



**INTERNATIONAL CONFERENCE ON  
COMPUTING INNOVATION,  
INTELLIGENCE, TECHNOLOGIES AND  
EDUCATION 2024**

**CIITE '24**

**5 - 7 SEPTEMBER, 2024  
XIAMEN UNIVERSITY  
MALAYSIA, SELANGOR,  
MALAYSIA**

**PROGRAM BOOKLET &  
ABSTRACTS**

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**Publication**

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**Conference website**

<http://ciite24.xmu.edu.my/>

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# MESSAGE FROM VICE PRESIDENT OF XIAMEN UNIVERSITY MALAYSIA

**ASSOCIATE PROFESSOR DR. ZHANG YING**  
**VICE PRESIDENT, XMUM**

Dear Esteemed Delegates and Participants,

It is my immense pleasure to formally welcome you to the 1st International Conference on Computing Innovation, Intelligence, Technologies, and Education 2024 (CIITE'24).

It is both an honour and a privilege for Xiamen University Malaysia to host this conference and offer a platform for you, our esteemed delegates, to delve into research, scholarly pursuits, and professional growth. These values are central to our mission at Xiamen University Malaysia, and we are excited to facilitate discussions that push the boundaries of computing and its impact on various sectors.

Xiamen University Malaysia is the first overseas campus established by a renowned Chinese university and the first Chinese university branch campus in Malaysia. Since welcoming our first batch of students, we have rapidly grown to serve a diverse student body from numerous countries, offering a wide range of bachelors, masters, and PhD programs.

We aspire to become a university with a distinct global outlook, embracing cultural diversity, and featuring first-class teaching and research. Our commitment to supporting cutting-edge fundamental and applied research is central to this vision, ensuring that our work has significant industry relevance and real-world impact.

In line with this commitment, Xiamen University Malaysia is dedicated to fostering innovation and excellence in the field of computing. Our programs and research initiatives are designed to address contemporary challenges and explore emerging opportunities. We are proud of the achievements and contributions of our vibrant academic community, and we believe that CIITE'24 will further strengthen our collective efforts in advancing knowledge and practice.

I wish you a productive conference as you exchange ideas and uncover new opportunities to drive advancements in your field. I look forward to discovering new ways we can collaborate on shared interests.

**WELCOMING ADDRESS BY  
ASSISTANT PRESIDENT  
OF XIAMEN UNIVERSITY MALAYSIA**

**PROFESSOR DR. WANG HUI-QIONG  
ASSISTANT PRESIDENT, XMUM**

Ladies and Gentlemen,

Good morning and a very warm welcome to the 1st Conference on Computing Innovation, Intelligence, Technologies and Education 2024 (CIITE '24) at Xiamen University Malaysia (XMUM). CIITE '24 is organised by the School of Computing and Data Science (SCDS) and technically co-sponsored by IEEE Malaysia. It is an honour and a privilege to host such a distinguished gathering of scholars, industry leaders, and innovators from around the globe. At XMUM, we are committed to fostering an environment of academic excellence, innovation, and collaboration. The CIITE conference embodies these values, bringing together brilliant minds to share knowledge, explore new ideas and forge partnerships that will shape the future of technology and education.

The conference theme resonates deeply with our mission. As we navigate the challenges of the 21st century, it is imperative that we leverage technology and innovation to create sustainable solutions that benefit society and the environment. I am confident that the discussions and insights shared over the next few days will inspire us all to think creatively and act decisively. The conference also hosts a special session Digital Smart Health Informatics: Innovations and Applications (DSHI- Innov. & Apps 2024), which is a very emerging crucial research domain, to advance our lifestyle and healthcare systems.

I would like to extend my heartfelt gratitude to the conference chair Dr Mahdi H. Miraz and co-chair Prof. Shukor Abd Razak, conference steering committee chairs and members, technical programme committee members, our keynote speakers, panellists and participants for their invaluable contributions. Your expertise and dedication are what make this conference a success. I also want to thank our local organising committee and volunteers for their hard work and commitment in making CIITE '24 a reality. As we embark on this journey of discovery and collaboration, I encourage you all to engage actively, share your perspectives and build lasting connections. Together, we can drive innovation and create a brighter, more sustainable future. Once again, welcome to CIITE '24. I wish you all a productive and inspiring conference over the next three days. Thank you.

# WELCOMING SPEECH BY CIITE '24 CONFERENCE CHAIR

**ASSOCIATE PROFESSOR DR. MAHDI H. MIRAZ**  
**Conference Chair**

Dear Esteemed Colleagues and Participants,

It's my great pleasure to welcome you to the 1st International Conference on Computing Innovation, Intelligence, Technologies and Education 2024 (CIITE '24) at the picturesque ground of Xiamen University Malaysia, taking place from 5th to 7th September, 2024.

As you all know, the conference is organised by the School of Computing and Data Science (SCDS) and Technically Co-sponsored by IEEE and the proceedings will be submitted for publication in IEEE Xplore. We would like thank for the support received from IEEE Malaysia Section and IEEE Computer Society Malaysia Chapter in organising this conference. The supports and contributions received from our fellow colleagues and other XMUM stakeholders as well as the sponsors are also gratefully acknowledged.

This year's conference promises to be an exciting and enriching experience, bringing together leading minds from around the globe to discuss and explore the latest advancements in computing, information technology. As the first conference of this series, it's the beginning and we are committed and confident to uphold and accelerate this momentum for the future endeavours. We have an impressive line-up of keynote speakers, panel discussions, and technical sessions that will provide valuable insights and stimulate engaging discussions. We have also planned several networking events and social activities to foster collaboration and build lasting connections among participants. Additionally, there will be opportunities to present and discuss your research through paper presentations and poster sessions.

We encourage you to take full advantage of the opportunities to network, share your research and collaborate with fellow attendees. Your participation is crucial to the success of this conference and I am confident that together, we will make CIITE '24 a memorable and impactful event. Thank you for joining us and we look forward to the inspiring exchanges and ground breaking ideas that will emerge from this gathering.

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# CONFERENCE PROGRAM

DAY 1		
5 SEPTEMBER 2024, THURSDAY		
Time	Program	Venue
8:30-9:30	Registration	A3 #827 Foyer
	Breakfast	A3 #819
9:30-9:35	<b>WELCOMING SPEECH</b> Assoc. Prof. Dr. Mahdi H. Miraz Conference Chair	A3 #827
9:35-9:45	<b>CONFERENCE STATISTICS</b> Assoc. Prof. Ts. Dr. Yau Wei Chuen Chair, Technical Program Committee	
9:45-10:00	<b>OPENING SPEECH</b> Prof. Wang Hui-Qiong Assistant President, Xiamen University Malaysia	
10:00-10:50	<b>KEYNOTE SPEECH I</b> Prof. Ts. Dr. Nor Badrul Anuar Bin Juma'at From Hands-On to Hands-Off: The Revolutionary Shift to Automated Network Traffic Classification	
10:50-11:00	Group photograph	
11:00-11:10	Coffee break	A3 #819
11:10-12:00	<b>INVITED SPEAKER I</b> Assoc. Prof. Carlene E-A Campbell The role of cybersecurity towards digitalization and economic growth: challenges, uncertainties, 2024 and beyond	A3 #827
12:00-14:00	Lunch break	A3 #819
14:00 - 16:00	<b>PAPER PRESENTATION</b>  PARALLEL SESSION 1 <b>MODERATOR: CHANDRA REKA RAMACHANDIRAN</b> Usman Ahmad Usmani, Suliana Sulaiman, Junzo Watada (Paper ID 26)	A3 #827

	<p><b>Integrating AI in Data Warehousing and OLAP: A Pathway to Enhanced Analytics and Insights in Modern Data Ecosystems</b></p> <p><b>Geetha Kanaparan &amp; Diane Strode (Paper ID 30)</b>  <b>Structural Elements that Improve Coordination in Agile Software Development</b></p> <p><b>Mohammed N.M. Ali, M. M. Hafizur Rahman &amp; Hejab Al Fawareh (Paper ID 37)</b>  <b>Cost-effectiveness Analysis of a Shifted Completely Connected Network for Massively Parallel Computer Systems</b></p> <p><b>Vidra Rinata, Marini Othman &amp; Rajermani Thinakaran (Paper ID 62)</b>  <b>An Assessment of The Talent Management Practices At Aceh Government: A Way Forward In Leveraging AI</b></p> <p><b>Rezaul Azim, Md. Sharif Mia, Kamrun Naher, Touhidul Alam, M. T. Islam &amp; Mohammad Arif Sobhan Bhuiyan (Paper ID 41)</b>  <b>Hook-shaped Dual Element MIMO Antenna for X-band and Ku-band Applications</b></p> <p><b>Hong Ding, Chia Chao Kang, SuYang Xi, Zehang Liu, Xuan Zhang &amp; Yi Ding (Paper ID 94)</b>  <b>FPGA-Optimized Hardware Accelerator for Fast Fourier Transform and Singular Value Decomposition in AI</b></p>	
<b>14:00 – 16:00</b>	<p style="text-align: center;"><b>PARALLEL SESSION 2</b></p> <p><b>MODERATOR: TOA CHEAN KHIM</b></p> <p><b>Wei Heng Yap, Rui Cao &amp; Sim Kuan Goh (Paper ID 33)</b>  <b>Efficient Multi-View 3D Human Pose Estimation via Knowledge Distillation</b></p> <p><b>Chua Chong Chai &amp; Hong Chang (Paper ID 57)</b>  <b>Exploring Public Sentiments on AI in Mainland China: A Study of User-Generated Data from Weibo</b></p> <p><b>Wenqi An &amp; Shaidah Jusoh (Paper ID 68)</b>  <b>Utilizing BERT and TextCNN for Detecting Depression within Social Media Text Comments</b></p> <p><b>Wei Heng Yap, Sin Tian Lee, Rui Cao &amp; Ashwaq Mukred Saeed Qasem (Paper ID 105)</b>  <b>GestureSpeak: An Efficient Real-time Finger Spelling Recognition Model</b></p> <p><b>Chia Chao Kang, Yuze Wu, Chia Pao Liew, Chia Yang Kang, Zi Neng Ng &amp; Xinwei Li (Paper ID 46)</b>  <b>Automated Solar Tracking Panel Array for an Independent Hydroponic Electricity Supply</b></p>	<b>A3 #824</b>
<b>16:00-16:10</b>	<b>Coffee break</b>	<b>A3 #819</b>

16:10-16:50	<p style="text-align: center;"><b>INVITED SPEAKER II</b></p> <p><b>Prof. Ts Dr Rusli bin Haji Abdullah</b>  <b>The Impact of Emerging Technology on Society: Opportunities, Challenges, and Ethical Considerations</b></p>	A3 #827
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<b>DAY 2</b>		
<b>6 SEPTEMBER 2024, FRIDAY</b>		
Time	Program	Venue
9:00-9:50	<p style="text-align: center;"><b>INVITED SPEAKER III</b></p> <p><b>Dr. Mabrouka Abuhmida</b>  <b>The Therapist: Annie the chatbot</b></p>	A3 #827
9:50-10:00	Coffee break	A3 #819
10:00-12:00	<p style="text-align: center;"><b>PAPER PRESENTATION</b></p> <p style="text-align: center;"><b>PARALLEL SESSION 1</b></p> <p><b>MODERATOR: TEH JIA YEW</b></p> <p><b>Heng Chi En, Heng Yu Ping &amp; Ahmad Affandi Supli (Paper ID 47)</b>  <b>Exploring the Impacts of the Stylized Semi-open – world Virtual Reality (VR) Game on Presence</b></p> <p><b>Blessina Preethi R., Pragadeesh S. K., Saranya Nair M., Berlin Shalu S. Vergin Raja Sarobin M. (Paper ID 55)</b>  <b>Energy efficient Agrovoltaic monitoring system using IoT-based Wireless Sensor Network</b></p> <p><b>Qiyi Xie, Yuanjing Zhon, Mohammad Mahdi Ariannejad, Setio Timothy Darryl Budi, Chen Zeyu &amp; Chen Shuyi (Paper ID 92)</b>  <b>Recent Advances in the Digital Twin System for Smart Farming: A Five-Year Review</b></p> <p><b>Md Shoreef Uddin, Mabrouka Abuhmida (Paper ID 118)</b>  <b>Real-time Water Logging Monitoring and Forewarning System Facilitated by Vision and IoT</b></p> <p><b>Ye Xiaoyi &amp; Lee Sui Ping (Paper ID 119)</b>  <b>Machine Learning Methods for Breast Cancer Diagnosis</b></p> <p><b>Syedmohamadreza Manzourolajdad, Leela Koran, Kheng Seang Lim, Mas Shahidayana Mohktar &amp; Fatimah Ibrahim (Paper ID 123)</b>  <b>Semantic Reorganization in Transdisciplinary Research: Integrating 'Pre-Stimulus Activity,' 'Anticipation,' and 'Voluntary Action' in Neurocognitive Studies</b></p>	A3 #827

	<b>PARALLEL SESSION 2</b>	
	<b>MODERATOR: MD. IFTEKHAR SALAM</b>	
	<b>Zixuan Zhu &amp; Saif Kifah (Paper ID 29)</b> Exploring the Risk Posed by Adversarial Attacks on Face Recognition with CNN	
	<b>Qi Zhi, Liu Mingxin, Teh Jia Yew, Burra Venkata Durga Kumar, Md. Iftekhar Salam &amp; Mohammad Arif Sobhan Bhuiyan (Paper ID 53)</b> Malware Feature Extraction of the Alibaba Cloud Malware Dataset via Machine Learning Algorithms	<b>A3 #824</b>
<b>10:00–12:00</b>	<b>Nurul Ulfa Abdul Aziz, Roslina Ibrahim &amp; Firdaus Abdullah (Paper ID 48)</b> Review of Game Features to Develop a Serious Game Model for Mental Health Awareness	
	<b>Yuin Torng Yew, Puah Jia Hong, Chow Khuen Chan, Norita Mohd Zain, Chean Khim Toa &amp; Sim Kuan Goh (Paper ID 66)</b> EEG Sleep Stages Classification using Transformer-based Models: A Review	
<b>12:00–15:00</b>	<b>Lunch break</b>	<b>A3 #819</b>
<b>15:00–15:40</b>	<b>POSTER PRESENTATION</b>	<b>A3 #824</b>
	<b>SPECIAL SESSION</b>	
	<b>Dr. Goh Sim Kuan</b> Neural Interface and Intelligence	
<b>15:40–17:00</b>	<b>Mr. Kelvin Wong</b> Innovation & Revolution On Brain-Computer Interface & Neurotechnology 2024	<b>A3 #827</b>

<b>DAY 3</b>		
<b>7 SEPTEMBER 2024, SATURDAY</b>		
Time	Program	Venue
	<b>KEYNOTE SPEECH II</b>	
<b>9:00–9:50</b>	<b>Professor Jin-Song Dong</b> Probabilistic Model Checking for Sports Analytics: Decisions Beyond LLM	<b>A3 #827</b>
<b>9:50–10:10</b>	<b>Breakfast</b>	<b>A3 #819</b>
	<b>INVITED SPEAKER IV</b>	
<b>10:10–11:00</b>	<b>Prof. Dr Lim Kheng Seang</b> Innovation in Epilepsy	<b>A3 #827</b>

11:00-12:50	<p style="text-align: center;"><b>ONLINE PRESENTATION</b></p> <p><b>MODERATOR: MOHD SHAZMIR BIN SHAHARUDDIN</b>  <b>Cheong Winnie &amp; Lim Thian Li (Paper ID 44)</b>  <b>The Role of Color in Cinematography: A Study on the Psychological Impact of Color on Audience's Perception and Emotional Response</b></p> <p><b>Xinwen Lu &amp; Thian Li Lim (Paper ID 31)</b>  <b>Study of Audience Viewing Experience on Enhancing the Smoothness and Stereoscopic Effect of 2D Animation Using Live 2D</b></p> <p><b>Yi Ken Chuah, Chean Khim Toa, Sim Kuan Goh, Chow-Khuen Chan &amp; Hiroki Takada (Paper ID 103)</b>  <b>Emotion Classification through EEG Signals: The Emosense Model</b></p> <p><b>Runhua Jiang, Yiyang Huang, Yixuan Han, Jingqi Lin, Shuyang Yu, Yifei Guo &amp; Sim Kuan Goh (Paper ID 64)</b>  <b>Fine-tuning Generative Adversarial Networks Using Genetic Algorithm</b></p> <p><b>Mu Heng He &amp; Chean Khim Toa (Paper ID 98)</b>  <b>A Review of Sensor-Based Gait Recognition</b></p> <p><b>Luo Qiyuan, Zhang Xingnan, , Zhang Yuanxin, Burra Venkata Durga Kumar &amp; Liu Meifeng (Paper ID 106)</b>  <b>Optimizing Insurance Strategies through Disaster Risk Assessment Models: A Case Study of Earthquakes in Japan</b></p>	 <b>Teams link for online session</b>
	12:50-13:00	<p style="text-align: center;"><b>CLOSING SPEECH</b></p> <p><b>Assoc. Prof. Dr. Tee Sim Hui</b>  <b>Deputy Dean, School of Computing and Data Science, XMUM</b></p>
<b>END OF CONFERENCE</b>		

# KEYNOTE SPEECH I

## FROM HANDS-ON TO HANDS-OFF: THE REVOLUTIONARY SHIFT TO AUTOMATED NETWORK TRAFFIC CLASSIFICATION



**PROFESSOR TS. DR. NOR BADRUL ANUAR BIN JUMA'AT**

**Department of Computer System & Technology  
Faculty of Computer Science and Information Technology  
Universiti Malaya**

### **Abstract**

Network traffic classification is crucial for implementing network management policies, particularly for security. However, the surge in Internet-of-Things and encrypted traffic poses serious scalability and privacy issues, undermining classifier efficacy and potentially leading to security breaches, service agreement failures, and financial losses. This keynote aims to provide foresight into the future of network traffic classification, discussing potential innovations, emerging trends, and the evolving challenges in network security that professionals and businesses might face. The presentation delves into the transformative journey of network traffic classification, transitioning from labour-intensive manual processes to sophisticated automation. The presentation traces the historical context, highlighting the challenges and limitations inherent in manual classification methods, including scalability issues, the requirement for expert knowledge, and the potential for human error. It then explores the paradigm shift towards automation, emphasizing the integration of advanced technologies such as machine learning, deep learning, and artificial intelligence. This presentation examines case studies and real-world applications, illustrating how automated network traffic classification has revolutionized cybersecurity, network management, and user experience. Furthermore, the presentation offers insights into the future of network traffic classification, speculating on emerging trends, potential innovations, and the evolving landscape of network security. In conclusion, this keynote presentation charts the significant shift from manual to automated network traffic classification, highlighting the crucial role of technologies like machine learning and artificial intelligence in overcoming the challenges of scalability and privacy.

## Speaker Biography

Prof. Ts. Dr. Nor Badrul Anuar is an accomplished academic leader with a wealth of experience in various leadership positions. He currently serves as the Associate Vice Chancellor for Infrastructure and Information Services and acts as the Chief Information Officer at Universiti Malaya, where he leads various university services, including ICT, physical infrastructure, sports, and library services. As a senate member, he also chairs many ICT and infrastructure development committees. In addition, he leads the Centre of Research for Cyber Security & Network (CSNET).

Nor Badrul Anuar began his academic journey at Universiti Malaya, earning his Bachelor's and Master's degrees in Computer Science in 2001 and 2003, respectively. He obtained his PhD at the Centre for Information Security & Network Research, University of Plymouth, UK 2012. After joining Universiti Malaya as a tutor in 2001, he was promoted to lecturer in 2003, senior lecturer in 2008, and associate professor in 2017. In 2022, he was promoted to full professor at the Faculty of Computer Science and Information Technology at Universiti Malaya, Kuala Lumpur. In addition, he is also serving as a visiting professor at the Institute of Informatics and Computing in Energy (IICE), Universiti Tenaga Nasional, Malaysia.

He has supervised numerous post-doctoral fellows and research students, including eighteen PhD and six master's research students, in the computer network security and applications domain between 2012 and 2022. He has published extensively on computer security and applications, with his work being featured in academic journals both domestically and internationally. As of January 2023, his 152 published papers have attracted 7,670 citations and obtained an H-index of 41, making him a highly cited scholar. He is recognised as an expert in several subject categories, including computer science, engineering, science & technology - other topics, telecommunications, and information science & library science, by Web of Science.

In 2022, Stanford University recognised him as one of the world's top 2% scientists. Currently, he serves on the editorial board of two journals, including the Journal of Network and Computer Applications (JNCA), which has an impact factor of 7.574. He has received numerous honours and recognitions throughout his illustrious career. He was honoured by Universiti Malaya for eight consecutive years, from 2012 to 2019, for his outstanding service. In 2015, he was recognised as an outstanding lecturer in science at Universiti Malaya and was awarded the university's highest honour, the Universiti Malaya Excellence Award (Anugerah Cemerlang Universiti Malaya).

His research interests are intrusion detection systems, high-speed networks, and management information systems. Specifically, he focuses on intrusion detection systems, intrusion response systems, security events and management, digital forensic and network security, switching, routing, IPv6, and multicast. His current research explores network traffic classification and its applications and the role of federated learning in enhancing network security.

# KEYNOTE SPEECH II

## PROBABILISTIC MODEL CHECKING FOR SPORTS ANALYTICS: DECISIONS BEYOND LLM



**PROFESSOR JIN-SONG DONG**

**Deputy Head, Department of Computer Science,  
National University of Singapore (NUS)**

### **Abstract**

Sports analytics encompasses the utilization of data science, artificial intelligence (AI), psychology, and Internet of Things (IoT) devices to enhance sports performance, strategy, and decision-making. This process involves the processing and interpretation of cloud-based data from a variety of sources, such as video recordings and performance metrics. The resulting insights aid in evaluating player and team performance, preventing injuries, and supporting coaches and managers in making well-informed decisions and achieving superior outcomes. One widely recognized formal method, Probabilistic Model Checking (PMC), has traditionally been employed in reliability analysis for complex safety-critical systems. For instance, the reliability of an aircraft can be determined by evaluating the reliability of its components, including the engine, wings, and sensors. We apply PMC to Sports Analytics. As an example, the reliability (winning percentage) of a tennis player can be ascertained from the reliability (success rate) of their specific sub-skill sets (e.g., serve, forehand, backhand, etc). In this presentation, we will discuss our recent research work, which involves the application of PMC, machine learning, LLM, and computer vision to sports analytics. The reasoning capabilities of LLM will also be discussed. At the end of the presentation, we will present the vision of a new international sports analytics conference series <https://formal-analysis.com/isace/2024/>

## Speaker Biography

Prof. Jin Song Dong is a professor and deputy head of the Computer Science Department at the National University of Singapore. His research interests include safety and security systems, sports analytics, and trusted machine learning/LLM reasoning. He co-founded the commercialized PAT verification system which has garnered thousands of registered users from over 150 countries.

Jin Song co-founded the commercialized trusted machine learning system Silas ([www.depintel.com](http://www.depintel.com)). He has received numerous best paper awards and served on the editorial board of ACM Transactions on Software Engineering and Methodology and Formal Aspects of Computing. He has successfully supervised 30 PhD students and is an Institute of Engineers Australia Fellow.

In his leisure time, Jin Song developed Markov Decision Process models for tennis analysis using PAT, assisting professional players with pre-match analysis (beating the world's best). He is a Junior Grand Slam coach and coached tennis to his three children, all of whom have reached the #1 national junior ranking in Singapore/Australia. Two of his children have earned NCAA Division 1 full scholarships, while his second son, Chen, played #1 singles for Australia in the Junior Davis Cup Final and participated in both the Australian Open and US Open Junior Grand Slams.

# INVITED SPEAKERS

## **Assoc. Prof. Carlene E-A Campbell**

University of Wales Trinity Saint David (UWTSD)  
Swansea, Wales, United Kingdom

### **THE ROLE OF CYBERSECURITY TOWARDS DIGITALIZATION AND ECONOMIC GROWTH: CHALLENGES, UNCERTAINTIES, 2024 AND BEYOND**

#### **Abstract**

The key drivers of digitalization and economic growth are mainly Internet of Things (ToT), the Cloud and the convergence of Information Technology (IT) and Operational Technology (OT). The security challenges within these areas outline the need for cybersecurity within organisations and industries to prepare beyond 2024 and how AI, ML and blockchain can be resilient, organised and proactive to aid cyber security challenges. Security is about enabling risk to allow business to grow confidently, knowing that their valuable data and assets are protected against threats. Attacks on business are inevitable, recovery is not. Actions matter to business, customers, and shareholders. Recovering back up and running quickly is now more critical than ever. Automated computing technologies will aid to the needs of global customers more quickly.

#### **Speaker Biography**

Carlene is a Assoc Professor in cybersecurity and Innovative Systems within the Wales Institute of Science & Art. Her managerial and leadership experiences have been acquired over more than twenty-five years. The latter 10 years working as Professor (Associate), Institute Manager for Research Degrees (IMORDs); Faculty Head of Research Lead, and Previously Senior Lecturer and Lecturer respectively in the School of Applied Computing at the University of Wales Trinity Saint David (UWTSD). She is one of the expert advisers on the SMART Digital Accelerator project at UWTSD. This is the Welsh government-funded project consisting of a team of industry expert advisers who work with manufacturers in Wales to help them identify the right technology to boost their bottom line and the research supervisor for researchers on MADE Cymru. She is also a current member of the Institution of Engineering and Technology (IET) professional body and former Chair (4 years) of the IET Wales South Wales committee which is very much involved with community services.

Carlene has over 25 years of experience, as a leading researcher and academic within the field of Cybersecurity & Computer Forensics, Computer & Wireless Networks and other areas of digital technologies. She has gained respect in industry, policy and academia. Her research work spans various interdisciplinary and collaborative research projects by applying technological solutions within areas such as Automotive Engineering, Built and Natural Environment, Electrical and Electronic Engineering, etc. Carlene has supervised several students at doctoral level to successful completion in the areas of cybersecurity, SMART IoT, computer & wireless communications etc. She is currently on the MADE Cymru projects at UWTSD in Blockchain, Operational Technology (OT) Cybersecurity and Machine Learning with a number of doctoral Research Associated.

## **Prof. Ts Dr Rusli bin Haji Abdullah**

Software Engineering and Information System Department,  
University Putra Malaysia, Serdang, Selangor, Malaysia

### **THE IMPACT OF EMERGING TECHNOLOGY ON SOCIETY: OPPORTUNITIES, CHALLENGES, AND ETHICAL CONSIDERATIONS**

#### **Abstract**

This paper examines the multifaceted relationship between emerging technology and society, focusing on the opportunities, challenges, and ethical considerations inherent in their interaction. As technological advancements continue to accelerate across diverse fields such as artificial intelligence, biotechnology, blockchain, and renewable energy, their impact on society becomes increasingly pronounced. This study delves into the ways in which emerging technologies shape various aspects of human life, including economic systems, social structures, cultural practices, and ethical norms. By exploring topics such as innovation ecosystems, regulatory frameworks, technological disruption, and global perspectives, this paper seeks to provide a comprehensive understanding of the complex interplay between technology and society. Furthermore, it highlights the importance of fostering responsible innovation, promoting inclusivity, and addressing ethical dilemmas to ensure that emerging technologies serve the collective good and contribute positively to the advancement of humanity.

#### **Speaker Biography**

Professor Ts Dr Rusli is a professor at Software Engineering and Information System Department, Universiti Putra Malaysia. He was the former Dean of Faculty of Computer Science and Information Technology (CSIT), UPM. Specialized in Software Engineering and Knowledge Management that he has completed his PhD in Computer Science at Universiti Teknologi Malaysia (UTM), Johor, Malaysia in 2006. Starting his career as a lecturer since 1996, after served as System Analyst for 8 years at UPM.

He has published over 14 books and more than over 160 journal papers, conference publications and other academic research publications. He has also received numerous awards and recognitions throughout his career that includes Silver Medal for University Research Invention in 2008 and 2009, Gold Medal for University Research Invention 2005, Silver Medal for Invention of Technology and Exposition I-TEX (2009), Silver Medal for Malaysian Research Invention and Exposition – MTE (2010, 2012 & 2014) as well as Certification of University Excellent Services based on Lecturer Services for many years since 1999 up to now.

In addition, he has received more than over 12 research and collaboration grants as principal investigator (PI) at National level such as from MOHE, MOSTI and MDeC as well as at the International Level such from Japan University.

## **DR. MABROUKA ABUHMIDA**

Research & Innovation Group Leader  
University of South Wales, United Kingdom

### **TITLE: THE THERAPIST: ANNIE THE CHATBOT**

#### **Abstract**

The use of AI to provide mental health support in conservative communities. Our team is dedicated to crafting a cutting-edge generative AI system tailored to enhance mental health support in communities facing access, availability, and affordability challenges. This innovative system will deliver conversational therapy adhering to established therapeutic protocols endorsed by various practitioners. It is designed to be culturally responsive and adjusted to the religious contexts of users. The architecture includes a dual-interface dashboard for patients and therapists with risk assessment tools that analyse conversational signs and offer critical signposting functions.

#### **Speaker Biography**

Dr Mabrouka Abuhmida, a Senior Lecturer in Computing and the guiding force behind the MSc Artificial Intelligence course, is celebrated as the STEM Woman of the Year 2023. Her extensive expertise in artificial intelligence and machine learning has been the cornerstone of interdisciplinary research. Her work, notably in mental health support and the development of intelligent technologies, showcases her innovative approach to applying AI to diverse sectors. Her leadership extends beyond academia; Her advocacy for seamless technology transfer is evident in her efforts to bridge gaps between public institutions and private enterprises, fostering partnerships that drive technological advancement and innovation.

## **PROFESSOR DR. LIM KHENG SEANG**

Faculty of Medicine  
University Malaya, Malaysia

### **TITLE: INNOVATION IN EPILEPSY**

#### **Abstract**

In this lecture, I will show you the journey of a patient who was first presented with a seizure (initial presentation), assessed and investigated (EEG and MRI), and treated with various antiseizure medications (pharmacological treatment). Her seizures were not controlled, and she was subsequently referred for epilepsy presurgical evaluation (advances in monitoring), operated on (epilepsy surgery) and became seizure-free. Innovations that can be applied throughout these stages will be discussed, including images, EEG and neuroimaging analysis, big data and machine learning, and technological advances in epilepsy treatment.

#### **Speaker Biography**

Professor Dr. Lim Kheng Seang, a University Malaya graduate in 1999 with MRCP (UK), is a Professor of Neurology in the Faculty of Medicine, University of Malaya, and a Consultant Neurologist specializing in epilepsy at the University of Malaya Medical Centre and University Malaya Specialist Centre, Malaysia. He was trained at the University of Malaya for his neurology subspecialty training (2008), followed by fellowship training in Melbourne (2011) and Cleveland (2017) for epilepsy. He completed his junior doctor training in Hospital Alor Setar, Kedah before joining University Malaya Medical Centre in 2005. He is the President of the ASEAN Neurological Association (ASNA, 2023-2027), the General Secretary of the Asian and Oceanian Commission, International League Against Epilepsy (ILAE-AO), the chair of the Research Task Force in the commission, the past President of the Malaysian Society of Neurosciences (MSN) and Malaysian Epilepsy Society (PEM), an active member of the Malaysian Epilepsy Council and internationally and ex-chair of the Research Commission in the International Bureau of Epilepsy.

He has been involved in many trials of newer treatments in epilepsy, and also specializes in non-invasive and invasive epilepsy surgery assessment. Other areas of expertise included vagal nerve stimulation and callosotomy evaluation and monitoring. He is currently the Associate Editor for Neurology Asia, an Editorial Board member of the Journal of Xiangya Medicine, and on the committee of the recent 7th Asian Oceanian Congress on Clinical Neurophysiology (AOCCN) held in February 2021. His research works focus on the psychosocial aspects of epilepsy, clinical studies especially epilepsy surgery and seizures in brain tumours, genetics in focal and familial

epilepsies, pharmacogenomics and pharmacokinetics of antiepileptic drugs, quantitative EEG and quantitative MRI research, and artificial intelligence. He is active in research, being the principal investigator and co-investigator in many local and international research projects, and has a strong collaboration with Southeast Asia, Taiwan and Hong Kong, Australia and New Zealand, and the United Kingdom. He was recently awarded the Impact Oriented Interdisciplinary Research Grant (IIRG) Programme.

# SPECIAL SESSIONS

## DR. GOH SIM KUAN

School of Computing and Data Science  
Xiamen University Malaysia, Malaysia

### TITLE: NEURAL INTERFACE AND INTELLIGENCE

#### Abstract

The rapid advancement in AI and neuroimaging technologies has opened new avenues for diagnosing and treating neurological disorders. However, the complexity and cost of these technologies often pose barriers to their widespread adoption, particularly in developing regions. To address this challenge, we present a web-based EEG source imaging tool enhanced with AI capabilities, designed specifically for medical doctors. Our platform combines advanced EEG source imaging with AI-driven analysis to provide accurate and efficient source localization of neural activities. The AI algorithms are trained on diverse datasets to automatically detect and highlight abnormal brain activity patterns, i.e., those associated with epilepsy. This tool significantly reduces the time and expertise required for analysis, making it accessible even to clinicians with different levels of technical backgrounds. Moreover, the web-based nature of the tool ensures accessibility from any location with internet connectivity, facilitating remote consultations and collaborative diagnoses.

#### Speaker Biography

Dr Goh Sim Kuan obtained his B. Eng. and Ph.D. from the National University of Singapore. He is currently an assistant professor at Xiamen University, Malaysia. Prior to joining Xiamen University Malaysia, he was a research fellow at the Air Traffic Management Research Institute, Nanyang Technological University. His research focuses on computational intelligence, deep learning, and brain-computer interface. He is an IEEE Senior Member.

## **MR. KELVIN WONG**

General Manager  
Ultra Technology Engineering, Malaysia

### **TITLE: INNOVATION & REVOLUTION ON BRAIN-COMPUTER INTERFACE & NEUROTECHNOLOGY 2024**

#### **Abstract**

The field of Brain-Computer Interface (BCI) and Neurotechnology is undergoing a transformative shift, driven by innovative applications and revolutionary advancements. Explore the cutting-edge applications of BCI technology in various real-world scenarios, highlighting the significant impact these developments are having on both research and practical implementations. One key area of focus is the integration of BCI in neuropsychological research and therapeutic gaming. The BrainPY game, designed for children with mental health issues, exemplifies how EEG data can be combined with immersive gameplay to assess and enhance cognitive and emotional well-being. This application demonstrates the potential of BCI technology to create meaningful interactions that contribute positively to mental health.

The discussion will also cover unique applications, such as recording EEG data from horses to study equine brain activity, illustrating the adaptability of BCI devices in unconventional settings. This approach underscores the versatility of BCI technology in environments where traditional EEG setups may not be feasible. Additionally, future possibilities in the integration of BCI with AI-driven tools like ChatGPT and DALL-E will be explored. These interfaces have the potential to create more personalized and interactive user experiences, marking a significant advancement in the way humans interact with technology and their environment. This session provides a comprehensive overview of the current and future applications of BCI, showcasing how innovation is driving a revolution in neurotechnology.

#### **Speaker Biography**

Mr. Kelvin Wong is the General Manager of Ultra Technology Engineering (UTE), bringing over 12 years of experience in biomedical products, particularly with g.tec medical engineering. He also has a decade of experience with Maplesoft products, including Maple and MapleSIM, and five years working with DigitalED's Mobius Online STEM Education platform. Mr. Kelvin Wong earned his Bachelor of Electrical & Electronic Engineering degree from UCSI University and has since been actively involved in STEM education, control systems, Brain-Computer Interface (BCI), and Neuro-Rehabilitation. His expertise in neurotechnology and BCI has been instrumental in advancing the development and application of cutting-edge EEG devices, positioning him as a key figure in the industry.

# POSTER PRESENTATION

**Tay Yi Jie, Lim Thian Li**

*School of Computing and Data Science, Xiamen University Malaysia*

**The Role of Visual Effects (VFX) in Short Films: Impacts on Live-action Non-Linear Narrative Short Films**

**Kwan Lok Yi, Mohd Shazmir Bin Shaharuddin**

*School of Computing and Data Science, Xiamen University Malaysia*

**The Comparison of Open-ending and Close-ending Short Film Genre for Advertising: Consumer Engagement in Social Media**

**Chen Siyuan, Heng Yu Pin**

*School of Computing and Data Science, Xiamen University Malaysia*

**Curiosity-driven Exploration in Open World Game: The Effect of Level Design Patterns**

**Lim Pei Sien, Mr. Mohd Shazmir Bin Shaharuddin**

*School of Computing and Data Science, Xiamen University Malaysia*

**Influence of Jingle Sound on Audience Engagement and Emotional Response Regarding Persuasive Advertisement Video**

**Ong Li Xue, Ms. Lim Thian Li**

*School of Computing and Data Science, Xiamen University Malaysia*

**The Effectiveness of Game-based Learning in Improving Players' Ability to recognize and avoid Cyber Scams in Real0life Scenarios**

**Teoh Pearly, Heng Yu Ping, Ahmad Affandi Supli**

*School of Computing and Data Science, Xiamen University Malaysia*

**A Viewpoint from Player Trait Types: The Impact of Feminine Narrative Role-Playing Game (RPG) on Player Experiences**

**Chuah Wen Fong, Mohd Shazmir Bin Shaharuddin**

*School of Computing and Data Science, Xiamen University Malaysia*

**An Exploration of Local Fashion Branded AR Filters Advertising Value on Instagram**

# ABSTRACTS OF PAPER PRESENTATION

## DAY 1 PARALLEL SESSION 1

**MODERATOR: CHANDRA REKA RAMACHANDIRAN**

**Usman Ahmad Usmani, Suliana Sulaiman, Junzo Watada (Paper ID 26)**

Integrating AI in Data Warehousing and OLAP: A Pathway to Enhanced Analytics and Insights in Modern Data Ecosystems

This research paper delves into the pivotal convergence of Data Warehousing, Online Analytical Processing (OLAP), and Artificial Intelligence (AI) to unlock enhanced analytics and insights in the context of contemporary data ecosystems. By thoroughly exploring the integration of AI methodologies, the study not only investigates their synergies with traditional data warehousing and OLAP techniques but also highlights how this synergy contributes to fostering improved data quality and enabling more sophisticated analytics capabilities. Through an examination of real-world case studies, this research not only provides practical insights but also addresses critical challenges, such as scalability and ethical concerns. Ultimately, this work illuminates the transformative potential of harmonizing AI with data warehousing and OLAP, offering a promising trajectory towards more informed decision-making and innovation within data-driven landscapes.

**Geetha Kanaparan & Diane Strode (Paper ID 30)**

Structural Elements that Improve Coordination in Agile Software Development

Agile software development (ASD) enables project teams to coordinate their work. Many different ASD practices may contribute to effective coordination. This paper investigates the influence of three structural elements of agile project coordination, proximity, availability, and substitutability, on effective implicit coordination. Survey data from 340 agile practitioners worldwide was analysed using PLS-SEM. The results show that the structural elements of coordination each have a positive effect on the effective implicit coordination of agile software development projects. This paper guides practitioners on what agile practices contribute to improved coordination. This paper also validates the structural elements of an existing theoretical model of ASD coordination and shows that the model is generalisable to various agile contexts.

**Mohammed N.M. Ali, M. M. Hafizur Rahman & Hejab Al Fawareh (Paper ID 37)**

Cost-effectiveness Analysis of a Shifted Completely Connected Network for Massively Parallel Computer Systems

The Cost-Effectiveness Analysis (CEA) is a crucial tool for comparing the impact of newly developed technologies to their associated costs. CEA evaluates the costs of two

or more new products by examining the benefits derived from them. Therefore, analyzing the cost-effectiveness (CE) of any new innovation is essential before beginning the production process. A comprehensive assessment of costs and benefits is necessary to perform an accurate CEA, which should consider the long-term effects of new developments. CEA is applicable for evaluating all new products and technologies across various sectors, including computer science. In this paper, the Cost-Effectiveness Factor (CEF) of a proposed parallel computer system utilizing a shifted completely connected network (SCCN) will be analyzed. This system consists of multiple levels and the cost of creating each level will be compared to the benefits obtained from it. Additionally, each level will be compared to other networks with a similar number of processing elements (PEs). To evaluate this network, the cost-effectiveness factor (CEF) will be calculated. Each level of the SCCN demonstrated the lowest CEF when compared to the two-dimensional networks included in the study.

### **Vidra Rinata, Marini Othman & Rajermani Thinakaran (Paper ID 62)**

#### **An Assessment of The Talent Management Practices At Aceh Government: A Way Forward In Leveraging AI**

This study aims to assess talent management practices within the Aceh Government and look into the potential use of Artificial Intelligence (AI) to improve existing strategies. The utilization of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to summarize relevant research aims to enhance talent acquisition, retention, and development within the government sector. This study will conduct a literature review on methods for managing talent and the integration of AI in government, using the PRISMA approach. This article suggests integrating AI into talent management in the Aceh Government. The text is a thorough review that provides practical advice for effectively tackling challenges in talent management. The article seeks to suggest solutions for optimizing talent processes and enhancing organizational performance by exploring the benefits and limitations of AI integration in the Aceh Government. The assessment will provide guidance for the integration of AI in talent management within the Aceh Government, assisting decision-makers in aligning policies with government objectives. The paper will explore the ramifications of AI in talent management, encompassing advancements in efficiency, augmented decision-making capabilities, and tailored development initiatives. This study will tackle issues such as data protection and workforce preparedness, providing suggestions for optimizing the advantages of AI. This study offers a thorough evaluation of talent management within the Aceh Government and proposes the incorporation of AI to improve its efficacy.

**Rezaul Azim, Md. Sharif Mia, Kamrun Naher, Touhidul Alam, M. T. Islam & Mohammad Arif Sobhan Bhuiy (Paper ID 41)**

**Hook-shaped Dual Element MIMO Antenna for X-band and Ku-band Applications**

This paper proposes a simple hook-shaped MIMO antenna for X- and Ku-band applications. The MIMO comprises a hook-shaped patch with a rotated C-shaped parasitic element and a ground with a Cresent-shaped slot. It is etched on both sides of an FR4 material, having a dielectric constant of 4.3. The numerical results reveal that the single element of the studied MIMO with an overall size of  $14 \times 16$  mm<sup>2</sup> achieved dual operating bands of 9.77 - 11.28 GHz and 11.92 - 12.95 GHz. Antiparallel placement of the two single elements forms the anticipated MIMO and can retain the dual working bands for X- and Ku-bands. The isolation between the elements of the MIMO is greater than 20dB with good efficiency and gain, which perfectly fits with X-band and Ku-band applications.

**Hong Ding, Chia Chao Kang, SuYang Xi, Zehang Liu, Xuan Zhang & Yi Ding (Paper ID 94)**

**FPGA-Optimized Hardware Accelerator for Fast Fourier Transform and Singular Value Decomposition in AIAI**

This research introduces an FPGA-based hardware accelerator to optimize the Singular Value Decomposition (SVD) and Fast Fourier transform (FFT) operations in AI models. The proposed design aims to improve processing speed and reduce computational latency. Through experiments, the paper validates the performance benefits of the hardware accelerator and shows how well it handles FFT and SVD operations. With its strong security and durability, the accelerator design achieves significant speedups over software implementations based on its modules for data flow control, watermark embedding, FFT and SVD.

**DAY 1 PARALLEL SESSION 2**

**MODERATOR: TOA CHEAN KHIM**

**Wei Heng Yap, Rui Cao & Sim Kuan Goh (Paper ID 33)**

**Efficient Multi-View 3D Human Pose Estimation via Knowledge Distillation**

In this paper, we focus on the challenge that arises when deploying 3D HPE models in real-world scenarios where computational resources and memory constraints are prevalent. To address this challenge, our research focuses on leveraging knowledge distillation as a technique to reduce the model's complexity and computational demands while preserving its performance. Knowledge distillation involves transferring the knowledge acquired by a complex teacher model to a more lightweight student model. By distilling the essential information, we aim to create a streamlined

and efficient 3D HPE model capable of maintaining high accuracy with reduced computational overhead. By training the Student Model with different types of ResNet model, i.e., ResNet-50, ResNet-101, we get the result that with the rate of declining parameters from Teacher Model to Student Model reaching 41% for ResNet-50 and 73% for ResNet-101, it's able to conclude we address the challenge of deploying 3D HPE systems in resource-constrained real-world settings. Ultimately, we aspire to empower researchers and practitioners with adaptable, efficient tools that transcend the boundaries of 3D pose estimation, shaping the landscape of computer vision applications.

### **Chua Chong Chai & Hong Chang (Paper ID 57)**

#### **Exploring Public Sentiments on AI in Mainland China: A Study of User-Generated Data from Weibo**

The motivation of this study stems from the increased attention to AI ethics and public opinion since the launch of the large language model product ChatGPT. While international studies often focus on public opinion research on English social platforms, discussions and analyses of AI among mainland Chinese users are infrequently conducted, despite China's leadership in global AI development. This study aims to bridge this gap by analyzing user-generated data on Weibo, providing insights into the emotional polarity and key discussion topics surrounding AI among Chinese netizens. An ERNIE-BiLSTM was implemented for sentiment classification, and a LDA-CorEx method was deployed for topic modeling. The sentiment trajectory analysis results show a post-COVID-19 optimistic rebound. through Latent Dirichlet Allocation (LDA) and review with Correlation Explanation (CorEx), we identify seven key discussion topics, including National Strategy, Entertainment, Robotics, and others, and analyze their sentiment distribution. The findings have implications for policymakers, practitioners, and international stakeholders interested in promoting AI technology and products.

### **Wenqi An & Shaidah Jusoh (Paper ID 68)**

#### **Utilizing BERT and TextCNN for Detecting Depression within Social Media Text Comments**

Depression is a common symptom associated with various mental health conditions. Social media platforms have become a space for people to openly share their thoughts and feelings. These online expressions may have signs of depression. As such, the ability to detect depression in people's social media content is a crucial step towards addressing and preventing mental health issues. Deep learning techniques have emerged as effective approaches for analyzing large textual datasets, such as social media posts. This paper examines two well-established deep learning (DL) models, namely BERT and TextCNN in detecting depressive symptoms from text. The findings suggest that both the BERT and TextCNN models exhibit the capability to identify signs of depression within text-based content. While the TextCNN model was found to

have a faster training time, the BERT model demonstrated a higher overall accuracy rate in detecting depressive symptoms. These results highlight the potential of deploying both models and natural language processing techniques to gain insights into depressive symptoms from people's online expressions.

**Wei Heng Yap, Sin Tian Lee, Rui Cao & Ashwaq Mukred Saeed Qasem  
(Paper ID 105)**

**GestureSpeak: An Efficient Real-time Finger Spelling Recognition Model**

In this paper, an efficient real-time finger spelling recognition system which designed for bridging communication gaps for the deaf and hard-of-hearing communities is presented. The traditional sign language recognition systems are more likely focusing on accuracy rather than the speed and efficiency in low specs devices. This leads to limiting the usage of the traditional system as it needs high specs of the users' devices. To solve this issue, a model balancing both accuracy and response time is proposed. The proposed approach leverages n-gram modelling and Knowledge Distillation techniques to enhance performance and accuracy. The system integrates these methodologies to capture the temporal dependencies between gestures and reduce the computational burden typically associated with deep learning models. Different variants of EfficientNetv2 and MobileNetV3 architectures, pre-trained on the ImageNet dataset, were utilized to achieve a balance between efficiency and accuracy. Experimental results demonstrate that the proposed system maintains high accuracy with significantly reduced computational requirements, making it suitable for practical applications in resource constrained environments such as mobile devices. This research contributes to the field by introducing a novel combination of n-gram modelling and Knowledge Distillation in the context of finger gestures recognition in sign language, offering a viable solution for real-time applications. Unlike other normal works focusing on the parts of sign language which contains poses of arms and gestures of arthrosis, we concentrate more on the hand gesture-based sign language recognition. Through our work, we believe that we can promote the communication between sign languages with the efficient real-time finger spelling recognition model in a way of hand gesture-based.

**Chia Chao Kang, Yuze Wu, Chia Pao Liew, Chia Yang Kang, Zi Neng Ng & Xinwei Li (Paper ID 46)**

**Automated Solar Tracking Panel Array for an Independent Hydroponic Electricity Supply**

The world's population is growing, and so is the demand for food. New technologies make agriculture more efficient but require a lot of energy. Alternative technologies and resources such as renewable energy should replace non-renewable energy sources to reduce environmental impacts and sustain natural resources. The project explores the possibility of implementing an automatic sun-tracking solar panel array for an independent hydroponic system. The main idea of this project is to create solar arrays

that will optimize the usage and storage of renewable energy sources in hydroponic systems. Most importantly, the project's unique element is designing a solar tracking system that will be about 20% more efficient than fixed solar panels in power generation. It is to create a hydroponic system with a single-axis solar tracking system and a maximum power point tracking (MPPT) charging controller. It would better optimize solar energy harvesting and provide higher energy generation efficiency than fixed solar panel systems. In addition, with the help of MPPT systems, the power output of solar panel systems can be maximized at any time. The author found that the project could provide about 29% of the power enhancement from efficiency tests under ideal optimization compared to a fixed solar panel system.

## DAY 2 PARALLEL SESSION 1

**MODERATOR: TEH JIA YEW**

### **Heng Chi En, Heng Yu Ping & Ahmad Affandi Supli (Paper ID 47)**

Exploring the Impacts of the Stylized Semi-open -world Virtual Reality (VR) Game on Presence

Virtual Reality (VR) is an immersive technology that immerses users in a simulation of the actual world or completely alters it. This research aimed to fill the gaps in existing knowledge by investigating the effects of stylized semi-open-world VR games on the sense of presence in players. Through the development of a stylized 3D virtual environment, the study examined the semi-open-world VR game design elements that significantly influence presence while also exploring the impact of various factors such as motion sickness, VR gaming experience, and gender on gaming satisfaction and the degree of presence experienced by participants in semi-open-world VR games. It was tested by 26 participants using the Presence Questionnaire (PQ 3.0) and the Game User Experience Satisfaction Scale (GUESS-18) survey. The findings revealed that usability/playability, player engrossment, and visual aesthetics significantly influence presence, with male participants without motion sickness and prior VR gaming experience reporting higher gaming satisfaction, while participants without VR gaming experience surprisingly reported a higher sense of presence. These insights served as valuable references for developers aiming to create more immersive and engaging virtual experiences.

### **Blessina Preethi R., Pragadeesh S. K., Saranya Nair M., Berlin Shalu S. & Vergin Raja Sarobin M. (Paper ID 55)**

Energy efficient Agrovoltaic monitoring system using IoT-based Wireless Sensor Network

In contemporary society, the ongoing requirement for food and power generation has found a partial solution in Agrovoltaics. This approach combines eco-friendly power production through the integration of solar panels on agricultural land. However,

challenges emerge in the absence of a coordinated monitoring system to produce quality food and power. The proposed model focuses on energy-efficient data aggregation and classification for monitoring agrovoltatics using real-time data. The agrovoltaic monitoring system is an IoT-based heterogeneous wireless sensor network (WSN) operating on a battery. Thus, optimizing energy efficiency becomes crucial, which the proposed model achieves by eliminating redundancy in data aggregation using cosine similarity. The collected data is classified to monitor both the crop's health and the solar panel's condition using a hybrid model combining GRU and Adaboosting, referred to as Energy-efficient Agrovoltaic monitoring (EeAVM) model. The proposed model EeAVM improves the energy efficiency of the network by 30% and accuracy by 1.2% compared to alternative models.

**Qiyi Xie, Yuanjing Zhon, Mohammad Mahdi Ariannejad, Setio Timothy Darryl Budi, Chen Zeyu & Chen Shuyi (Paper ID 92)**

**Recent Advances in the Digital Twin System for Smart Farming: A Five-Year Review**

The development of digital technologies has given rise to novel approaches to the problems facing contemporary agriculture. Digital Twin systems (DTS) are one of these technologies that have become an innovative tool in smart farming. DTS facilitates data-driven decision-making, predictive maintenance, and real-time monitoring by emulating actual farming processes virtually. Precision management over agricultural processes is made possible by integrating Internet of Things (IoT) devices, artificial intelligence (AI), and big data analytics into DTS. This reduces environmental effects, optimizes resource consumption, and increases crop yields. To provide an overview of the most recent uses of DTS in smart farms and to emphasize their contributions to productivity, sustainability, and efficiency, this study explores twenty case studies from the previous five years of research to get the benefits, difficulties, and implementation strategies of using DT technology in several agricultural environments. The paper emphasizes how DT systems are revolutionizing smart farming and opening the door to a more resilient and intelligent agrarian future.

**Md Shoreef Uddin, Mabrouka Abuhmida (Paper ID 118)**

**Real-time Water Logging Monitoring and Forewarning System Facilitated by Vision and IoT**

Water logging is a significant problem for developing nations, especially those with high average rainfall or those closer to the sea. In addition to traffic congestion, water logging in cities can also result in financial hardship and, in rare situations, even fatalities. We are plagued by this water logging problem year after year because of ourselves. In addition to natural causes, water logging can also be carried on by man-made factors, including excessive plastic usage, a lack of effective waste management systems, the slow intervention of authorities, and a lack of real-time alarm systems. However, if the likelihood of water logging can be predicted beforehand and a warning can be provided to the authorities at the same time, the situation may be resolved by taking the appropriate action. In this study, we proposed a cost-effective IoT Based embedded system that can predict water logging and send alert notifications to the

Authority. Early flood alarms will be sent to the authorities by installing the system in various city locations, especially in those that are prone to water logging. This will assist the authorities to take the appropriate action. The development of real-time notification and remote system monitoring capabilities are the main focuses of this study. To get our desired result, In this study, we use Esp 32 for data processing and transmission, the system also consists of a solar panel, camera, rain sensor, Humidity and temperature sensor, water flow sensor, and Ultrasonic sensor for collecting real-time data from the environment.

### **Ye Xiaoyi & Lee Sui Ping (Paper ID 119)**

#### **Machine Learning Methods for Breast Cancer Diagnosis**

Breast cancer is an important issue in the field of women's health. Early detection and diagnosis are crucial to treatment and prognosis. However, traditional breast cancer detection methods have some limitations, and it is challenging to accurately identify tumors. Machine learning technology can play an important role in early diagnosis of breast cancer. This paper aims to develop an accurate and efficient machine learning model that can use clinical data to automatically detect breast cancer, so as to judge whether the tumor is malignant or benign. In this study, we explore the application of machine learning algorithms in the classification of breast cancer using the Wisconsin Breast Cancer Database. A machine learning framework is proposed. Leveraging the rich clinical data provided by this database, we employ various classifiers, including KNN, Random Forest, SVM, Logistic Regression, and Naive Bayes, to develop AI algorithm for breast cancer detection. This paper implements and compare this machine learning algorithms based on their performance metrics, such as accuracy, precision, recall, and F-measure. Experimental results indicate that SVM outperforms other classifiers, achieving high precision, recall, and F-measure values for both malignant and benign samples. This result suggests that SVM is well-suited for breast cancer detection tasks and holds significant potential for clinical applications.

### **Syedmohamadreza Manzourolajdad, Leela Koran, Kheng Seang Lim, Mas Shahidayana Mohktar & Fatimah Ibrahim (Paper ID 123)**

#### **Semantic Reorganization in Transdisciplinary Research: Integrating 'Pre-Stimulus Activity,' 'Anticipation,' and 'Voluntary Action' in Neurocognitive Studies**

The synthesis of knowledge is a cornerstone of advancing scientific research and addressing complex research problems, in particular within interdisciplinary and transdisciplinary frameworks. This paper explores the semantic organization and the evolving interconnections among closely related neurocognitive processes—specifically, "Pre-Stimulus Activity," "Anticipation," and "Voluntary Action." Despite their underlying physiological similarities, these processes often remain conceptually and terminologically isolated within different research clusters, leading to a fragmented understanding and inhibiting the synthesis of new insights. Utilizing a bibliometric analysis of datasets from Web of Science and PubMed, this study investigates the

semantic patterns and chronological evolution of key terms associated with these processes. The findings underscore the necessity of semantic reorganization in research, emphasizing that the integration of related concepts is not merely additive but requires a deeper, structural alignment of terminologies across disciplines. Such reorganization is pivotal for advancing transdisciplinary research, as it facilitates the synthesis of knowledge and the development of more comprehensive theoretical models. By systematically including and cross-referencing datasets related to "Anticipation" and "Voluntary Action" within the study of "Pre-Stimulus Activity," this paper advocates for a more unified approach to understanding these neurocognitive phenomena, ultimately contributing towards a more cohesive and integrated research landscape.

## DAY 2 PARALLEL SESSION 2

**MODERATOR: MD. IFTEKHAR SALAM**

### **Zixuan Zhu & Saif Kifah (Paper ID 29)**

Exploring the Risk Posed by Adversarial Attacks on Face Recognition with CNN

Face recognition models are gaining rising attention, especially CNN-based models. They are employed in multiple applications, such as security and surveillance. However, those models are vulnerable to adversarial attacks. This study investigates some adversarial attack strategies to evaluate the capability of the CNN-based face recognition models against adversarial attacks. In addition, some attack methods are employed in the same model to assess the abilities of those adversarial attack methods. Two CNN-based face recognition models are trained to test model accuracy and loss. Then, two adversarial attack methods are applied to attack the models. The first attack method is the Fast Gradient Sign Method (FGSM). As for the second attack method, it is the Random Gradient Method (RGM). This study demonstrates that ArcFace and CosFace models are vulnerable to Adversarial Attacks. Furthermore, the FGSM method has a better attack success rate in comparison with RGM to CNN-based face recognition models.

### **Qi Zhi, Liu Mingxin, Teh Jia Yew, Burra Venkata Durga Kumar, Md. Iftexhar Salam & Mohammad Arif Sobhan Bhuiyan (Paper ID 53)**

Malware Feature Extraction of the Alibaba Clous Malware Dataset via Machine Learning Algorithms

This thesis explores a method for detecting and analyzing malware using machine learning algorithms, specifically variable-length N-grams and XGBoost, to extract significant behavioral features from API call sequences. By pre-processing the dataset and conducting statistical analysis to identify differences in API occurrences among malware families, the proposed method demonstrates high accuracy in classifying malware samples from the Alibaba Cloud dataset. The results show a 91.3% accuracy for multiclass classification and 99.0% for binary classification, highlighting the

potential of variable-length N-grams and XGBoost in enhancing malware detection and analysis.

### **Nurul Ulfa Abdul Aziz, Roslina Ibrahim & Firdaus Abdullah (Paper ID 48)**

#### **Review of Game Features to Develop a Serious Game Model for Mental Health Awareness**

The increasing prevalence of mental health challenges, such as anxiety and depression, necessitates innovative strategies for effective intervention. Despite the potential of digital games to enhance mental health awareness, many existing designs lack the integration of essential features to achieve educational and medical goals. This study addresses this gap by reviewing and identifying appropriate game features for designing a serious game model to increase mental health awareness. By analysing research from 2016 to 2023, the study integrates important game features, including mechanics, dynamics, aesthetics, and educational content. The resulting serious game feature model combines the Mechanics-Dynamics-Aesthetics (MDA) framework and the Serious Game Design Assessment (SGDA) framework, ensuring a balance between education and entertainment. Critical sub features include technical accessibility, rules, goals, feedback mechanisms, rewards, levels, challenges, narrative elements, social connections, and cognitive-behavioural therapy (CBT) principles. This comprehensive model supports the creation of an effective tool that educates and engages users, significantly enhancing mental health awareness. The findings suggest that well-structured game designs are powerful mental health education and advocacy tools, opening new avenues for research and application across various demographic groups and settings.

### **Yuin Torng Yew, Puah Jia Hong, Chow Khuen Chan, Norita Mohd Zain, Chean Khim Toa & Sim Kuan Goh (Paper ID 66)**

#### **EEG Sleep Stages Classification using Transformer-based Models: A Review**

Sleep research is vital for understanding the complexities of human physiology and promoting overall health and well-being. Despite its importance, sleep disorders are widespread and can significantly impact daily functioning and quality of life. A critical aspect of sleep research is the classification of sleep stages, traditionally performed manually but now increasingly automated using computational techniques. However, current classification models face challenges, particularly in accurately distinguishing between sleep stages such as N1, REM, and wakefulness, and in classifying different types of sleep, such as micro sleep and macro sleep. Addressing these research challenges can lead to significant advancements in automated sleep scoring and contribute to the development of clinically deployable sleep diagnostic tools. Recently, there is a growing interest in leveraging advanced deep learning models, especially transformers, for analysing EEG signals, which are crucial for sleep stage classification due to their temporal dependency. In contrast to convolutional neural networks (CNNs), which have been commonly used for this purpose, transformer architectures offer promise in capturing long-range dependencies in timeseries data. Furthermore, the

integration of multimodal learning approaches, such as combining EEG signals with other physiological data, holds the potential for improving the accuracy and robustness of sleep stage classification. This review article focuses on transformer-based models for sleep stages classification, and also to clarify the current gaps in sleep classification.

### **DAY 3 SESSION (ONLINE)**

**MODERATOR: MOHD SHAZMIR BIN SHAHARUDDIN**

#### **Cheong Winnie & Lim Thian Li (Paper ID 44)**

##### **The Role of Color in Cinematography: A Study on the Psychological Impact of Color on Audience's Perception and Emotional Response**

Films are a sequence of emotions connected by narrative, possessing a unique ability to evoke a range of feelings in viewers. In the realm of cinematography, color serves as a powerful tool for eliciting emotions and deepening the audience's connection to the narrative. Despite the significance of color, empirical research on its effects in film has been relatively sparse, often relying on untested conventions. Existing studies tend to simplify stimuli to neutral contexts, overlooking the emotional complexity inherent in films. Notably, there has been no experimental research exploring the effects of color using both neutral and emotional video stimuli. To address this gap, a methodological framework was developed, employing variations in warm and cold colors (orange and blue hues) across both neutral and emotional stimuli. The study produced five video clips and one image, each presented in two coloration versions, to examine viewers' perceptions and emotional responses. A quantitative survey was conducted with 66 respondents, focusing on how coloration influences emotional intensity. The findings revealed that in emotional contexts, respondents perceived significant differences in emotional intensity between warm and cold colorations, reinforcing the role of color in enhancing emotional content. Even within neutral contexts, coloration alone significantly impacted emotional perception, despite the absence of explicit emotional cues. Warm colors emerge as potent elicitors of positive emotions, particularly in contexts with high valence and high arousal or low valence and high arousal. Conversely, cold colors complement negative emotions, proving effective in emotional contexts of low valence and low arousal or low valence and high arousal. This understanding equips filmmakers with the ability to intentionally craft emotional experiences through deliberate use of color.

#### **Xinwen Lu & Thian Li Lim (Paper ID 31)**

##### **Study Of Audience Viewing Experience On Enhancing The Smoothness And Stereoscopic Effect Of 2D Animation Using Live2D**

This research addresses the growing expectations of animation audiences by exploring the potential of Live2D technology in enhancing 2D animation. While traditional 2D animation is artistically diverse, it struggles with smooth movements and realistic depth. Live2D technology, successful in gaming and virtual broadcasting, offers a solution through a deformable layer system. This study identifies key gaps in Live2D's application in anime, particularly with rotational animations. The methodology

involves creating a Live2D short film and gathering audience feedback via a five-point Likert scale questionnaire. Using tools like Live2D Cubism, SAI, PS, and AE, the production process highlights Live2D's potential. Comparative analysis with traditional 2D segments shows Live2D's superiority in smoothness and depth, enhancing the visual experience. Positive audience feedback confirms Live2D's aesthetic benefits. Despite limitations, this study paves the way for future research in various applications, broader demographics, and monitoring Live2D's development. It offers valuable insights for animators exploring innovative approaches in content creation, fostering creative and technological progress.

### **Yi Ken Chuah, Chean Khim Toa, Sim Kuan Goh, Chow-Khuen Chan & Hiroki Takada (Paper ID 103)**

#### **Emotion Classification through EEG Signals: The Emosense Model**

In the Emotion research, there has been extensive work on emotion classification using electroencephalogram (EEG) signals. Despite most studies having achieved high accuracy, there is a potential for improvement in the model, particularly in training time reduction. Reducing the training time will further optimize the modelling efficiency. Hence, our study aims to develop an efficient EEG-based emotion classification model that achieves high accuracy with a reduced number of training epochs. The proposed model, named EmoSense, employs a hybrid deep learning neural network architecture, which comprises a combination of Convolutional Neural Network (CNN), Deep Autoencoder (DAE), Bidirectional Long Short-Term Memory (BiLSTM), and an Attention mechanism. EEG features are first extracted using Differential Entropy (DE) on the EEG channels, which are then structured to form a four-dimensional (4D) representation of features with temporal, spatial, and frequency information. Subsequently, the extracted features will be trained with the proposed model. Experimental evaluation of the publicly available DEAP dataset demonstrated that the proposed model achieved accuracy of 94.11% with only 35 epochs. This performance is comparable with the result of Cascaded Convolutional Recurrent Neural Networks model developed by Meng et al., which reported accuracy of 94.64% with 100 epochs. The primary reason for the comparison with Meng et al. is that our overall process, including feature extraction and formation, is similar to their study, with the only difference being the deep learning architecture. Our finding indicates that the EmoSense model is not only able to achieve comparable accuracy but also reduces the number of training epochs, demonstrated the potential to learn the EEG features in a shorter time and lowering the computational cost. This study will benefit for the EEG-based emotion recognition to be more accessible and practical for the real-world applications.

### **Runhua Jiang, Yiyang Huang, Yixuan Han, Jingqi Lin, Shuyang Yu, Yifei Guo & Sim Kuan Goh (Paper ID 64)**

#### **Fine-tuning Generative Adversarial Networks Using Genetic Algorithm**

Generative Adversarial Networks (GANs) are a major innovation in the field of deep learning. It has been widely used in image generation and text-to-image conversion

tasks. However, it is challenging for GANs to find a balance for competition between generators and discriminators. In this paper, we investigate the optimization effect of combining the Adam optimization algorithm and genetic algorithm on the GANs training process. In the experiment, we first use the Adam algorithm to pre-train GANs and then apply the genetic algorithm (GA) to further optimize the pre-trained model. The experimental results show that this combination method not only reduces the number of iterations required by the genetic algorithm through pre-training, thus saving the training time but also improves the performance of the training model. This shows that the use of a hybrid optimization strategy in complex network training is very effective and improves training efficiency.

### **Mu Heng He & Chean Khim Toa (Paper ID 98)**

#### **A Review of Sensor-Based Gait Recognition**

The aim of this review article is to provide a comprehensive overview of sensor-based gait recognition systems, exploring different sensor types, data processing methods and modelling algorithms. Gait analysis enables the recognition and analysis of individual gait characteristics by collecting biometric data (e.g., acceleration, angular velocity, and posture information) generated during human movement. In this way, it is applied with areas such as safety verification, health monitoring and fall detection for the elderly. This paper also explores the diversity of gait patterns, the impact of environmental factors on gait analysis, and technical challenges in data capture and analysis, and proposes future technological innovations and research directions.

### **Luo Qiyuan, Zhang Xingnan, Zhang Yuanxin, Burra Venkata Durga Kumar & Liu Meifeng (Paper ID 106)**

#### **Optimizing Insurance Strategies through Disaster Risk Assessment Models: A Case Study of Earthquakes in Japan**

With the increasing frequency of extreme weather events and natural disasters, insurance providers around the world are facing enormous challenges. This study addresses insurance claims resulting from these disasters by developing a comprehensive disaster insurance risk assessment model, focusing on Japan, a country prone to frequent earthquakes. The model integrates a Catastrophe Model, the Analytic Hierarchy Process (AHP), and an expert scoring method to optimize the risk assessment and compensation process for historic buildings. The results show that the model has strong predictive power, which provides valuable insights for insurance companies, policymakers, and urban planners in mitigating the impact of disasters and protecting cultural heritage.

# GENERAL CONFERENCE INFORMATION

## LANGUAGE

The official language of the conference is English.

## CONFERENCE VENUE

### XIAMEN UNIVERSITY MALAYSIA (XMUM)

Xiamen University Malaysia (XMUM) is the first overseas campus set up by a renowned Chinese university and the first Chinese university branch campus in Malaysia. Located in the vicinity of Bandar Kota Warisan, Sepang, Selangor, it's just 15 minutes ride from the country's administrative center of Putrajaya or 45 km southwest of Kuala Lumpur. It is built on an area of 150 acres with a planned total floor space of 470,000 square meters. XMUM aspires to become a university with a distinct global outlook, which features first-class teaching and research, and embraces cultural diversity. With the exception of Chinese Studies and Traditional Chinese Medicine, the medium of instruction for all other program is English.



**Website:** [www.xmu.edu.my](http://www.xmu.edu.my)

**Address:** Jalan Sunsuria, Bandar Sunsuria, 43900 Sepang, Selangor Darul Ehsan, Malaysia

**Tel:** +03 7610 2079

## PRAYER ROOMS FOR MUSLIM PARTICIPANTS



Building A3, Ground Floor (smaller one)

Building B1, Top Floor (bigger one)

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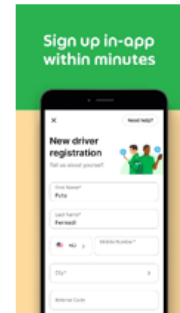


(A) Download



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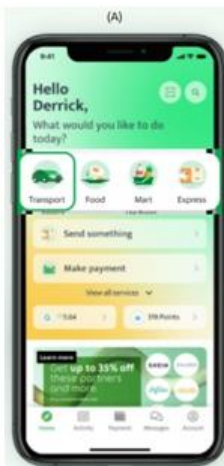
(B) Signup (fill-in your details)



Step 2: Use the Grab app

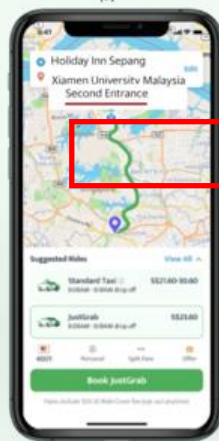
Select location as "Xiamen University Malaysia Second Entrance"

(A) Open the APP  
(Click **Transport**)



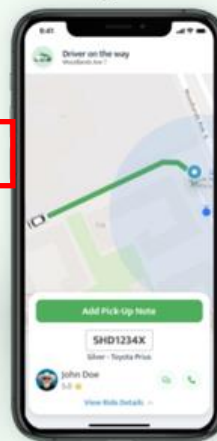
Homepage

(B) Enter the locations  
(where you want to go)  
and Click **Book JustGrab**



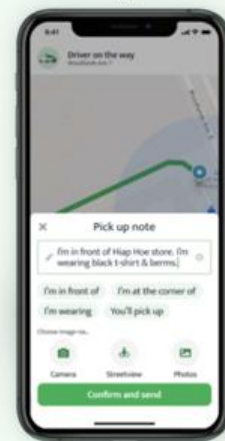
Confirming the ride

(C) Driver is coming  
Wait at selected (B)  
location



Once a driver has been matched.

(D) Add note  
Optional

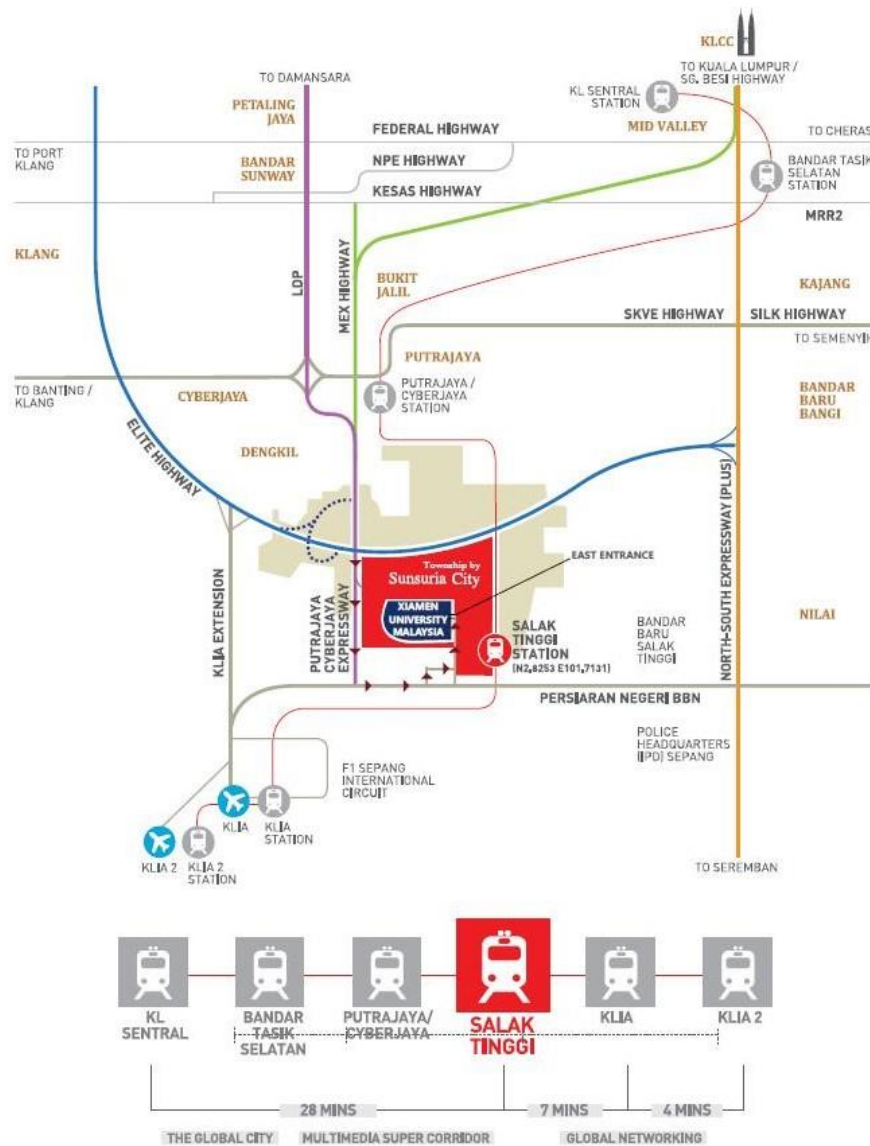


Pick up note added.

Step 3: From the security guard – **Second Entrance** walk 3 Minutes toward **A3 building**



## KUALA LUMPUR INTERNATIONAL AIRPORT TO XIAMEN UNIVERSITY MALAYSIA



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