan Malaysia)*	***Rosmina Jaafar*** *(Universiti Kebangsaan Malaysia)*	**Ayub Subandi** (Univeristi Kebangsaan Malaysia)	***Nor Fadzilah Abdullah*** *(Universiti Kebangsaan Malaysia)*
	4.15 pm – 4.45 pm	***Rosmiwati Mohd Mokhtar*** *(Universiti Sains Malaysia)*	***Chang Soon Tony Hii*** *(Universiti Kebangsan Malaysia)*	***Muhammad Idzdihar Idris*** *(Universiti Teknikal Malaysia Melaka)*	***Naim Kamarudin*** *(Universiti Kebangsaan Malaysia)*
	4.45 pm – 5.00 pm	***Wei Han Lee*** *(University of Nottingham Malaysia)*	***Azrif Manut*** *(Universiti Teknologi MARA)*	***Qinghua Su*** *(Beijing Wuzi University)*	***Shujat Ali*** *(Universiti Kebangsaan Malaysia)*
	5.00 pm – 5.15 pm	***Faza Nur Azizi*** *(Universitas Islam Indonesia)*	***Md. Mahmudur Rahman*** *(Universiti Kebangsan Malaysia)*	***Eric Pradana Putra Amin (Universiti Tenaga Nasional)***	***Sadia Mostofa*** *(University Kebangsaan Malaysia)*
	5.15 pm – 5.30 pm	***Yousif Saad Alshebly*** *(University of Nottingham Malaysia)*	***Raudah Abu Bakar*** *(Universiti Teknologi MARA)*	***Sabir an Abubakar (Monash University Malaysia)***	***Asma Abu-Samah (****Universiti Kebangsaan Malaysia)*
	5.30 pm – 5.45 pm	***Seri Mastura Mustaza*** *(Universiti Kebangsaan Malaysia)*	***Jian Xian Kang*** *(Universiti Kebangsaan Malaysia)*	***Wilson June Xian Ng (University of Nottingham Malaysia)***	***Elin Cahyaningsih*** *(Bakrie University)*
	END OF CONFERENCE				

2022 20th Student Conference on Research and Development (SCOReD 2022)
08 – 09 November 2022, Malaysia.

TECHNICAL PROGRAMME

Date	Time (MYT = UTC+8)	Event	Virtual Venue
08 November 2022 Tuesday	8.30 am – 9.00 am	**Registration**	
	9.00 am – 9.15 am	**Welcoming Remarks** **Chair** **IEEE Malaysia Section** **Opening Speech** **Dean** **Faculty of Engineering & Built Environment Universiti Kebangsaan Malaysia**	**Melati Room**
	9.15 am – 10.00 am	**Keynote 1: Prof. Dr. Brian Yuliarto** ***Bandung Institute of Technology***	
		Chair: Dr Iskandar Yahya (UKM)	
	10.00 am – 10.45 am	**Keynote 2: Prof. Ir. Dr. Hazlie Mokhlis** ***Universiti Malaya*** **Chair: Ts. Dr. Nor Azwan Bin Mohamed Kamari (UKM)**	
	10.45 am – 11.00 am	**Group Photo and Tea Break**	
	11.00 am – 12.45 pm	**Breakout Sessions**	
	Session 1-1: Control, Signal Processing & Engineering Intelligent Systems **Chair: Dr. Aqilah Baseri Huddin (UKM) / Dr. Seri Mastura Mustaza (UKM)**		**Melati Room**
	11.00 am – 11.30 am	***Nasharuddin Zainal (Universiti Kebangsaan Malaysia)*** Automated Essay Scoring (AES) using English Essay Question	
	11.30 am – 11.45 am	***Aminu Zimit (Universiti Teknologi Malaysia)*** Paths Planning for Agricultural Robots: Recent Development, Taxonomy, Challenges, and Opportunities for Future Research	
	11.45 am – 12.00 pm	***Syed Mohd Zahid Syed Zainal Ariffin (Universiti Teknologi MARA)*** Image Fusion for Single-trait Multimodal Biometrics: A Brief Review	
	12.00 pm – 12.15 pm	***Nabilah Ibrahim (University Tun Hussein Onn Malaysia)*** Heart Sounds Frequency Analysis for Development of Auto Diagnosis System of Heart Disease	
	12.15 pm – 12.30 pm	***Gurjeet Singh (University Malaya)*** Smart Street Lighting with Prediction Algorithm	
	12.30 pm –	***Nur Idora Abdul Razak (Universiti Teknologi MARA)***	

	12.45 pm	Integrated Invoicing Solution: A Robotic Process Automation (RPA) with AI and OCR Approach	
	Session 1-2: Control, Signal Processing & Engineering Intelligent Systems **Chair: Dr. Noraishikin Zulkarnain (UKM) / Dr. Asraf Mohamed Moubark (UKM)**		**Dahlia II**
	11.00 am – 11.30 am	***Noor Syazwana Abd Aziz (National Defence Foundation Studies & Centre for Defence Foundation Studies)*** Smoothing of Kinematics Data Using Functional Data Analysis Approach	
	11.30 am – 11.45 am	***Muhammad Adib Zaini Jemani (Universiti Teknologi MARA)*** Intruder Detection from Video Surveillance Using Deep Learning	
	12.00 pm – 12.15 pm	***Siti Salasiah Mokri (Universiti Kebangsaan Malaysia)*** Segmentation of Brain Glioma in MRI Images Using Deep Learning	
	12.15 pm – 12.30 pm	**Mostafizur Rahman (Universiti Kebangsaan Malaysia, Malaysia)** Tire Condition Classification Based on Tread Depth using Machine Learning	
	12.30 pm – 12.45 pm	***Mimi Diana Ghazali (Universiti Teknologi MARA)*** Implementation of Ground Penetrating Radar in Assessing Leachate in Sanitary Landfill	
	Session 1-3: Photonics Technologies & Semiconductor Devices Chair: Dr **Iskandar Yahya (UKM) / Prof Dr. Huda Abdullah (UKM)**		**Dahlia III**
	11.00 am – 11.30 am	***Nur Hidayah Azeman (Universiti Kebangsaan Malaysia)*** Nutrient classification using machine-learning algorithms on optical absorbance data for hydroponics system	
	11.30 am – 11.45 am	***Fatinah Mohd Rahalim (Universiti Sains Islam Malaysia)*** Inspection of Silica Glass Ruby Using A Charge-Coupled Device (CCD) Linear Sensor	
	11.45 am – 12.00 pm	***Wan Ying Loh (Universiti Malaysia Perlis)*** Modified March MSS for Unlinked Dynamic Faults Detection	
	12.00 pm – 12.15 pm	***Muhammad Naziiruddin Hamzah (Universiti Teknologi Malaysia)*** Negative Bias Temperature Instability Analysis of a 15 nm p-channel Junctionless Fin Field Effect Transistor (p-JLFinFET)	
	12.15 pm – 12.30 pm	***Zhi Shuang Lee (Universiti Teknologi Malaysia)*** Simulation of Inkjet Printed MIMCAP for Flexible Electronics Application	
	12.30 pm – 12.45 pm	***Wan Ying Loh (Universiti Malaysia Perlis)*** Automated Fault Analyzer for March Algorithm Dynamic Fault Detection Analysis	
	Session 1-4: Electrical Power Engineering **Chair: Ts. Dr. Muhammad Ammirrul Atiqi Mohd Zainuri (UKM) / Dr. Syahirah Abd Halim (UKM)**		**Dahlia IV**
	11.00 am – 11.30 am	***Afida Ayob (Universiti Kebangsaan Malaysia)*** Battery Lifespan Prognostics for Sustainable Operation and Management of Battery Storage Systems	
	11.30 am – 11.45 am	***Siti Nursyafiqah Abdul Ghani (University Malaysia Perlis)*** Comparison of Energy Encryption Techniques for Near-Field WPT Security Application	
	11.45 am – 12.00 pm	***Babangida Modu (Universiti Teknologi Malaysia)*** Hybrid Reaching Law-Based Integral Sliding Mode Control for DC Microgrid	
	12.00 pm –	***Ahmad Asrul Ibrahim (Universiti Kebangsaan Malaysia)***	

	12.15 pm	Optimal Scheduling of Plug-in Electric Vehicles Using Binary Gravitational Search Algorithm with A Suitable Decision Function	
	12.15 pm – 12.30 pm	***Nor Azwan Mohamed Kamari (Universiti Kebangsaan Malaysia)*** Economic Load Dispatch Solution via MFPA Approach	
	12.30 pm – 12.45 pm	***Noor Azlinda Ahmad (Universiti Teknologi Malaysia)*** Structure and AC Breakdown Performance of Polypropylene/propylene-Based Elastomer Blends	
	12.45 pm – 2.00 pm	**Lunch**	
	2.00 pm – 2.45 pm	**Keynote 3: Prof. Dr. Mohammad Tariqul Islam** ***Universiti kebangsaan Malaysia*** **Chair: Assoc. Prof. Dr. Gan Kok Beng (UKM)**	**Melati Room**
	2.45 pm – 3.30 pm	**Keynote 4: Ts. Amiruddin Zahamail** ***Siemens Malaysia Sdn. Bhd.*** **Chair: Prof. Dr. Sawal Hamid Md. Ali (UKM) / Prof. Ir. Dr. Norhana Arsad (UKM)**	**Melati Room**
	3.30 pm – 3.45 pm	**Tea Break**	
	3.45 pm – 5.30 pm	**Breakout Sessions**	
	Session 2-1: Control, Signal Processing & Engineering Intelligent Systems **Chair: Dr. Muhammad Faiz Bukhori (UKM) / Assoc. Prof Ir. Dr. Nasharuddin Zainal (UKM)**		**Melati Room**
	3.45 pm - 4.15 pm	***Mahidur R Sarker (Universiti Kebangsaan Malaysia)*** Optimized piezoelectric energy harvesting system for Micro-devices application integrated with Internet of Things (IoT) platform toward sustainable energy utilization	
	4.15 pm – 4.45 pm	***Rosmiwati Mohd Mokhtar (Universiti Sains Malaysia)*** Model Reduction of Discrete-Time Bilinear Second Order-Structured Systems in Infinite and Finite Frequency Intervals	
	4.45 pm – 5.00 pm	***Wei Han Lee (University of Nottingham Malaysia)*** Development of a 4D Printed Variable Stiffness Gripper	
	5.00 pm – 5.15 pm	***Faza Nur Azizi (Universitas Islam Indonesia)*** Facial Expression Image based Emotion Detection using Convolutional Neural Network	
	5.15 pm – 5.30 pm	***Yousif Saad Alshebly (University of Nottingham Malaysia)*** Control of 4D Printed Actuators Twisting Behavior via Printing Direction	
	5.30 pm – 5.45 pm	***Seri Mastura Mustaza (Universiti Kebangsaan Malaysia)*** Variable Stiffness Strategies for Multi-Segment Soft Robot Actuator	
	Session 2-2: Sustainable Embedded Technologies **Chair: Dr. Siti Salasiah Mokri (UKM) / Prof. Ir. Dr. Norhana Arsad (UKM)**		**Dahlia II**
	3.45 pm - 4.15 pm	***Rosmina Jaafar (Universiti Kebangsaan Malaysia)*** Vital signs monitoring, systems, and technologies towards application to Internet of medical things	
	4.15 pm – 4.30 pm	***Chang Soon Tony Hii (Universiti Kebangsaan Malaysia)*** Marker Free Gait Analysis using Pose Estimation Model	

	4.30 pm – 4.45 pm	***Azrif Manut (Universiti Teknologi MARA)*** Development of Humidity Sensor on Interdigitated Electrode (IDE)	
	4.45 pm – 5.00 pm	***Md. Mahmudur Rahman (Universiti Kebangsaan Malaysia)*** Range of Motion Measurement Using Single Inertial Measurement Unit Sensor: A Validation and Comparative Study of Sensor Fusion Techniques	
	5.00 pm – 5.15 pm	***Raudah Abu Bakar (Universiti Teknologi MARA)*** Development of Real Time Health Monitoring System	
	5.15 pm – 5.30 pm	***Jian Xian Kang (Universiti Kebangsaan Malaysia)*** Morphology and electron circulation of ZTO (Zinc Tin Oxide) on SLG for CZTS thin film solar cell	
	Session 2-3: Photonics Technologies & Semiconductor Devices **Chair: Dr. Mohd Saiful Dzulkefly Zan (UKM) / Prof. Ir. Dr. Ahmad Ashrif A Bakar (UKM)**		**Dahlia III**
	3.45 pm - 4.15 pm	**Ayub Subandi (Univeristi Kebangsaan Malaysia)** High Flow Rate Peristaltic Electromagnetic Micropump Fabricated Using Multiple Photolithography	
	4.15 pm – 4.30 pm	***Muhammad Idzdihar Idris (Universiti Teknikal Malaysia Melaka)*** *The fabrication of 4H-Silicon Carbide (4H-SiC) FinFET: Challenges and prospects for sustainable power devices*	
	4.30 pm – 4.45 pm	***Eric Pradana Putra Amin (Universiti Tenaga Nasional)*** Power Over Fiber for Phone Charging Application	
	4.30 pm – 4.45 pm	***Qinghua Su (Beijing Wuzi University)*** *Rapid detection of QR code based on Histogram Equalization -Yolov5*	
	4.45 pm – 5.00 pm	***Eric Pradana Putra Amin (Universiti Tenaga Nasional)*** *Power Over Fiber for Phone Charging Application*	
	5.00 pm – 5.15 pm	***Sabiran Abubakar (Monash University Malaysia)*** *Comparison of RGB and white LED Illumination in Honey Imaging System UsingHistogram Approach*	
	5.15 pm – 5.30 pm	***Wilson June Xian Ng (University of Nottingham Malaysia)*** *A ReRAM-based Nonvolatile PIM*	
	Session 2-4: Next Generation Communication & Network Technologies and Others **Chair: Assoc. Prof. Dr. Mohd Fais Mansor (UKM) / Dr Noor Syazwana Abd Aziz (UPMM)**		**Dahlia IV**
	3.45 pm - 4.15 pm	***Nor Fadzillah Abdullah (Universiti Kebangsaan Malaysia)*** Wireless Airborne IoT Network for Rural Water Quality Monitoring	
	4.15 pm – 4.30 pm	***Naim Kamarudin (Universiti Kebangsaan Malaysia)*** Monitoring The Trend of Energy Consumption During The Pandemic	
	4.30 pm – 4.45 pm	***Shujat Ali (Universiti KebangsaanMalaysia)*** ***A Review of 6G Enabler: Vertical Heterogeneous Network (V-HetNeT***	
	4.45 pm – 5.00 pm	***Sadia Mostofa (University Kebangsaan Malaysia)*** A GPS TEC-based Ionospheric-M Index over Malaysia	
	5.00 pm – 5.15 pm	***Asma Abu-Samah (Universiti Kebangsaan Malaysia)*** Investigation of Incremental Learning for Dynamic Over the Top (OTT) Applications Service Management	
	5.15 pm – 5.30 pm	***Elin Cahyaningsih (Bakrie University)*** Knowledge Requirement for E-government Implementation in Indonesia: A Regulation Framework	
End of Conference			

ACKNOWLEDGEMENTS

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