2021

BICET

Brunei International Conference on Engineering and Technology

"Innovation in engineering and technology towards enhancing quality of life and society"

CONFERENCE PROGRAMME

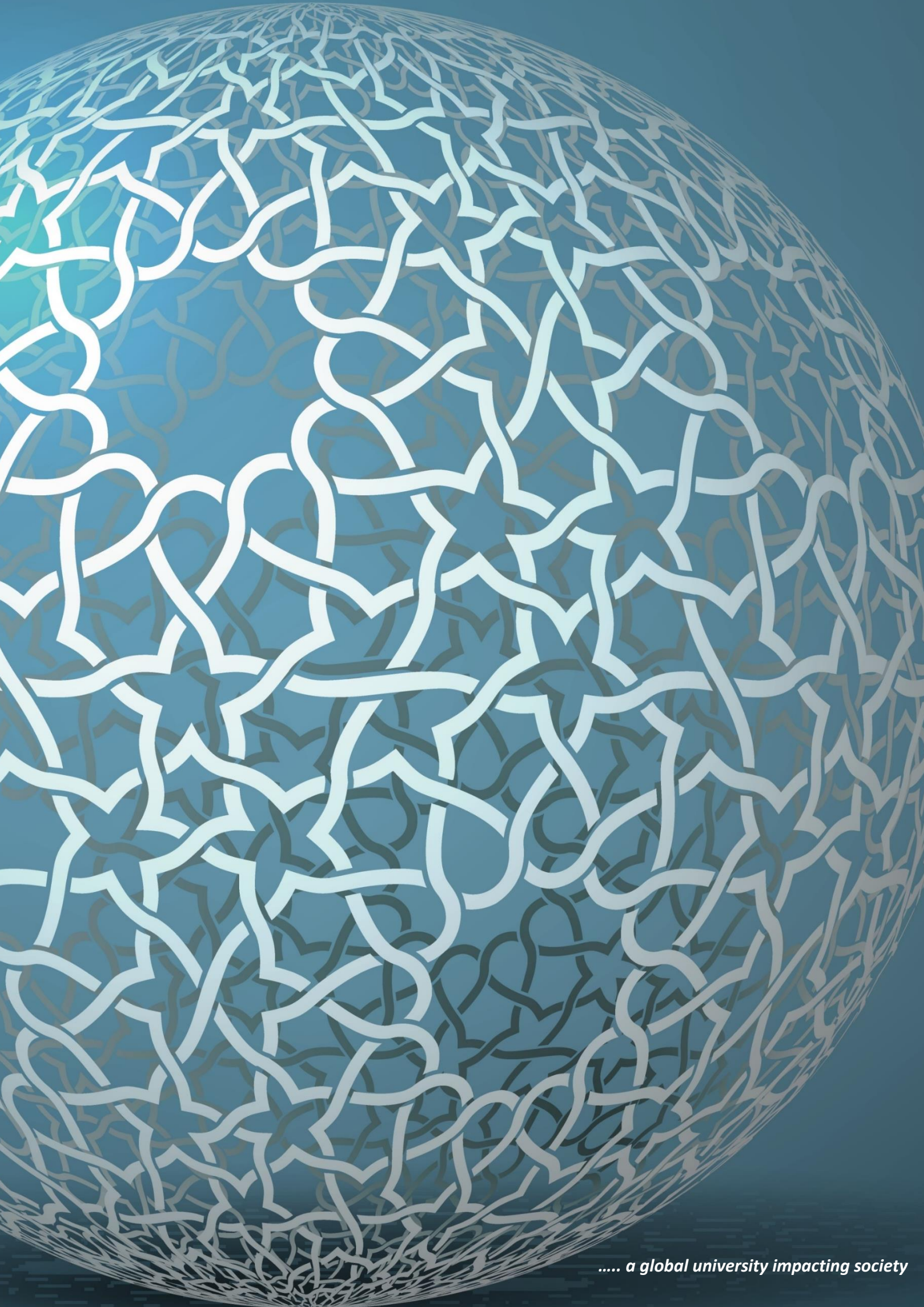
8th Brunei International Conference on Engineering and Technology 2021

www.utb.edu.bn/BICET2021/index.html

8-10 November 2021

Silver Sponsors

Supporting Partners


..... a global university impacting society

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Foreword by Vice Chancellor

بسم الله الرحمن الرحيم

السلام عليكم ورحمة الله وبركاته

On behalf of Universiti Teknologi Brunei (UTB), I would like to welcome all of you to the **8th *Brunei International Conference on Engineering and Technology* (BICET 2021)** *w*hich will be held from 8th to 10th November 2021. Our last BICET conference was organised in November 2018. As a leading technological university in Brunei Darussalam, UTB nurtures socially responsible talents committed to building a global and entrepreneurial society in pursuit of innovation and industry-relevant capabilities which supports Brunei's Vision 2035. UTB Faculty of Engineering plays a strategic and pivotal role in providing quality engineering education as well as enhancing research in the areas of Civil, Electrical & Electronics, Mechanical and Petroleum & Chemical Engineering. On this note, BICET 2021 aims to provide the platform for academics, researchers, engineers, experts and students to exchange ideas as well as to network with scientists worldwide.

The theme for BICET 2021 is ***"Innovation in Engineering and Technology Towards Enhancing Quality of Life and Society"***. The theme is relevant to our role in society especially in view of the COVID-19 pandemic which had impacted our daily lives tremendously. Both innovation and technology have a significant part to play in combatting the pandemic and to ensure the livelihood & well-being of society are preserved.

Despite the pandemic, I am pleased to announce that we received overwhelming response of **more than 200 papers in this year's BICET Conference**, thus making it the highest record in this conference series. The BICET 2021 will be organised into 4 parallel tracks, composed of 20 sessions conducted over three days. We had received papers from countries including Australia, Bahrain, Bangladesh, Brunei Darussalam, Canada, China, Egypt, Ghana, Hong Kong, India, Indonesia, Iraq, Ireland, Japan, Kazakhstan, Malaysia, Nigeria, Peru, Philippines, Qatar, Russia, Saudi Arabia, South Africa, South Korea, Sri Lanka, Tanzania, UAE, United Kingdom, USA and Vietnam. This year, we have renowned keynote speakers from different continents sharing with us their latest findings in their respective fields. These include Professor Dr. Ataur Rahman from Western Sydney University, Australia, Professor Dr. Jihong Wang from University of Warwick, United Kingdom, Professor Dr. Safian Sharif from Universiti Teknologi Malaysia, Malaysia and Professor Dr. Janardhan Reddy Koduru from Kwangwoon University, Seoul, South Korea.

I would like to extend our sincere appreciation to our Silver sponsors, Berakas Power Company (BPC), Brunei Shell Petroleum (BSP), Huawei Technologies and Petrokon Utama Sdn Bhd. In addition, I also would like to thank our supporting partners, Pertubuhan Ukur Jurutera & Arkitek (PUJA), The Institution of Mechanical Engineers UK (Brunei Group), Society of Petroleum Engineers USA (Brunei Section), The Institution of Civil Engineers, UK and The Institution of Engineering and Technology UK for making this conference a great success.

Last but not least, I would like to express my utmost gratitude to the organising committee members for their dedication and hard work in ensuring the conference is implemented smoothly. It is my sincere hope that all participants will benefit through this virtual online BICET 2021 conference.

Wabillahi Taufik Walhidayah Wassalamualaikum Warahmatullahi Wabarakatuh

Professor Dr. Dayang Hajah Zohrah binti Haji Sulaiman
Vice Chancellor,
Universiti Teknologi Brunei

Welcoming Address by Conference Chair

Greetings!

On behalf of my Co-Chair Dr. Hjh Ena Kartina binti Hj Abd Rahman (Assistant Vice Chancellor Academic) and the Conference Organising Committee, I take great pride in welcoming all the attendees of the ***8th Brunei International Conference on Engineering and Technology* (BICET 2021)**. This conference is hosted by the Faculty of Engineering, Universiti Teknologi Brunei (UTB) which will take place online using the Zoom platform from 8th to 10th November 2021. BICET is the flagship international conference series organised by the Faculty of Engineering UTB since its inception in 2001. During the past two decades, BICET served as a stage for the academic and industry communities to address current and future innovations in engineering and technology with the goal of enhancing the quality of life and society.

This tradition will continue and BICET 2021 aims to bring researchers, scientists, technologists, and engineers together to share their ideas, recent issues, opinions and research findings on the latest technological development in their respective fields.

The COVID-19 pandemic has disrupted almost every aspect of our lives and this has forced us to take full advantage of the digital platform to conduct the conference. We will continue to strive in our endeavours under this new normal and our conference this time around will be held virtually in 20 sessions in five virtual rooms, namely *Simpur, Rafflesia, Telang, Bougainvillea and Vanda Orchid*. These room names represent the exquisite flowers of Brunei Darussalam. I am delighted that this BICET conference has attracted by far the highest submission of 206 papers from 30 countries in various fields of engineering and technology. There will be 180 speakers sharing their work and ideas in this conference. All manuscripts are peer reviewed and accepted papers will be published in the AIP Scopus-index Conference Proceedings.

This conference would not have been a success without the dedication and support from my colleagues serving in the various committees namely: Ceremony, Finance, HSE, ICT, Innovation & Protocol, Logistics, Media & Publicity, Photography, Publishing, Souvenirs & Certificates, Sponsorship and Technical. The individuals involved in these committees are as listed on pages 37-39 of this Conference Programme. My sincere thanks are also due to all the internal and external reviewers who have invested a significant time and effort in reviewing the papers to maintain a high standard of quality for this conference.

I am grateful to the continuing support of our industries in sponsoring this conference namely Berakas Power Company, Brunei Shell Petroleum, Huawei Technologies and Petrokon Utama Sdn Bhd. My sincere thanks are also due to our supporting partners, Pertubuhan Ukur Jurutera & Arkitek (PUJA), The Institution of Mechanical Engineers UK (Brunei Group), Society of Petroleum Engineers USA (Brunei Section), Institution of Civil Engineers, UK and The Institution of Engineering and Technology UK.

Finally, it is our sincere hope that all delegates find BICET 2021 interesting, exciting, and inspiring.

On behalf of the Faculty of Engineering, I welcome you to our BICET 2021, and wish you a successful conference!

…. a university is only as good as its staff

Professor Ir. Dr. Ramesh Singh Kuldip Singh

Dean, Faculty of Engineering
Co-Chair Organising Committee, BICET 2021
Universiti Teknologi Brunei

Universiti Teknologi Brunei: *An Overview*

Universiti Teknologi Brunei (UTB) is the only Engineering and Technology University in Brunei Darussalam that specialises in the areas of Engineering, Business and Computing. UTB was initially established as Institut Teknologi Brunei (ITB) in 1986, a higher learning institution that offered Higher National Diploma programmes in the three areas mentioned above. ITB was upgraded to university status in 2008, and started offering home-grown undergraduate and postgraduate programmes in 2009. ITB was renamed to UTB in March 2016.

UTB's philosophy has been that effective instruction, hands-on approach and industry-based programmes equip students with fundamental & specialist knowledge, competence and marketable skills. This guiding principles have helped UTB to produce holistic graduates who are highly competent and valued by employers. Our degrees are also well recognised by many universities abroad as meeting the requirement for graduates to undertake further studies at the Masters and PhD levels such as in the UK, Europe, Australia and USA.

UTB aspires to become one of the best universities of Engineering and Technology in South-East Asia and has coined its 2019-2023 Strategic Plan with the vision ***"A Global University Impacting Society"***. This aspiration is in line with the Wawasan Brunei 2035 or Brunei Vision 2035, inaugurated by the Government of His Majesty the Sultan in 2007, aims to transform Brunei Darussalam to be known throughout the world as a nation whose people are educated; highly skilled and successful measured by the highest international standards, enjoy high quality of life that are among the world's top ten countries; and with a dynamic and sustainable economy. In order to achieve this vision, UTB is committed to producing students who are well-rounded individuals with social and economic responsibility, marketable and having strong national values of Malay Islamic Monarchy. This requires the university to excel in all of its endeavours that include teaching and learning, research, partnership & collaboration, community and industry engagement as well as creating a vibrant campus for a diverse learning culture, inclusivity and an intellectually stimulating environment.

UTB offers more than 25 undergraduate and postgraduate programmes in engineering, computing, business, sciences, communication and design through the Faculty of Engineering, School of Computing and Informatics, School of Business, School of Applied Science and Mathematics, Centre For Communication, Teaching and Learning, and School of Design.

UTB made its first appearance in the Quacquarelli Symonds World University Ranking (QSWUR) at 442 in 2018, evaluated against 4,763 institutions from 151 countries. Despite facing unprecedented challenges due to the COVID-19 pandemic, UTB continues to rise in the ranking and currently the university is ranked at the 344th place in the QSWUR 2022. In 2021, for the first time in history, UTB has been awarded the **QS 5-Star Plus for an outstanding University.** This achievement has placed UTB among the 15 universities in the world and the only university in Southeast Asia to receive such recognition. This award recognizes the university as an elite destination for the best students and faculty worldwide, and acknowledges UTB's research excellence, teaching quality, globalization experience for students and capacity for nurturing talent and producing holistic graduates.

About BICET 2021

Innovation in engineering and technology towards enhancing quality of life and society

Introduction

Brunei International Conference on Engineering and Technology (BICET) is the flagship international conference series organised by UTB Faculty of Engineering over the past two decades. The inaugural BICET was held on 9-10 October 2001 and this was followed by the 2nd BICET (15-18 August 2005), the 3rd BICET (3-5 November 2008), the 4th BICET (25-26 January 2012), the 5th BICET (1-3 November 2014), the 6th BICET (14-16 November 2016) and the 7th BICET which was held on 12-14 November 2018. Due to the COVID-19 pandemic, the 8th BICET which was initially planned for 9-11 November 2020 has been rescheduled on the **8-10 November 2021**. BICET has been a successful forum for academics, researchers, scientist, technologist, and engineers to interact and to present their research findings in an international forum.

The theme of BICET 2021 is *Innovation in engineering and technology towards enhancing quality of life and society*.

Considering the uncertainty with restriction in travelling for international participants and the latest development of the pandemic around the globe as well as in Brunei Darussalam, the BICET 2021 will be conducted fully online presentation / virtual presence for all participants.

Rationale

In the wake of the fourth industrial revolution (IR4.0), the exploitation and adoption of key enabling technologies such as additive manufacturing, collaborative robotics, artificial intelligence, virtual reality and IoT seeks for the progressive automation of the production process. In addition, society nowadays is highly reliant on smart technologies which are advancing rapidly to meet their demands. However, the technological development pace is not the same among nations and regions for various reasons. To bridge this gap, it is imperative that the latest outcomes of research endeavours in different regions are shared for the good of society as well as to leverage on new technologies to improve business performance and to open up new opportunities and collaborations. Constructive dialogues between academics, technologists, engineers and researchers will not only contribute to the transfer, but also drive knowledge to higher levels with richer perspectives. As a leading technological university, UTB nurtures socially responsible talents committed to building a global and entrepreneurial society in pursuit of innovation, industry-relevant capabilities, towards the fulfilment of Brunei Vision 2035. In this capacity, UTB is an influential institution of higher learning especially in the areas of Civil, Electrical & Electronic, Mechanical, and Petroleum & Chemical Engineering. As such the BICET 2021 will provide an important platform for academics, researchers, engineers, students, and experts to exchange ideas in order to strengthen innovative and interdisciplinary research on integrated technologies towards embracing IR4.0.

Conference Objectives

- Provide a forum for intra/inter-disciplinary exchange of current research findings in Engineering and Technology.
- Foster collaborative research.
- Enhance dialogue between practitioners, researchers and academics from different academia and industries.
- Explore opportunities for development and implementation of research findings.
- To enhance life-long learning and nurture innovation in engineering and technology.
- Allow dissemination and sharing of knowledge through presentation and publication in conference proceedings.

Conference Topics / Tracks

A) Civil Engineering

CE01: Structural Engineering

CE02: Construction Materials

CE03: Traffic and Highway Engineering

CE04: Geotechnical Engineering

CE05: Construction Management

CE06: Green Building

CE07: Water Resources Engineering

CE08: Coastal Engineering

CE09: Environmental Engineering

CE10: Other relevant topics

B) Electrical and Electronic Engineering

EE01: Power and Energy Systems

EE02: Micro/Nanoelectronic Devices and Integrated Circuits

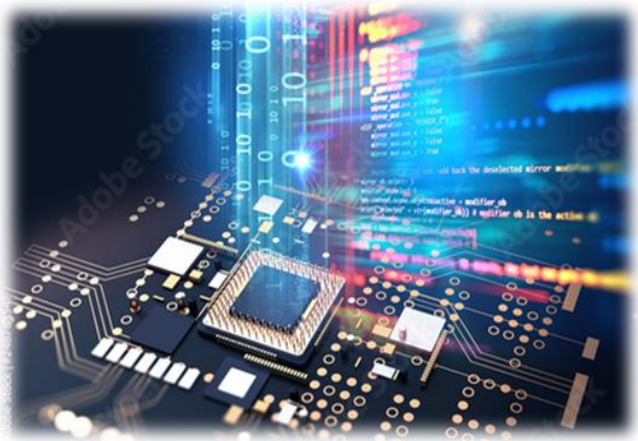
EE03: Communications and Networking

EE04: Photonics and Fibre Optics

EE05: Control Systems and Instrumentation

EE06: Industrial Electronics

EE07: Signal and Image Processing



EE08: Computers, Networking, Software and Applications

EE09: Mechatronics and Robotics

EE10: Machine Learning and Artificial Intelligence

EE11: Antennas, Propagation and RF Circuits

EE12: Power Electronics and Electric Machines

EE13: Other relevant topics

C) Mechanical Engineering

ME01: Air Conditioning and Refrigeration

ME02: Heat and Mass Transfer

ME03: Renewable and Sustainable Energy

ME04: Biomedical Engineering

ME05: Materials Science and Engineering

ME06: Functional Materials and Smart Materials

ME07: Advanced Ceramics and Composites

ME08: Engineering Design and Product Design

ME09: Advanced Manufacturing Processes

ME10: Marine Engineering

ME11: Electronic Manufacturing and Packaging

ME12: Lean and Green Manufacturing

ME13: CAD/CAM/CAE/CIM

ME14: Structural Analysis and Engineering

ME15: Additive Manufacturing

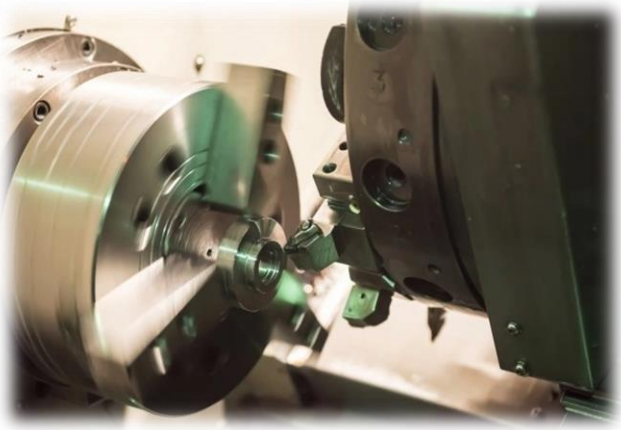
ME16: Industrial Engineering

ME17: Supply Chain Management

ME18: Mechanical Engineering Education

ME19: Science in Technology

ME20: Other relevant topics



D) Petroleum and Chemical Engineering

PCE01: Reservoir Modelling and Simulation

PCE02: Advances in Enhanced Oil Recovery

PCE03: Reaction Engineering

PCE04: CFD in Chemical and Bio-Chemical Engineering

PCE05: Fluidization Engineering

PCE06: Process Engineering

PCE07: Biofuels and Bioenergy

PCE08: Material Engineering

PCE09: Simulation, Optimization, Planning and Control of Process

PCE10: Nanotechnology

PCE11: Water Treatment

PCE11: Membranes

PCE12: Mathematical Modelling

PCE13: Other relevant topics

Conference Schedule

8th NOVEMBER 2021 (MONDAY)	
Time	***Event***
9:00	*OPENING CEREMONY* Virtual Arrival of Guests
9:30	*Arrival of the Guest of Honour* **Yang Berhormat Dato Seri Setia Ir. Awang Haji Suhaimi bin Haji Gafar** *Minister of Development, Brunei Darussalam*
9:35	Recital of Surah Al-Fatihah and Doa Selamat
9:45	*Welcoming speech by* **Yang Mulia Professor Dr. Dayang Hajah Zohrah binti Haji Sulaiman** *Vice-Chancellor, Universiti Teknologi Brunei*
10:00	*Speech and Official Opening of BICET 2021 by the Guest of Honour*
10:15	Multimedia Presentation Photo Session
10:20	***Plenary Session: Keynote Speaker #1*** **Professor Dr. Janardhan Reddy Koduru** *Department of Environmental Engineering* *Kwangwoon University, Seoul, South Korea* *Session Chair:* Professor Dr. Mohamed Hasnain Isa, *Assistant Vice-Chancellor (Research)*
11:10	***Plenary Session: Keynote Speaker #2*** **Professor Dr. Ataur Rahman** *School of Engineering* *Western Sydney University, Australia* *Session Chair:* Professor Ir. Dr. Ramesh Singh Kuldip Singh, *Dean, Faculty of Engineering*
12:00 – 13:20	***LUNCH BREAK***
PARALLEL SESSIONS	
13:20	Session 1A
	Session 1B
	Session 1C
	Session 1D
15:00 – 15:20	***COFFEE BREAK***
15:20	Session 1A
	Session 1B
	Session 1C
	Session 1D
17:20	***END OF DAY 1***

Conference Schedule

9th NOVEMBER 2021 (TUESDAY)	
Time	***Event***
9:00	***Arrival of Participants***
9:15	***Plenary Session: Keynote Speaker #3*** **Professor Dr. Safian Sharif** *Chair, Frontier Materials Research Alliance, Universiti Teknologi Malaysia* *Session Chair:* Professor Ir. Dr. Mohammad Yeakub Ali (Technical Chair, BICET 2021)
10:00 – 10:20	***COFFEE BREAK***
	PARALLEL SESSIONS
10:20	Session 2A
	Session 2B
	Session 2C
	Session 2D
12:20 – 13:20	***LUNCH BREAK***
	PARALLEL SESSIONS
13:20	Session 3A
	Session 3B
	Session 3C
	Session 3D
15:00 – 15:20	***COFFEE BREAK***
15:20	Session 3A
	Session 3B
	Session 3C
	Session 3D
17:20	***END OF DAY 2***

Conference Schedule

10th NOVEMBER 2021 (WEDNESDAY)	
Time	***Event***
PARALLEL SESSIONS	
9:00	Session 4A
	Session 4B
	Session 4C
	Session 4D
10:00 – 10:20	***COFFEE BREAK***
10:20	Session 4A
	Session 4B
	Session 4C
	Session 4D
12:20 – 13:20	***LUNCH BREAK***
13:20	Session 5A
	Session 5B
	Session 5C
	Session 5D
15:00 – 15:20	***COFFEE BREAK***
15:20	***Plenary Session: Keynote Speaker #4*** **Professor Dr. Jihong Wang** *School of Engineering, University of Warwick, United Kingdom* *Session Chair:* Professor Ir. Dr. Syuhaimi bin Ab Rahman (Universiti Kebangsaan Malaysia)
16:00	Session 5A
	Session 5B
	Session 5C
	Session 5D
17:00	*CLOSING CEREMONY* *Arrival of the Guest of Honour* **Yang Mulia Professor Dr. Dayang Hajah Zohrah binti Haji Sulaiman** *Vice-Chancellor, Universiti Teknologi Brunei* *Closing speech by* ***Professor Dr. Mohamed Hasnain Isa**, Chair of Steering Committee,* BICET 2021 Recital of Al-Asr
17:20	***END OF* BICET 2021**

Keynote Speakers

Keynote Speaker 1

Day 1

8th November @ 10:20 am (GMT+8)

Professor Dr. Janardhan Reddy Koduru

Department of Environmental Engineering
Kwangwoon University, Seoul,
South Korea

SCAN ME

Magnetic Functionalized Graphitic Carbon Composites for Sustainable Water Remediation

Abstract: Water bodies are becoming polluted with heavy metals and toxic pollutants as industrialization accelerates. Many techniques have been developed in pursuit of removing toxic pollutants from aqueous environment. Magnetic separation has piqued the interest of researchers due to its excellent performance in the removal of toxic pollutants. On the other hand, magnetic Functionalized graphitic carbon composites (MGO) have unique physicochemical properties such as excellent magnetic properties, high specific surface area, surface active sites, high chemical stability, tunable shape and size, and ease of modification. Cover the following topics in this talk: why do you choose graphitic carbon? and the significance of their magnetization, followed by the development of a low-cost magnetic graphitic carbon composite from natural sources using green techniques for sustainable water treatment.

Biography: *Dr. Janardhan Reddy Koduru is a Professor of Environmental Engineering at Kwangwoon University, South Korea. He has over 18 years of experience in academics and research. His research interest includes the development of nanomaterials or nanocomposites by synthetic chemistry and green routes for sustainable energy and environmental applications. He has published over 95 papers including seven book chapters, one book and holding two Korean patents as a co-investigator. His h index is 26 with about 2000 citations in Scopus database. He received over eight awards for his excellent research and academic achievements. He received the top 1% Publons Peer Reviewer Awards for Multidisciplinary and Environment & Ecology continuously since 2016. He acts as an editorial board member and guest editor for various scientific journals including Journal Environmental Management, Applied Sciences Journal, MDPI (Nanocomposites for the Sustainable Environment).*

Day 1

8th November @ 11:10 am (GMT+8)

SCAN ME

Professor Dr. Ataur Rahman

School of Engineering
Western Sydney University, Australia

Rainwater Harvesting System as a Tool to Promote Sustainable Water Management

Abstract: Water is the vital source of life. Although human race has made significant developments in many aspects of life, the very basic need of fresh drinking water has not been ensured to over one billion people globally. In recent years, water reuse, conservation and recycling are being promoted to meet the growing water demand, and in this regard, rainwater harvesting (RWH) has received a significant attention. This paper presents an overview of research on RWH systems through a bibliometric analysis and summarizing research undertaken by water engineering group of Western Sydney University, Australia. The number of publications on RWH has been increasing significantly with time. It has been found that USA, China, India, Australia, and South Africa have published the highest number of articles on RWH. Ghisi E (Brazil) has the highest number of published articles, while Rahman A (lead author of this article) has the highest citations in RWH research. Water engineering group in Western Sydney University has developed a RWH filtration unit to produce drinking water at household level, which is expected to be widely adopted in rural areas. RWH has been making a positive contribution to meet water related sustainable development goals.

Biography: *Prof. Ataur Rahman is currently serving as a Professor at School of Engineering at Western Sydney University (WSU), Sydney, Australia. His specialization is in the areas of Water and Environmental Engineering. Prof. Rahman obtained his PhD in Water Engineering from Monash University, Australia. He has worked in WSU for 19 years. Previously he worked in Queensland University of Technology for two years, Monash University for two years and Sinclair Knight Merz for one year. Prof. Rahman is a world leader in flood modelling, water quality assessment, water-related sustainability, rainwater harvesting and climate change impact assessment. His total publications on various aspects of water and environmental engineering are 448 that include ten books/conference proceedings and 122 ISI listed journal articles. His h index is 28 with about 3000 citations in Scopus database. He received the G.N. Alexander Medal from Engineers Australia for his outstanding research paper on flood modelling. He developed ARR-RFFE Model, which is widely used in Australia. He has supervised 18 PhD students and won VC's Excellence Award twice in WSU. He served as a project leader for many funded research projects worth over $2 million. He is a Fellow of The Institution of Engineers Australia.*

Day 2

9th November @ 9:15 am (GMT+8)

Professor Dr. Safian Sharif

Frontier Materials Research Alliance
Universiti Teknologi Malaysia

SCAN ME

Effect of Trochoidal Strategy in End Milling of Titanium Alloy Ti-6Al-4V

Abstract: Titanium alloy (Ti-6Al-4V) is widely used in aerospace industries due to its unique properties of high strength, low mass and corrosion resistance. This alloy is categorized as a difficult-to-machine material due to its high temperature strength and low thermal conductivity causing rapid tool wear and tool failure. This research is focused on trochoidal milling of titanium alloy where a small immersion angle and intermittent tool engagement allow enough space for the chip to evacuate, and eventually faster cooling of cutting tool. However, the prediction of machining responses such as tool wear, tool life, surface roughness and dimensional accuracy under trochoidal machining are not well established. In this study, experimental research was conducted using a PVD TiAlN + TiN coated carbide tool inserts at various cutting speed, feed rate and step over at a constant axial depth of cut. Results showed that the cutting speed was a dominant factor, followed by feed rate that significantly influence the tool wear and tool life. In addition, the tool entry strategy also reduces the tool wear and step over substantially affect the dimensional accuracy of the machined parts. Low cutting speed resulted high surface roughness (Ra) due to the presence of built-up-edges caused by high temperature and pressure.

Biography: *Dr. Safian Sharif has been a professor since 2008 and currently he is the Chair for Frontier Materials Research Alliance, Universiti Teknologi Malaysia. Prof. Safian received his PhD in Manufacturing from Coventry University in 2000. His main area of specialization is in machining of aerospace materials such as titanium alloys, inconel, stainless steel and other exotic materials which include hardened steels, cobalt chromium molybdenum, composites and wood. He is actively engaged in other research areas such as additive manufacturing, sustainable manufacturing, rapid tooling and casting. Since year 2000, he has been the principal researcher and co-researcher of various research projects under UTM, Government of Malaysia and European Commission. His postgraduate supervision includes 34 PhDs and 60 Master students. Professor Safian has published more than 200 articles in reputed journals and conference proceedings. His h-index is 27 with about 3000 citations in Scopus database. He is also serving as an Editor for Machining Science and Technology and Jurnal Teknologi. He has been appointed as an auditor for academic programmes for Malaysian Qualifications Agency (MQA) and Eng. Tech. Accreditation Council (ETAC), Prof. Safian also serves as panel assessor for MOHE research grants and board of studies for various institutions in Malaysia.*

Day 3

10th November @ 3:20 pm (GMT+8)

SCAN ME

Professor Dr. Jihong Wang

School of Engineering
University of Warwick, United Kingdom

Overview of the Current Development in Compressed Air Energy Storage

Abstract: To achieve the ambitious emission reduction target worldwide, it is essential to replace the fossil fuel fired thermal power plants by renewable energy sources, such as wind, solar etc. Integration of intermittent renewable energy power generation to the power grid has great impacts on the grid load balance and stability. Global efforts are made in searching for suitable solutions, among which Energy Storage is widely recognised as a key enabling technology for decarbonising future energy systems. Studies indicate 100-200GWh of storage capacity is needed to achieve a net-zero power system in which low-cost grid-scale electrical energy storage (EES) with 10-100h of duration is crucial. Such grid-scale EES with storage duration more than 10 hours achieving low installed energy capital costs (5-35$/kWh and <20$/kWh) is of critical importance for making use of wind and solar as well as serving applications for long-duration storage to cope with extreme weather incidents. In addition to pumped hydro, hydrogen, thermal and flow batteries, Compressed Air Energy Storage (CAES) is also a suitable energy storage for long duration storage applications. CAES is a mechanical energy storage technology that uses a compressor to generate pressurised air while there is excessive power generated; then the pressurised air is stored in air reservoirs and will be released via a turbine to generate electricity when needed. Compared with other energy storage technology, CAES has its merits of large scale, long duration, and low cost. Three types of CAES plants are usually classified: diabatic CAES (D-CAES), adiabatic CAES (A-CAES) and isothermal CAES (I-CAES). The main differences between the three CAES technologies are the heat source for reheating the air during expansion and the reheated air's temperature, both of which lead to different round trip efficiencies, power capacities, and carbon emissions. The presentation will give an overview of the current CAES technology development and some CAES projects around the world.

Biography: *Dr. Jihong Wang is a Professor at the School of Engineering, University of Warwick. She is the head of power and control systems research laboratory. Previously she worked at the University of Birmingham, where she was Deputy Director of the Midlands Energy Graduate School. She has also served as a Lecturer and Senior Lecturer at the University of Liverpool from 1998 to 2007. Her research interests include power system modelling control and monitoring, energy storage and grid integration, energy efficient actuators and optimal control methods. She has published over 100 journal papers and gained several best paper awards. Her h-index is 28 with more than 4000 citations in Scopus database. Her research has led to several practical innovations, including a smart voltage controller product and a clean pneumatic UPS (uninterrupted power supply) through joint research projects with industry. She led the EPSRC Grand Challenge Programme in Energy Storage "Integrated Market-fit and Affordable Grid-scale Energy Storage (IMAGES)". Through the project, an open-source software tool has been developed for compressed air and thermal energy storage. She is Co-investigator for Supergen Energy Storage Hub (EP/L019469/1) and member of Supergen Energy Storage Network+ 2019 (EP/S032622/1). She is also a part of the Joint UK-India Clean Energy Centre (EP/P003605/1). Professor Jihong Wang is an IEEE senior member and IET fellow.*

zoom Guidelines

Please do the following to join your meeting:

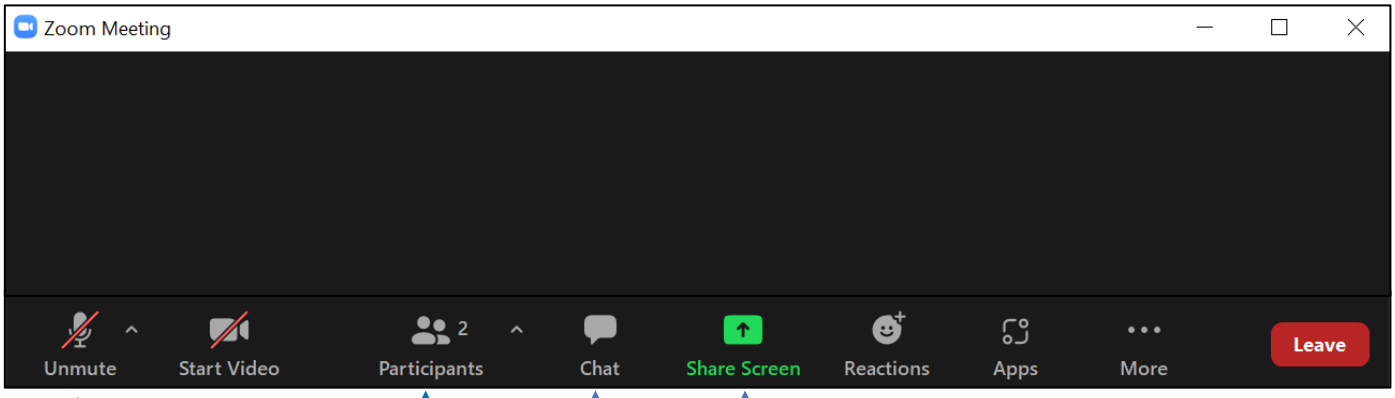
1) Check which **Session/Day/Time** you are scheduled for presentation in the **Technical Programme.**
2) Take note of the **Conference Room** of your Session.

Option 1: *Join your Session directly by using* ***the link provided*** *for your Conference Room.*

Option 2: *Join your Session directly by* ***scanning the QR code*** *of your Conference Room .*

Option 3: *Join your Session using the* ***Zoom App****. The Meeting ID and Passcode for your Conference Room are listed on Page 16.*

Some basic information on Zoom functions



Audio muted and video off (both indicated by a red slash)

Click Participants to allow you to "Raise Hand" for the Q&A session

Click to open the Chat box. This will enable you to chat with the Host/Participants

Click to share screen of your presentation (make sure your presentation is open)

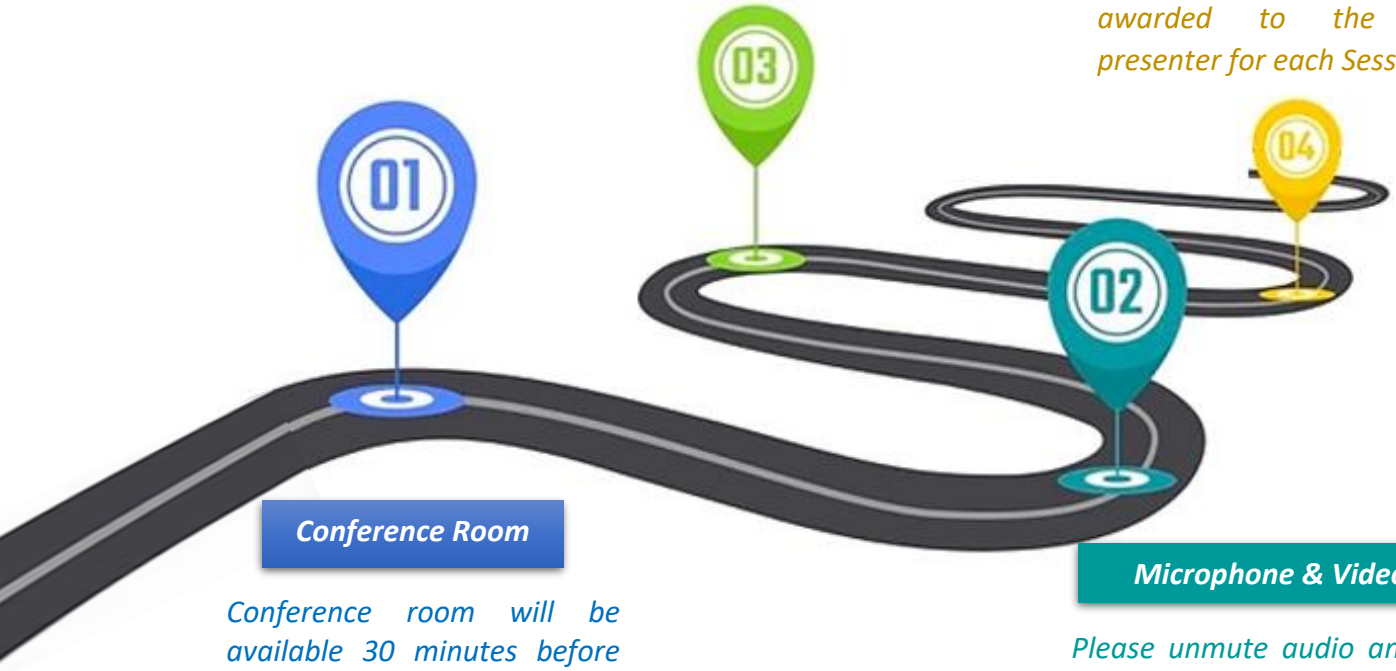
Presentation Information

Presentation Certificate

Presentation certificate will be email to the presenters after the conference. A Best Presenter Certificate will be awarded to the best presenter for each Session.

Presentation Time

*Each presenter is allocated **15-min. for presentation and 5-min. for Q&A.***



Conference Room

Conference room will be available 30 minutes before the conference scheduled time. Please enter the meeting room 10 minutes earlier.

Microphone & Video

Please unmute audio and start video during your presentation. It is suggested to use headset with microphone or earphone with microphone.

Virtual Meeting Details

		Simpur Room	Rafflesia Room	Telang Room	Bougainvillea Room	Vanda Orchid Room
Zoom link		https://bit.ly/2Z91cdc	https://bit.ly/3G3f8pL	https://bit.ly/3vEcCS0	https://bit.ly/3aXWgde	https://bit.ly/3jmfzSc
QR Code						
Meeting ID Passcode		673 673 7006 6737006	673 673 2635 6732675	673 000 6618 6736618	873 460 9054 6739054	673 000 5599 6735599
Day 1	9:00 – 12:00	Opening Ceremony Keynote #1 Keynote #2				
	13:20 – 17:20		Session 1A	Session 1B	Session 1C	Session 1D
Day 2	9:00 – 12:20	Keynote #3	Session 2A	Session 2B	Session 2C	Session 2D
	13:20 – 17:20		Session 3A	Session 3B	Session 3C	Session 3D
Day 3	9:00 – 12:20		Session 4A	Session 4B	Session 4C	Session 4D
	13:20 – 17:20	Keynote #4	Session 5A	Session 5B	Session 5C	Session 5D
		Closing Ceremony				

Technical Programme

8th November 2021

Session 1A  *Rafflesia Room*

https://bit.ly/3G3f8pL

SCAN ME

Session Chair: **Prof. Ir. Dr. Faris Tarlochan (Qatar University)**

Dr. Mohammad Iqbal (Universitas Syiah Kuala, Banda Aceh, Indonesia)

Dr. Naseem Uddin (UTB)

***Brunei Local Time*: 13:20 – 17:20 (GMT+8) • 8th November 2021**

13:20	Influence of welding parameters on microstructures and hardness of dissimilar weld joints between 316 and HSLA steel **(BICET_1)** *Misbahu Hayatu and E.T. Dauda*
13:40	An Optimal Economic Xbar & EWMA Scheme for Monitoring Process Mean **(BICET_9)** *Mohammad Shamsuzzaman, Salah Haridy, Hamdi Bashir and Ahmed Maged*
14:00	Characterization of Drilling with Minimum Quantity Lubrication **(BICET_15)** *Angelyana Geruna, Mohammad Ali, Seri Rahayu Yaakub, Asri Mohammad, Abdur-Rasheed Alao, Muataz Al Hazza and Erry Adesta*
14:20	Minimum Quantity Lubrication for an Eco-efficient Turning **(BICET_16)** *Wafy Amli, Mohammad Ali, Abdul Md Mazid, Seri Rahayu Yaakub, S. Ramesh, Zunaidi Ibrahim and Azlina Diyanah Hamid*
14:40	Investigation of the turning parameters on the surface finish of an aluminum bar **(BICET_20)** *Mohd Alai Arziul Abdullah, Md Asri Muhammad, Zunaidi Ibrahim, Mohammad Yeakub Ali and Judha Purbolaksono*
15:00 – 15:20	***COFFEE BREAK***
15:20	Design and Engineering Analysis of a Coconut Peeler Machine **(BICET_25)** *Awangku Yura Alif Yusofe, H.C. Alexander Chee, S. Ramesh, Mohammad Yeakub Ali and Zunaidi Ibrahim*
15:40	Statistical Analysis of The Effect of The Cutting Speed and Feed Rate on Chip Thickness in High-Speed End Milling for Hardened Steel D2 **(BICET_31)** *Muataz Hazza F. Al Hazza, Nor Amalina Binti Endut, Mohammad Yeakub Ali and Erry Y. T. Adesta*
16:00	Chip Morphology Analysis in High-Speed End Milling for D2 Hardened Steel **(BICET_32)** *Muataz Hazza F. Al Hazza, Muataz Hazza F. Al Hazza, Nor Amalina Binti Endut, Mohammad Yeakub Ali and Erry Y. T. Adesta*
16:20	Characteristics of Laser Welded Brazed AZ31/Ti-6Al-4V Dissimilar Joints **(BICET_34)** *S.T. Auwal, S. Ramesh, Auwal Ibrahim, B.I. Kunya, N. Mu'az, M.S. Dambatta, Abubakar Shehu Ahmad and Caiwang Tan*
16:40	Lap-shear Performance of Aluminum Alloy 5754 and 420 Martensitic Stainless Steel Resistance Spot Weld **(BICET_46)** *S.M. Manladan, S. Ramesh and Z. Luo*
17:00	Pre-Treatments Effect on Pepper Drying Time and Microstructure **(BICET_49)** *Ana Sakura Zainal Abidin, Melissa Michelle Rolland, Sinin Hamdan, Rasli Muslimen, Shirley J. Tanjong, Raudhah Ahmadi, Shahrol Mohamaddan and Annisa Jamali*
17:20	***END OF SESSION***

Session 1B  ***Telang Room***

Day 1

https://bit.ly/3vEcCS0

SCAN ME

Session Chair: **Prof. Abdullah Al-Maun (International Islamic University, Malaysia)**

Dr. Hj Mohd Khairul Ja'afar Hj Masri (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 8th November 2021**

13:20	The Comparison of Bias Correction Methods in Statistical Downscaling of Precipitation in Brunei Darussalam **(BICET_6)** *Dk Nur Ilyah Fathiyah Pg Ahmad Sufri, Uditha Ratnayake, Hj Asari Hj Abd. Rashid and Hjh Ena Kartina Hj Abd Rahman*
13:40	Optimisation of Organic Matter Removal from Landfill Leachate Using Ferrous (II)/ Persulfate (PS) System **(BICET_99)** *Nabilah Samsul, Mohamed Hasnain Isa, Shahriar Shams, Rozeana Hj Md. Juani and Mohammed Saedi Jami*
14:00	Status of E-waste Management in Brunei Darussalam **(BICET_114)** *Rusydina Idris, Shahriar Shams and Ismawi Yusof*
14:20	Characteristics of Municipal Solid Waste Leachate Under Hydrothermal Treatment **(BICET_118)** *Siti Salwa Khamis, Hadi Purwanto and Hamzah Mohd Salleh*
14:40	Soft Computing Techniques for Prediction of Forest Fire Occurrence in Brunei Darussalam **(BICET_133)** *Muhammad Iskandar Hanafi Bin Pengiran Haji Zahari, Rama Rao Karri, Mohamed Hasnain Isa, El-Said Mamdouh Mahmoud Zahran and S.M. Shiva Nagendra*
15:00 – 15:20	***COFFEE BREAK***
15:20	Waste COVID-19 Facemasks as an Auxiliary Iron Reductant in the Rotary Hearth Furnace **(BICET_144)** *Daniel J. C. Stewart, John Lewis, David Thomson and Andrew R. Barron*
15:40	Spatial Distribution of Rainfall Variability and Its Trends in the Coastal Zones of Bangladesh **(BICET_52)** *Md. Rezaul Karim, Nusrat Jahan and Shahriar Iqbal*
16:00	The Impact of Palm Sugar Replacement On Physicochemical Characteristics of Syzygium Malaccense Jam Processing **(BICET_185)** *Zumirra Affno, Aida Maryam Basri and Beston Faiek Nore*
16:20	Development of Brunei Regional Hydrodynamic Model for Modelling of Brunei Coastal Waters using Delft3D **(BICET_190)** *Rama Rao Karri, Dk Nur Siti Fatimah, Shahriar Shams, Ena Kartina Abdul Rahman, Hj Asari Bin Hj Abdul Rashid and Uditha Ratnayake*
16:40	Turbulent flow and micro-particle collection in the Bifurcation of human lungs **(BICET_193)** *Nurul Hasan, Nawaf Saeid, Roslynna Rosli and Md Mizanur Rahman*
17:00	Geotechnical Properties of Compost-Wastewater Sludge-Clay Biocover for Tropical Landfills **(BICET_122)** *Suaidah Rahim, Mohamed Hasnain Isa, Shahriar Shams and Muneerah Jeludin*
17:20	***END OF SESSION***

Session 1C Bougainvillea Room — Day 1

https://bit.ly/3aXWgde — SCAN ME

Session Chair: **Dr. Shah Newaz (UTB)**

Dr. Wida Susanty binti Haji Suhaili (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 8th November 2021**

13:20	A Comparative Study of Multi-Objective Functions in MOEA/D and Their Effects on Fuzzy Clustering **(BICET_39)** *Afiqah Basheer and Daphne Teck Ching Lai*
13:40	Speech Dataset of Kadazan Digits for Keyword Spotting **(BICET_12)** *Mohammad Ali Humayun, Hayati Yassin and Pg Emeroylariffion Abas*
14:00	A Low Complexity Convolutional Neural Network for Feature Extraction of Satellite Images Used in Path Loss Prediction **(BICET_7)** *Usman Sammani Sani, Daphne Teck Ching Lai and Owais Ahmed Malik*
14:20	Crowd Management: Simulation Modelling and Visualization Via Fuzzy Agents **(BICET_104)** *Ibrahim Venkat, Muhamad Naim Zali, Azhar Mohd Ibrahim, Saiful Omar and Bahari Belaton*
14:40	Mechatronic Design of a Myoelectric and Mechanomyographic Prosthesis with Intelligent Control for the Control of the Grip Function in People with Wrist Disarticulation and Transradial Amputation **(BICET_86)** *Diana Sofia Milagros Rosales Gurmendi and Ruth Aracelis Manzanares Grados*
15:00 – 15:20	***COFFEE BREAK***
15:20	Advanced RF/Microwave Filter Design using Microwave Circuit Simulators **(BICET_124)** *Kenneth Yeo*
15:40	Study of Macroplastic Transport and Fate in Urban River System **(BICET_97)** *Nur Syadza Elyana Abdullah Kok, Sharina Yunus, Swee Peng Ang, Khairuddin Hj Abd Ghafar and Pg Muhammad Nazri Pg Hj Ahmad*
16:00	Investigation of Edge Detection Techniques On Coronary Angiography Images **(BICET_91)** *Harsa Amylia Mat Sakim*
16:20	The Evaluation of Machine Learning Algorithms for Detecting Islamophobic Tweets **(BICET_89)** *Alice Takoh, Daphne Teck Ching Lai and Rosyzie Anna Apong*
16:40	Evaluation of 2D and 3D Posture for Human Activity Recognition **(BICET_83)** *Md Amran Hossen, Abdul Ghani Naim and Pg Emeroylariffion Abas*
17:00	Numerical Analysis of a Proposed Photonic Crystal Fiber for Sulfuric Acid Sensing **(BICET_87)** *Abdul Mu'Iz Maidi, Pg Emeroylarriffion Abas, Nianyu Zou and Feroza Begum*
17:20	***END OF SESSION***

Session 1D  ***Vanda Orchid Room*** Day 1

https://bit.ly/3jmfzSc SCAN ME

Session Chair: **Prof. Sivakumar Manickam (UTB)**

Ir. Dr. Wendy Ng (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 8th November 2021**

13:20	Effects of Pressure Variations in the Quality of Graphene Production through Chemical Vapor Deposition by Regression **(BICET_53)** *Nur Aqidah Haji Donglah, Nornasuha Mahmud Adenan and Maziyar Sabet*
13:40	The Influence of Temperature on the Quality of Graphene obtained through Chemical Vapour Deposition **(BICET_55)** *Nornasuha Mahmud Adenan, Nur Aqidah Haji Donglah and Maziyar Sabet*
14:00	The Addition of Graphene Nanoplatelets on the Thermal Characteristics of Polycarbonate **(BICET_27)** *Maziyar Sabet and Hassan Soleimani*
14:20	Graphene Oxide-Manganese Ferrite (GO-$MnFe_2O_4$) Nanocomposite: Synthesis and Its Use for Adsorptive Removal of Cd(II) and U(VI) Ions from Aqueous Medium **(BICET_163)** *Lakshmi Prasanna Lingamdinne, Choi Jong-Soo, Ganesh Kumar Reddy Angaru, Janardhan Reddy Koduru, Yoon-Young Chang, Jae-Kyu Yang and Rama Rao Karri*
14:40	Design of Reformer and Water Gas Shift Reactor for Production of Hydrogen Gas via Steam Methane Reforming **(BICET_14)** *Fuad Sahari, Zaim Ramli, Hassanul Ibrahim, Farzana Yussof and Rama Rao Karri*
15:00 – 15:20	***COFFEE BREAK***
15:20	Design of Absorption Column and Pressure Swing Adsorber for Production of Hydrogen by Steam Methane Reforming Using Biogas **(BICET_10)** *Dk Farzana, Hassanul Ariffin, Izzan Fuad, Zaim Ramli and Rama Rao Karri*
15:40	Experimental Evaluation of Water-Based Al_2O_3 and MgO Nanofluids on Selective Flat Plate Collector Thermal Efficiency **(BICET_93)** *Nur Wardhyana Yahya, Reddy Prasad and Dakshinamoorthy Sathiyamoorthy*
16:00	Effect of reduction method of reduced Graphene Oxide for phenol adsorption from Aqueous Solutions **(BICET_161)** *Choi Jong-Soo, Seon-hwa Lim, Lakshmi Prasanna Lingamdinne, Janardhan Reddy Koduru, Jae-Kyu Yang and Yoon-Young Chang*
16:20	Superhydrophilic Fabrics for Oil Remediation from Sea Water **(BICET_143)** *Sajad Kiani, Andrius Stanulis and Andrew R Barron*
16:40	Stability of Carboxylic Acid Modified Alumina Nanoparticles for Enhanced Oil Recovery Applications **(BICET_155)** *Wafaa Al-Shatty, Shirin Alexander and Andrew Barron*
17:00	Functionalization of Basic Oxygen Steelmaking Slag **(BICET_153)** *Lucy Fisher and Andrew Barron*
17:20	***END OF SESSION***

Technical Programme

9th November 2021

Keynote #3  *Simpur Room*

https://bit.ly/2Z91cdc

SCAN ME

Session Chair: **Professor Ir. Dr. Mohammad Yeakub Ali (Technical Chair, BICET 2021)**

Brunei Local Time: **9:00 – 10:00 (GMT+8) • 9th November 2021**

9:00	***Arrival of Participants***
9:15	***Plenary Session: Keynote Speaker #3*** **Professor Dr. Safian Sharif** *Chair, Frontier Materials Research Alliance, Universiti Teknology Malaysia*
10:00 – 10:20	***COFFEE BREAK***

Breakout Parallel Sessions

Session 2A  *Rafflesia Room*

https://bit.ly/3G3f8pL

SCAN ME

Session Chair: **Dr. Roslynna Rosli (UTB)**

Dr. Abdur-Rasheed Alao (UTB)

Brunei Local Time: **10:20 – 12:20 (GMT+8) • 9th November 2021**

10:20	Improving Microstructure Homogeneity and Reduce Grain size of Zn-3Mg Alloy through ECAP Processing **(BICET_63)** *M.S. M.S. Dambatta, S. Izman, S.T. Auwal, D. Kurniawan, S Ramesh, U. Abdullahi, H. Mas Ayu, A. Shah, Ay Gidado and Auwal Ibrahim*
10:40	Effect of Alumina Nanoparticles on the Material Removal Rate for Polymer Composite Materials during Milling Process **(BICET_76)** *Athraa A Ridha, Saad K Shather and Mustafa A Rajab*
11:00	Mechanical Properties and Corrosion Behaviour of AA5083 Joined at 45° Rolling Direction Using Friction Stir Welding **(BICET_88)** *Makopola William Matlou and Veeredhi Vasudeva Rao*
11:20	Microwave Sintering of CuO-doped Y-TZP Ceramics **(BICET_102)** *K.Y. Sara Lee and S. Ramesh*
11:40	Selection of Composite Material Based on Compromise MCDM Method **(BICET_106)** *Aamir Adeeb Abdul Rahim, S. Ramesh and S. Nurmaya Musa*
12:00	Fabrication and Characterization of Plastic Tiles from Plastic Wastes in Bangladesh **(BICET_111)** *Md Sanuwar Uddin, Mohammad Zoynal Abedin and Mohammad Yeakub Ali*
12:20 – 13:20	***LUNCH BREAK***

Session 2B *Telang Room* Day 2

https://bit.ly/3vEcCS0 SCAN ME

Session Chair: **Dr. Tan Soon Jiann (UTB)**

Dk Dr. Noor Muneerah Binti Pg Hj Jeludin (UTB)

Brunei Local Time: **10:20 – 12:20 (GMT+8) • 9th November 2021**

10:20	Landslide susceptibility assessment using frequency ratio model in Jalan Kota Batu-Subok area of Brunei Darussalam **(BICET_26)** *Hamirol Aqim Salleh, Ena Kartina Abdul Rahman, Uditha Ratnayake and Md Motiar Rahman*
10:40	Tendency of Intra-City Bus Drivers to Use Cell Phone While Driving Using Ordered Probit Model **(BICET_47)** *Sakif Ahmed, Md. Shihab Uddin, Shahrul Ibney Feroz, Md. Ridwan Bin Alam, Farhan Ahsan Farabi, Md. Moin Uddin and Shakil Mohammad Rifaat*
11:00	Basic Properties of Post-Disaster Recycled Material in Palu City as Flexible Pavement Materials **(BICET_48)** *Novita Pradani, Rita Irmawaty, Muhammad Wihardi Tjaronge and Irwan Ridwan Rahim*
11:20	Effects of Mixing Method and Duration on Concrete Properties Exposed To Hot Weather Conditions **(BICET_58)** *Saiful Baharin Duraman*
11:40	Investigation of Shear Strength and Flexural Cracking Load of FRP Reinforced Members using FEA **(BICET_191)** *Md Shah Alam and Nurul Hasan*
12:00	Exploring the Cracking and Healing Behaviour of the Thin Asphalt Overlay **(BICET_3)** *Noor Asmael*
12:20 – 13:20	***LUNCH BREAK***

Session 2C Bougainvillea Room — Day 2

https://bit.ly/3aXWgde — SCAN ME

Session Chair: **Dr. Feroza Begum (Universiti Brunei Darussalam)**

Dr. Dina Shona Laila (UTB)

***Brunei Local Time*: 10:20 – 12:20 (GMT+8) • 9th November 2021**

10:20	Smart Waste Bin System Using Beacon Technology **(BICET_98)** *Muhammad Fauzan Haji Salleh, Dr Wida Susanty Haji Suhaili and Ravi Kumar Patchmuthu*
10:40	IoT Adoption to address water level issues for paddy plantation in IBTE Agro **(BICET_100)** *Mohamad Zuhair Arif Haji Shahrum, Dr Wida Susanty Haji Suhaili and Dr Au Thein Wan*
11:00	Next Generation Smart Wardrobe Management System using IoT **(BICET_69)** *Arunakranthi Godishala, R Veena, Hayati Yassin and B Rajkumar*
11:20	Internet of Things: Digital Footprints Carry A Device Identity **(BICET_13)** *Rajarshi Roy Chowdhury, Dr. Azam Che Idris and Dr. Pg Emeroylariffion Abas*
11:40	Internet of Things (IoT) Based Air Quality Monitoring System with Audio Feedback System **(BICET_127)** *Peh Yong Ching, Zuraini Dahari and Nor Asiah Muhamad*
12:00	Smart Campus Initiative: Car Entrance, Exit and Parking Management Prototype Development **(BICET_169)** *Fatini Auni Anuar Puasa and Nurazmina Lingas*
12:20 – 13:20	***LUNCH BREAK***

Session 2D  *Vanda Orchid Room*

Day 2

https://bit.ly/3jmfzSc

SCAN ME

Session Chair: **Prof. Janardhan Reddy Koduru (Kwangwoon University, South Korea)**

Dr. Khairunnisa Nabilah Binti Hj Ruslan (UTB)

Brunei Local Time: **10:20 – 12:20 (GMT+8) • 9th November 2021**

10:20	Enhanced Performance of Graphene-Oxide Polyethersulfone Nanocomposite Membrane Wastewater and its Fouling Mechanism **(BICET_159)** *Nik Rashida Nik Abdul Ghani, Mohammed Saedi Jami and Mohamed Hasnain Isa*
10:40	Preparation and Characterization of ZnO-CNF/Chitosan Hydrogel and its in vitro Antibacterial Activity **(BICET_177)** *Janarthanan Supramaniam, Irvy Ai Xia Teh, Darren Yi Sern Low, Bey Fen Leo, Loh Teng Hern Tan, Bey Hing Goh, Sivakumar Manickam and Siah Ying Tang*
11:00	Study on Release Characteristics of Matrix-based Zinc Sulphate Controlled Release Fertilizers **(BICET_119)** *Dr. Vijaya Lakshmi Marlapalli, Rajendra Prasad, Sridevi V and Rama Rao Karri*
11:20	Studies on the enlargement of biodegradability index of potato industry wastewater using electrochemical method **(BICET_73)** *Thirugnanasambandham Karchiyappan and Rama Rao Karri*
11:40	Opportunities in Building Process Safety (PS) Competency in Brunei Darussalam **(BICET_107)** *Aisah Timbang, Mohammad Hazwan Azri, Reddy Prasad D M and Salwa Sofri*
12:00	Mechanical Behaviour of Y-TZP Consolidated at Various Temperatures **(BICET_24)** *Siti Rahmah Kamis, K.Y. Sara Lee and S. Ramesh*
12:20 – 13:20	***LUNCH BREAK***

Session 3A  *Rafflesia Room*

Day 2

https://bit.ly/3G3f8pL

SCAN ME

Session Chair: **Dr. Annisa Jamali (Universiti Malaysia Sarawak)**

Assoc. Prof. Dr. Mohammad Ali Basunia (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 9th November 2021**

13:20	Design of Active Winglet for Better Control Over Drag and Lift Coefficients for Commercial Aircrafts **(BICET_5)** *Mohamed Elkhair Arif Elhag and Naseem Uddin*
13:40	Kinematic and Dynamic Model Analysis for An Improved Design of Home-Based Wearable Lower Limb Rehabilitation Robot **(BICET_4)** *Muhammad Naim Leman, Annisa Jamali, Shahrol Mohamaddan, Helmy Hazmi and Mohd Syahmi Jamaluddin*
14:00	Metallurgical and Shear Strength of Brazed Bulk Pure Copper by Microwave Hybrid Heating **(BICET_165)** *Maisarah Lutfi, F. Yusuf, S. Ramesh and T. Ariga*
14:20	Design and Simulation of Low-Cost Lower Limb Exoskeleton for Rehabilitation Exercise **(BICET_28)** *Nilam Abdullah, Zunaidi Ibrahim, S. Ramesh, Md Asri Muhammad, Seri Rahayu Ya'Akub and Malai Zeiti Binti Sheikh Abdul Hamid*
14:40	Design and Fabrication of an Autonomous Smart Golf Caddie **(BICET_30)** *Amir Asyraaf Bin Aziz, Zunaidi Ibrahim, Md Asri Muhammad, S. Ramesh, Dk Seri Rahayu Pg Ya'Akub and Mohammad Ali*
15:00 – 15:20	***COFFEE BREAK***
15:20	Composite Laminate Pipe Subjected to Internal and External Pressure Loading for Oil and Gas Applications **(BICET_66)** *Za'im Aqwa Mohaimin and Yulfian Aminanda*
15:40	Road Crashed Barrier Using Rectangular Honeycomb as Absorber Structure **(BICET_67)** *Muhammad Asyraf Pengiran Haji Mat Rais and Yulfian Aminanda*
16:00	Performance of Mengkuang-Glass/Epoxy Double Lap Bolted Joint Subjected to Tensile Loading **(BICET_109)** *Asad Khalid and Syukri Harith*
16:20	Stress Intensity Factors of Multi Semi-elliptical Surface Cracks at the External Surface of a Pipe under Internal Pressure **(BICET_116)** *Fahrizan Rasyad, S. Ramesh, Md Asri Mohammad, Muhammad Akbar Barrinaya, Khusnun Widiyati, Sri Hastuty and Judha Purbolaksono*
16:40	Dynamic Mechanical Thermal Analysis of PTFE Based Composites **(BICET_123)** *Musa Alhaji Ibrahim, Shamsu Auwal Tukur and S. Ramesh*
17:00	Bending Response of Cotton, Coir and Glass/Epoxy Tubes **(BICET_110)** *Asad Khalid and Ak Md Nur Adi Syafi Rafiuddin Pg Eliza*
17:20	***END OF SESSION***

Session 3B *Telang Room* Day 2

https://bit.ly/3vEcCS0 SCAN ME

Session Chair: **Prof. Rezaul Karim (Islamic University of Technology, Bangladesh)**

Pg Dr. Saiful Baharin Pg Duraman (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 9th November 2021**

13:20	Assessment of Hydrological Response of Pahang River Basin **(BICET_147)** *Nur Wajihah Abd Hakim, Md Noor Salleh and Abdullah Al Mamun*
13:40	Application of Normalized Difference Vegetation Index in Agriculture to Estimate Rice Yield **(BICET_128)** *Hamizah Rhymee, Uditha Ratnayake, Ena Kartina Abdul Rahman and Shariar Shams*
14:00	Architectural Transformation in the Context of Adaptable Housing and Its Current Potential in Islamic Perspective **(BICET_50)** *Zulkefle Ismail and Fahmi Ibrahim*
14:20	Future Perspective of House Hold Waste Management in Brunei; a comparison with Successful Swedish System **(BICET_160)** *Dk Amirah Najibah Aliuddin, Md Sumon Reza, Abdalla and Abul Azad*
14:40	Findings on Student Mobility Challenges and Suggestions for a Sustainable Campus Strategy from Student Participation **(BICET_54)** *Nurin Batrisyia Suhaili and Zulkefle Ismail*
15:00 – 15:20	***COFFEE BREAK***
15:20	Renewable Energy: A Brief Review **(BICET_152)** *Jie Chie Yong and Md Motiar Rahman*
15:40	Investigating Prevention through Design (PtD) Concept for Safety in Malaysian Construction Industry **(BICET_136)** *Md Aslam Hossain, Muhammad Raihan Hafizh and Abid Nadeem*
16:00	Technology Adoption Model for Greening Existing Buildings: A Conceptualization **(BICET_140)** *Nurnazerah Haji Julayhe and Md Motiar Rahman*
16:20	Adopting Passive Design Strategies: A Brief Review **(BICET_29)** *Nor Aqilah Haji Juffle and Md Motiar Rahman*
16:40	Hydrochemical Characteristics of Groundwater and its Suitability for Drinking and Irrigation Uses in Makutupora Sub-basin Tanzania **(BICET_82)** *Ibrahimu Chikira Mjemah and Eliapenda Elisante Mariki*
17:00	Industry 4.0 in Construction: A Conceptual Framework **(BICET_43)** *Nurul Syazwana Mohammad Suferi and Md Motiar Rahman*
17:20	***END OF SESSION***

Session 3C Bougainvillea Room — Day 2

https://bit.ly/3aXWgde — SCAN ME

Session Chair: **Dr. Daphne Teck Ching Lai (Universiti Brunei Darussalam)**

Dr. Sharina Yunus (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 9th November 2021**

13:20	Thermoelectric cooling for Solar PV **(BICET_38)** *Hadi Mohaimin, Kenneth Yeo and Rafidah Petra*
13:40	Sinusoidal Pulse Width Modulation (SPWM) on Cascaded H-Bridge (CHB) Converter Harmonic Analysis **(BICET_146)** *Saifulbahri Hj Md Jaafar and Dina Shona Laila*
14:00	A Comparative Analysis of Optimisation Techniques for Voltage Collapse Point **(BICET_37)** *Haziq Ibrahim, Ang Swee Peng, Norfauzi Dani, Ashraf Khalil, William Voon and Hazlie Mokhlis*
14:20	Design of Medium Frequency transformer for Dual Active Bridge DC/DC Converter **(BICET_65)** *M.I. Rahman*
14:40	Thermoelectric temperature difference with PWM controller **(BICET_72)** *Hadi Mohaimin, Kenneth Yeo and Rafidah Petra*
15:00 – 15:20	***COFFEE BREAK***
15:20	An Experimental Study of The Rooftop Rainwater Energy Harvester to Generate Electricity **(BICET_95)** *Muhammad Akram Mohd Idros, Zuraini Dahari and Nor Asiah Muhamad*
15:40	Micro/nano-structuring Assisted Efficiency Improvement of Organic Light Emitting Diodes **(BICET_170)** *Biswajit Sana, Apurba Adhikary, Md. Shamim Ahsan and S H Shah Newaz*
16:00	IoT-Based Meter Reading for Domestic Power Consumption Billing **(BICET_75)** *Nor Asiah Muhamad, Lai Kum Tan, Swee Peng Ang and Saiful Bahri Md Ja'afar*
16:20	Effects of Incorporating Tutor Robot and Game-Based Learning for Teaching Mathematics to Primary School Students **(BICET_162)** *Siti Nazirah Haji Awang Damit and Sharina Yunus*
16:40	Periodic Library: Software Aid for Grade Ten Students with Visual Impairment **(BICET_19)** *Carlo H. Godoy Jr, Karl Jezrel D. Anglo, Angela Nicole C. Barbon and Dr. Apollo P. Portez*
17:00	Item Recommendation Using User Feedback Data and Item Profile **(BICET_68)** *Debashish Roy, Rajarshi Roy Chowdhury, Abdullah B. Nasser, Afdhal Azmi and Marzieh Babaeian Jelodar*
17:20	***END OF SESSION***

Session 3D  *Vanda Orchid Room*

Day 2

https://bit.ly/3jmfzSc

SCAN ME

Session Chair: **Prof. Andrew R Barron (Energy Safety Research Institute, United Kingdom)**

Dr. Bashir Suleiman (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 9th November 2021**

13:20	Effects of Root Developments and Vegetation Cover on Soil Water Infiltration **(BICET_103)** *Nur Sabrina Matali, Ena Kartina Abdul Rahman and Uditha Ratnayake*
13:40	Environmental Impact of Construction Waste **(BICET_113)** *Md Motiar Rahman and Fatin Shahrun Nizam*
14:00	Compressive and Flexural Strength of Coal Bottom Ash Lightweight Concrete **(BICET_132)** *Thevaneyan Krishta David, Sivaraos and S. Ramesh*
14:20	3D-Non-immersive VR Game for Process Safety Education **(BICET_108)** *Salwa Sofri, Mohammad Hazwan Azri, Reddy Prasad D M and Aisah Timbang*
14:40	Fabrication of Nanoparticle Carbonated Hydroxyapatite by Phase Transformation of Calcium Carbonate Prepared by Sol-Gel Hydrothermal Method **(BICET_125)** *L.T. Bang, Hoang Quoc Khai, S. Ramesh and Bui Duc Long*
15:00 – 15:20	***COFFEE BREAK***
15:20	Facies Prediction using Grain Size Analysis of Bruneian Sandstone Outcrops **(BICET_57)** *Nadiah Aqilah Haji Sufrian, Morteza Jami and Stephen Tyson*
15:40	Reservoir Characterization Using Petrophysical and Hydrocarbon Flow Parameters of the Deep Water Tariki Sandstone Member of the Otaraoa Formation, Taranaki Basin, New Zealand **(BICET_71)** *Surya Tejasvi Thota, Md Aminul Islam, Mohamed Ragab Shalaby, Nur Amirah Nihayatul Nabilah Alfian and Kamalia Norjannah Kamalrulzaman*
16:00	Multivariate analysis to evaluate the factors associated with oil production in Peru **(BICET_45)** *Rodrigo Alonso Castillo Ramos and Joseph Sinchitullo*
16:20	Tribological Behaviour of Aluminium-Copper-Cullet Metal Composite **(BICET_201)** *Awwal Hussain Nuhu, Suzi Salwah Jikan, Saliza Asman, Nur Azam Badarulzaman and Abdullahi Tijjani*
16:40	Effect of Surface Properties on Carbon Dioxide (CO_2) Adsorption on Sandstone **(BICET_189)** *Octaviana Antonia Feliz Soares de Jesus, Kiat Moon Lee, Sami Abdelrahman Musa and Joel Ben-Awuah*
17:00	COD Removal from Sanitary Landfill Leachate through Chemical Oxidation **(BICET_198)** *Suaibou Adamu, Mohamed Hasnain Isa, Rozeana Binti Hj Md. Juani, Asmaal Muizz Sallehhin Bin Hj Mohammad Sultan and Zuliana Binti Hj Nayan*
17:20	***END OF SESSION***

Technical Programme

10th November 2021

Session 4A  ***Rafflesia Room***

https://bit.ly/3G3f8pL

SCAN ME

Session Chair: **Prof. Yulfian Aminanda (UTB)**

Dr. Asad A Khalid Al Abdullah (UTB)

Brunei Local Time: **9:00 – 12:20 (GMT+8) • 10th November 2021**

9:00	Optimization of A Reliable Grid- Connected PV-Based Power Plant **(BICET_203)** *M.M Rashid and Mohammad Yeakub Ali*
9:20	A Study on the Models and Techniques Used in E-Business for Small-Medium Enterprises **(BICET_157)** *Hasyimah Isa, Mohammad Erwindie Abdul Rahim, Nur Aizzah Nurul Rashidah Mohammad Ariffin, Ratne Azera Embran, Syazana Han Mohammad Ridzuan Han, Ulaganathan Subramanian and Norazillah Abdullah*
9:40	Service Robot using Voice Recognition **(BICET_205)** *M.M Rashid and Mohammad Yeakub Ali*
10:00 – 10:20	***COFFEE BREAK***
10:20	Characterization and Corrosion Behavior of Heat Treated Electrodeposited Cobalt Alloy Coating **(BICET_168)** *M.R.M. Haizad, N.M. Nik Rozlin, C.M. Mardziah and S. Ramesh*
10:40	Study on the Lateral Torsional Buckling of Composite Thin-Walled Beam **(BICET_174)** *Nur Diana Zainal Abedin, Jaffar Syed Mohamed Ali, Abdul Aabid and Yulfian Aminanda*
11:00	Carbon Footprint and Climate Change: Perspective of Brunei Darussalam **(BICET_17)** *Nur Qayyimah, Mohammad Ali, Erry Adesta, Muataz Al Hazza, S. Ramesh and Zunaidi Ibrahim*
11:20	Development of $NiAl_2O_4$ Spinel Structure as an Electrode Material for Solid Oxide Fuel Cells **(BICET_164)** *Abdalla, Shammya Afroze, Mahendra Somalu and Abul Azad*
11:40	Clustering of Gas Turbine Emission Data **(BICET_186)** *Hasnanizan Taib and Ardeshir Bahreininejad*
12:00	A Light-Weight Low-Speed Stirrer for Proper Mixing of Fertilizer and Water in a Small Scale Automated Irrigation System **(BICET_137)** *Mohammad Ali Basunia*
12:20 – 13:20	***LUNCH BREAK***

Session 4B *Telang Room* Day 3

https://bit.ly/3vEcCS0 SCAN ME

Session Chair: **Dr. Md Motiar Rahman (UTB)**

Dr. Uditha Ratnayake (UTB)

Brunei Local Time: **9:00 – 12:20 (GMT+8) • 10th November 2021**

9:00	An Investigation into the Relationship Between Strength Properties of Sandstone Aggregate Stabilised with Cement and Polymer Emulsion for Road Sub-Base Applications **(BICET_70)** *Tan Eng Hie, Tan Soon Jiann and Elsaid M Zahran*
9:20	Backflow Characteristics at Palu Estuary as the Impact of Bed Subsidence After the 2018 Earthquake and Tsunami **(BICET_11)** *I Gede Tunas, Muh. Galib Ishak, Rudi Herman, Setiyawan and Yassir Arafat*
9:40	Chemical Stabilisation of Sandstone Road Aggregate Layers: A Literature Review **(BICET_85)** *Nurul Amalina Ashikin Ali, El-Said Mamdouh Mahmoud Zahran, Soon Jiann Tan and Nurul Hasan*
10:00 – 10:20	***COFFEE BREAK***
10:20	Performance Validation of Low-Cost Building Insulation Materials via the Thermal Characteristics and Costs of Insulation Materials **(BICET_154)** *Paul O. Awoyera, Nonso G. Enemchukwu, Rama Rao Karri and Shahriar Shams*
10:40	Using Water in a Sustainable Manner through Conservation at Households in Brunei **(BICET_195)** *Saiful Islam*
11:00	Survey on Properties of Coconut Timber, Shell and Coir and their Applications in Producing Construction Materials **(BICET_175)** *Akshaya S, Susmitha V S, Soundaryalakshmi S and Aisha Farhin K*
11:20	COD Removal from Sanitary Landfill Leachate through Chemical Oxidation **(BICET_198)** *Suaibou Adamu, Mohamed Hasnain Isa, Rozeana Binti Hj Md. Juani, Asmaal Muizz Sallehhin Bin Hj Mohammad Sultan and Zuliana Binti Hj Nayan*
11:40	Design and Fabrication of a Low-Cost Upper Limb Rehabilitation Device for Post-Stroke Patients **(BICET_33)** *Justin Ong Yi Kiat, Zunaidi Ibrahim, Md Asri Muhammad, Dk Seri Rahayu Pg Ya'Akub, Mohammad Ali and Dr Malai Zeiti Sheikh Abdul Hamid*
12:00	An Automatic Photometric Augmentation Technique to Recognize Faces with Single Sample Per Person **(BICET_78)** *Muhammad Tariq Siddique, Ibrahim Venkat, Asem Kasem and Sharul Tazrajiman*
12:20 – 13:20	***LUNCH BREAK***

Session 4C Bougainvillea Room — Day 3

https://bit.ly/3aXWgde

SCAN ME

Session Chair: Dr. Kenneth Yeo (UTB)

Dr. Ang Swee Peng (UTB)

Brunei Local Time: **9:00 – 12:20 (GMT+8) • 10th November 2021**

9:00	Smart Farming System for A Living Pharmacy: Exploring Brunei Medicinal Flora **(BICET_81)** *Abdul Qawiy Abdul Razak, Dina Shona Laila, Swee Peng Ang and Seno Adi Putra*
9:20	Connectivity Conceptual Modelling for Plant Agriculture Artificial Intelligence Information Systems **(BICET_94)** *Vladimir Kalichkin, Roman Koryakin and Kirill Maksimovich*
9:40	Determining Paddy Crop Health from Aerial Image using Machine Learning Approach: A Brunei Darussalam Based Study **(BICET_172)** *Muhammad Afiq Amirul Elfri, Fatin Hamadah Rahman, S H Shah Newaz, Wida Susanty Suhaili and Thien-Wan Au*
10:00 – 10:20	***COFFEE BREAK***
10:20	LoRa-based Remote Sensing of Peatland in Brunei Darussalam **(BICET_173)** *Mohamad Hafiz Bin Awang Jumat, Wida Susanty Suhaili, S H Shah Newaz and Nazmus Shaker Nafi*
10:40	Closed Loop Bidirectional Rotation and Speed Controls for Three-Phase Induction Motor **(BICET_194)** *Kah Haw Law*
11:00	Machine Learning Method in Detecting a Distributed of Service (DDoS): A Systematic Literature Review **(BICET_180)** *Muhammad Rusyaidi Zunaidi, Sardar Jaf and Zunaidi Ibrahim*
11:20	3D Printed Large-Scale Insole and Its Challenges **(BICET_126)** *Md Hazrat Ali and Sanjar Trubayev*
11:40	Solar Domestic Water Heater – Solar Thermal Energy Utilization **(BICET_92)** *Vanessa Deba Duwat and Dr Mohammad Nurul Islam*
12:00	Impact of Parallel High Voltage Transformers With and Without Earthing Transformer **(BICET_84)** *S.N. Syed Nasir, J.J. Jamian and R. Ayop*
12:20 – 13:20	***LUNCH BREAK***

Session 4D  *Vanda Orchid Room*

Day 3

https://bit.ly/3jmfzSc

SCAN ME

Session Chair: **Dr. Mohammad Nurul Islam (UTB)**

Dr. Abdur-Rasheed Alao (UTB)

Brunei Local Time: **9:00 – 12:20 (GMT+8) • 10th November 2021**

9:00	Performance Evaluation of Car Radiator Using Nano Fluids **(BICET_41)** *Abubakar Shehu Ahmad, S. Ramesh, Bala Abdullahi, S. T. Auwal and Nura Jibrin*
9:20	Experimental assessment of performance and emission characteristics of a diesel engine fueled with hybrid biodiesel and its blends with ethanol **(BICET_42)** *Shumani Ramuhaheli, Veeredhi Vasudevarao and Christopher Enweremadu*
9:40	Product Distribution in Fluidized Bed Co-pyrolysis of Sawdust and Rice Husk **(BICET_56)** *Amal Fadhilah, Mohammad Islam and Roslynna Rosli*
10:00 – 10:20	***COFFEE BREAK***
10:20	Synthesis and Sintering Studies of Hydroxyapatite Derived from Biogenic Waste Materials **(BICET_120)** *W.A. Chapa Pamodani Wanniarachchi, V. Janani, U. Sutharsini, M. Thanihaichelvan, S. Ramesh and C.K. Ng*
10:40	The Influence of pH on the Morphology of Hydroxyapatite Particles Synthesised by Microwave Heating **(BICET_134)** *K.W. Goh and S. Ramesh*
11:00	Effect of Pectin Integration in Biowaste Chicken Bones to Produce Hydroxyapatite **(BICET_135)** *C.K. Ng, K.Y. Sara Lee and S. Ramesh*
11:20	Experimental and Analyzing the Effect of Machining Parameters to the Surface Roughness of Aluminium **(BICET_181)** *Mohammad Razi Asyzowan, Zunaidi Ibrahim, Md Asri Muhammad and Dk Seri Rahayu Pg Ya'Akub*
11:40	The effect of Fiber Content and Fiber Orientation on Bending Strength of Abaca Fiber Reinforce Polymer Composite Fabricated by Press Method **(BICET_176)** *Mohamad Iqbal, Yulfian Aminanda, Arya Rudi Nasution, Teuku Firsa, Nazaruddin, Indera Sakti Nasution, Dadang Furqon Erawan and Dodi Andrian Saputra*
12:00	An Adaptive Upper-limb Stroke Rehabilitation System **(BICET_202)** *M.M Rashid and Mohammad Yeakub Ali*
12:20 – 13:20	***LUNCH BREAK***

Session 5A	Rafflesia Room	Day 3

https://bit.ly/3G3f8pL

SCAN ME

Session Chair: **Professor Dr. Ardeshir Bahreininejad (UTB)**

Dr. Naseem Uddin (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 10th November 2021**

13:20	Tides in Brunei Darussalam / Tidal Harmonics in Brunei Coastal Water **(BICET_148)** *Ahmad Farid Dato Hj Ali, Dr. Roslynna Rosli and Ap Dr Mohammad Ali Basunia*
13:40	Rooted Guardrail Post Design-An Improvement Towards Reducing Run-Off-Road Catastrophic Accidents **(BICET_139)** *Sivaraos and S. Ramesh*
14:00	A Non-Traditional Approach to Service-Learning in Engineering Education **(BICET_142)** *Douglas Tong Kum Tien, Siva Kumar Sivanesan and S. Ramesh*
14:20	Harvesting of Rainwater for Agriculture in Brunei Darussalam: Water Evaporation **(BICET_105)** *Muaz Marsidi, Mohammad Ali, Shahriar Shams, Azlina Diyanah Hamid, S. Ramesh and Dk Seri Rahayu Pg Yaakub*
14:40	Engineering Research: The Perspective Towards A Sound Conduct **(BICET_131)** *Thevaneyan Krishta David, Sivaraos and S. Ramesh*
15:00 – 15:20	***COFFEE BREAK***
15:20	***Plenary Session: Keynote Speaker #4*** Simpur Room **Professor Dr. Jihong Wang** *School of Engineering* *University of Warwick, United Kingdom* *Session Chair:* Professor Ir. Dr. Syuhaimi bin Ab Rahman (Universiti Kebangsaan Malaysia)

Session 5A *Continue*	Rafflesia Room
16:00	The Role of Disruptive Technologies on Accounting **(BICET_158)** *Mayamin Adibah Muhd Masa Masdi, Siti Wardah Hadanan, Nur Syahmina Afiqah Zamain, Aziz Hanafi Hasnan, Muhd Hazim Syakiran Julaihi, Bazilah Nuni Qurratu'aini Zahidah Sani, Fadzliwati Mohiddin, Ulaganathan Subramanian and Norazillah Abdullah*
16:20	A Review on the Autonomous Technology in ASEAN NCAP **(BICET_166)** *Mohd Danial Amrun, Tengku Nordayana Akma Tuan Kamaruddin, Nurulakmar Abu Husain, Yulfian Aminanda, Mior Azman Meor Said, Azanizawati Ma'Aram, Noor Irza Mohd Zaki and Mohd Khairi Abu Husain*
16:40	Design of Floatation Water Gate for Paddy Field Irrigation **(BICET_171)** *Muhamad Naqiuddin Awang Rambli, Pg Dr Seri Rahayu Pg Ya'Akub, Dr Denni Kurniawan, Dr Wida Susanty Haji Suhaili, Muhamdilah Morni, Pg Dr Rafidah Pg Hj Petra and Hj Ismit Hj Mohamad*
17:00 – 17:20	***CLOSING CEREMONY*** Simpur Room

Session 5B  ***Telang Room*** Day 3

https://bit.ly/3vEcCS0 SCAN ME

Session Chair: **Prof. Ir. Dr. Sivarao Subramonian (Universiti Teknikal Malaysia Melaka)**

Dr. Nurul Hasan (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 10th November 2021**

13:20	Tidal Energy in Brunei Darussalam: Motivations, Potentials and Challenges **(BICET_149)** *Ahmad Farid Dato Hj Ali, Roslynna Rosli and Mohammad Ali Basunia*
13:40	Analytical Machinability Characterization of Zirconia Materials by Indentation Techniques **(BICET_112)** *Nur Imanina Shamsul Bahren, Ng Jia Ying, Mohd Ammar Akmal Aliuddin and Abdur-Rasheed Alao*
14:00	Sintering Behaviour of Alumina Doped With Small Amounts of Manganese and Titania **(BICET_115)** *C. Gnanasagaran, S. Ramesh and U. Sutharsini*
14:20	Mechanical and Cytotoxic Properties of Zinc-Substituted Hydroxyapatite Bioceramic Derived From Eggshells **(BICET_117)** *C.M. Mardziah, S. Ramesh and N.R. Nik Masdek*
14:40	Hydrothermal Ageing of Alumina-Toughened Zirconia **(BICET_121)** *M.K.G. Abbas, S. Ramesh, Tao Wu, U. Sutharsini and L.T. Bang*
15:00 – 15:20	***COFFEE BREAK***
15:20	***Plenary Session: Keynote Speaker #4***  ***Simpur Room*** **Professor Dr. Jihong Wang** *School of Engineering* *University of Warwick, United Kingdom* *Session Chair:* Professor Ir. Dr. Syuhaimi bin Ab Rahman (Universiti Kebangsaan Malaysia)

Session 5B ***Continue***  ***Telang Room***

16:00	Digital Twin in Manufacturing by Using Programmable Logic Controller (PLC) **(BICET_130)** *Alexander Chee Hon Cheong, S. Ramesh, Fu Jie Kok and Jerome Ignatius Yuen Yi Xian*
16:20	Effects of Sintering on the Properties of Ceria Co-doped Scandia Stabilised Zirconia **(BICET_145)** *C.K. Ng, C.H. Ting and S. Ramesh*
16:40	Sustainable eSiC reinforced composite materials – Synthetization and Characterization **(BICET_150)** *Md Abdul Maleque, Masjuki Hassan and Yeakub Ali*
17:00 – 17:20	***CLOSING CEREMONY***  ***Simpur Room***

Session 5C	Bougainvillea Room	Day 3

https://bit.ly/3aXWgde

SCAN ME

Session Chair: **Prof. Dr. Nawaf Hazim Saeid (UTB)**

Ir. Dr. Zunaidi Ibrahim (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 10th November 2021**

13:20	Analysis on the Effect of Metal Inert Gas Welding Current and Travel Speed on the Mechanical Properties of Mild Steel Weld Joints **(BICET_182)** *Muhammad Farhan Amidon, Zunaidi Ibrahim, Md Asri Muhammad, Mohammad Ali and S. Ramesh*
13:40	Effect of Graphene Interface Modification on the Mechanical Properties of Graphene-epoxy Nanocomposite **(BICET_187)** *Akm Asif Iqbal, Dewan Nuruzzaman, Mohammad Yeakub Ali and A K M Parvez Iqbal*
14:00	Modelling of Surface Roughness for Glass-Assisted CO_2 Laser Machined P-Type Silicon Wafer **(BICET_188)** *Sivaraos and S. Ramesh*
14:20	Design Simulation and Development of Prototype Filling Nozzle in Food Industry **(BICET_156)** *Nor Aiman Sukindar, Haidah Farzana, Shafie Kamaruddin, Chuan Choong Yang, Sharifah Imihezri Syed Shaharuddin and Murhamdilah Morni*
14:40	Investigation on the Effect of Cutting Parameters on Surface Roughness in a Turning Operation of a Copper Bar **(BICET_21)** *Muhammad Haziq Awang Jaafar, Md Asri Muhammad, Zunaidi Ibrahim, Ahmad Shamil Abd Rahman, Maziri Morsidi, Pg Seri Rahayu Ya'Akub and Judha Purbolaksono*
15:00 – 15:20	***COFFEE BREAK***
15:20	***Plenary Session: Keynote Speaker #4*** Simpur Room **Professor Dr. Jihong Wang** *School of Engineering* *University of Warwick, United Kingdom* *Session Chair:* Professor Ir. Dr. Syuhaimi bin Ab Rahman (Universiti Kebangsaan Malaysia)

Session 5C *Continue*	Bougainvillea Room
16:00	CFD Analysis for a Ventilation System of a Kitchen **(BICET_64)** *Nawaf Saeid, Murhamdilah Morni and Yeo Kai Lin*
16:20	The effects of E-Commerce Businesses to Small-Medium Enterprises : Media Techniques and Technology **(BICET_179)** *Syukriah Kadir and Dr.Junaid M.Shaikh*
16:40	Universiti Teknologi Brunei Air Handling Unit Conversion **(BICET_167)** *Haji Muhammad Adam Haji Rosli and Mohamed Hairol Haji Md Ali*
17:00 – 17:20	***CLOSING CEREMONY*** Simpur Room

Session 5D  *Vanda Orchid Room*

Day 3

https://bit.ly/3jmfzSc

SCAN ME

Session Chair: **Dr. Abdul Azad (Universiti Brunei Darussalam)**

Dr. Nurul Islam (UTB)

Brunei Local Time: **13:20 – 17:20 (GMT+8) • 10th November 2021**

13:20	Engineering Analysis of an Upright Wheel Assembly for Passenger Vehicle **(BICET_23)** *Mohamed Irfan Bazrul Jama, H.C. Alexander Chee, S. Ramesh, Seri Rahayu Ya'akub, Zunaidi Ibrahim and Mohammad Yeakub Ali*
13:40	Energy Saving Capability of Variable Inertia Magneto-Rheological (MR) Flywheel **(BICET_204)** *M.M Rashid and Mohammad Yeakub Ali*
14:00	Reinforced Learning Experience Framework **(BICET_141)** *C.V. Aravind, Siva Kumar Sivanesan and S. Ramesh*
14:20	Properties of Glass Fiber Reinforced Polyamide 6-Polypropylene Composites under Tensile Loading **(BICET_206)** *Dewan Nuruzzaman, AKM Asif Iqbal, Noor Ismail, Mohammad Yeakub Ali, AKM Parvez Iqbal and Nayem Hossain*
14:40 – 15:20	***COFFEE BREAK***
15:20	***Plenary Session: Keynote Speaker #4***  *Simpur Room* **Professor Dr. Jihong Wang** *School of Engineering* *University of Warwick, United Kingdom* *Session Chair:* Professor Ir. Dr. Syuhaimi bin Ab Rahman (Universiti Kebangsaan Malaysia)
17:00 – 17:20	***CLOSING CEREMONY***  *Simpur Room*

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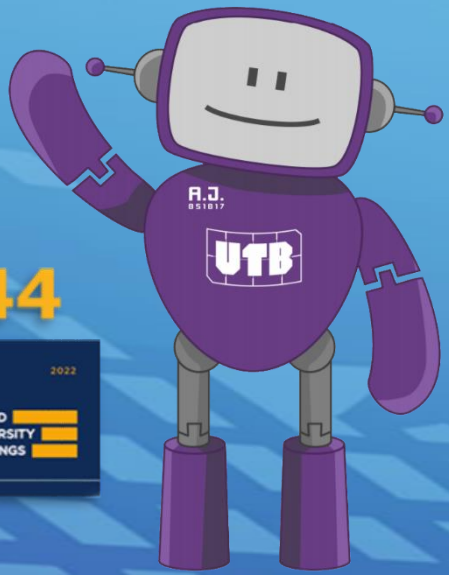

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