Program Book

7th International Conference on Software Engineering & Computer Systems (ICSECS 2021)

and

4th International Conference on Computational Science and Information Management (ICoCSIM 2021)

"Advancing Digital Society with Advanced Technologies"

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College of Computing & Applied Sciences
PROF. TS. DR. RUZAINI ABDULLAH ARSHAH

Assalamualaikum Warahmatullahi Wabarakatuh

On behalf of College of Computing & Applied Sciences community, Universiti Malaysia Pahang (UMP), I would like to extend our warmest welcome to all the participants and attendees to the 7th International Conference on Software Engineering & Computer Systems (ICSECS2021) and the 4th International Conference of Computational Science and Information Management Computational Science and Information Management (ICoCSIM 2021).

ICSECS previous events was held every two years, starting from 2009, while ICOCSIM has already held 3 times starting from 2012, then on 2015 and 2019. I am confident that this ICSECS-ICoCSIM2021 joint conference will play a significant role in inspiring activities in research and development of computer science and information management in our highly digitalized society. I would also like to take this moment to acknowledge the 14 international universities who have given excellent support to establish collaborations with UMP researchers and international partners for this conference.

It is hoped that the special attention of this conference to support digital society, including the very exciting area of Big Data, IoT, AI, and wireless sensor networks, etc., to address the various needs of social development will benefits participants and attendees.

I would like to express my sincere gratitude to all distinguished keynote speakers, industrial speakers, and invited speakers for their presence and contributions to the conference.

Congratulations to the program committee members for their continuous and endless efforts in ensuring the success of this joint conference.

I sincerely hope that all participants and attendees will benefit and gain knowledge from keynote speakers and presented papers of this joint conference and wishing the conference to be a great success.

Message from the Dean of Faculty of Computing

ASSOC. PROF. TS. DR. ADZHAR KAMALUDIN

Assalamualaikum Warahmatullahi Wabarakatuh

Greeting To Yang Berbahagia Tan Sri Dato' Sri Dr. Abdul Aziz Abdul Rahman, the chairman of Board of Director, Universiti Malaysia Pahang, Prof Ir Dr. Wan Azhar Wan Yusoff, the Vice Chancellor of Universiti Malaysia Pahang, Professor Ts. Dr. Ruzaini Abdullah Arshah, Senior Dean, College of Computing and Applied Sciences, all honorable guests, all Keynote Speakers, the committees of a joint conferences - 7th International Conference on Software Engineering & Computer Systems and the 4th International Conference of Computational Science and Information ManagementComputational Science and Information Management (ICSECS-ICOCSIM 2021) and ladies and gentlemen.

First of all, in this auspicious opportunity, I would like to extend my sincere greetings and warmest welcome to all participants of ICSECS-ICOCSIM 2021, organized by the Faculty of Computing, Universiti Malaysia Pahang. We are proud to announce that the conference is being conducted along with eight international universities which are Bina Nusantara University from Indonesia, Jazan University, Saudi Arabia from Hadhramout University from Yemen, Muscat College from Oman, Sathyabama Institute of Science & Technology from India, State Islamic University Sunan Kalijaga Yogyakarta from Indonesia, State Islamic University Sunan Kalijaga Yogyakarta, Indonesia, University of Santo Tomas from Philippines.

ICSECS 2021 is the first conference in our Faculty of Computing's history that will be conducted completely via digital platform due to the COVID-19 pandemic. In conjunction with the theme chosen for this conference, "Advancing Digital Society with Advance Technologies," we transform our session through this advanced technology supported during the conference.

The potential for Industry 4.0 growth is simply limitless and could address many issues concerning manufacturing with regard to health and safety of human labor, efficiency in managing supply chains, reduction in wastages, savings in time with efficient management of delivery systems. Digitalisation of the manufacturing system will be important to build direct links to end customers and produce innovative and customised products.

It aims to provide a platform for researchers, scholars, practitioners, and application developers to share and disseminate knowledge and information about Software Engineering and Computer Systems. These knowledge-based sharing activities will benefit all participating individuals, institutions, and organizations, including sponsors, presenters, and participants. May this conference open the door for inspirations and opportunities to explore the knowledge of software engineering and computer systems comprehensively.

This conference will be presented by 10 keynote speakers. The keynote speakers are academics, an industrial expert and a leader in youth community development. We have received many submissions and from them, 126 papers are accepted and published with the IEEE proceeding. Out of all submissions, the highest number of submissions are from IoT, Big Data Analytics and Artificial intelligence is 57, Information Management, E-Learning are 26, Software Engineering, Knowledge Engineering are 16, Cyber Security and Network, Communication are 11, from information systems are 11, from image processing are 5 submissions.

In the end, I look forward to finding that some lights are shed on our current understanding of the immense impact of software engineering and computer systems. Kindly take this golden opportunity to build your network and share your significant excerpt of research work.

On behalf of FK, thank you to all ICSECS-ICoCSIM 2021 organizing committee members for successfully organizing this event. A special dedication to all sponsors for the support and to all partners for their collaboration with us.

Thank you.

Message from the General Chair

DR. JAMALUDIN SALLIM

Assalamualaikum Warahmatullahi Wabarakatuh

As General Chair for this joint international conference, it is my great honor to welcome you to the 7th International Conference on Software Engineering & Computer Systems (ICSECS2021) and the 4th International Conference of Computational Science and Information Management Computational Science and Information Management (ICoCSIM 2021), organized by Faculty of Computing, Universiti Malaysia Pahang (UMP) Pekan, Pahang, Malaysia. The conference committee and I welcome you to a virtual gathering of IT/Computer Science professionals, educators, and students dedicated to advancing computing research. This joint conference testifies to the continuous ICSECS/ICoCSIM since 2009 that supporting the full spectrum of computing and information systems research.

The ICSECS-ICoCSIM 2021 draws researchers from all over the world to share ideas, innovations, and strategies that bring them together to explore and assess emerging opportunities and challenges in Computer Systems, Software Engineering Information Systems research, and practice to fulfill the conference theme - Advancing Digital Society with Advanced Technologies.

The ICSECS-ICoCSIM 2021 thrives through the efforts of many individuals. It is my pleasure and privilege to work with the faculty management, especially the Senior Dean, College of Computing and Applied Science Professor Ts. Dr. Ruzaini bin Abdullah Arshah, Dean of the Faculty of Computing Associate Professor Ts. Dr. Adzhar bin Kamaludin, and all the talented and tireless committee. They contribute tremendous works and efforts to make this event succeed.

We are incredibly grateful to 14 international universities for being our supportive collaborators and sponsors. I hope we can work again in the next series of ICSECS and ICoCSIM.

Welcome and thank you for supporting ICSECS-ICoCSIM 2021!

Message from the Conference Chair of ICSECS 2021

DR. FAUZIAH ZAINUDDIN

Assalamualaikum Warahmatullahi Wabarakatuh

On behalf of the ICSECS 2021 Organizing Committee, it is a great pleasure for me to welcome all participants to the 7th International Conference on Software Engineering and Computer Systems (ICSECS 2021), which is also a joint conference with ICoCSIM 2021. The conference is biennial events organised by the Faculty of Computing, UMP with the theme “Advancing Digital Society with Advance Technologies” for this year.

The aim of the ICSECS-ICoCSIM 2021 is to provide a forum for delegates from the industry and academia to exchange ideas and present their research works. In addition, it is an ideal venue for interactions and for them to establish the all-important contacts with each other in all aspects of Software Engineering and Computer Systems.

This time, due to the pandemic, the ICSECS-ICoCSIM 2021 is conducted using a webinar platform. With over 300 full papers received, the Technical Program Committee has an overwhelming task of selecting papers of outstanding quality and diversity. Finally, 126 papers were selected, involving authors from various countries. The keynote speeches will be delivered by some of the most outstanding experts in the field of Software Engineering and Computer Systems with respect to current issues that are related to digitalization of society using advanced technologies.

Finally, I would like to express my deepest appreciation to all members of the organizing committee who provide relentless effort, commitment and dedication in making ICSECS 2021 a successful event. I also would like to express my profound gratitude to all co-organizers of this event as well as our media partners for this conference. Not forgetting, my special appreciation to all speakers that submitted their works and attend this conference. I wish all a very successful conference with fruitful discussions.

“Selamat datang secara maya!”

Message from the Conference Chair of ICoCSIM 2021

DR. MOHD AZWAN HAMZA

Assalamualaikum Warahmatullahi Wabarakatuh

On behalf of the ICoCSIM 2021 organizing committee, I am honored and delighted to welcome you to the 4th International Conference on Computational Science and Information Management 2021, Pahang, Malaysia. The theme for this year's conference, Advancing Digital Society with Advanced Technologies, is particularly aim is to bring together researchers and practitioners from all the disciplines that engage with Computational Science and Information Management research.

As in previous years, ICoCSIM provides an excellent forum for exchanging information and discussion on a wide variety of Computational Science and Information Management topics, representing the latest developments and future trends. This conference which organized by Faculty of Computing, Universiti Malaysia Pahang, futher its successful in collaborating with our supportive partners from Indonesia, Faculty of Computer Science and Information Technology (FasilkomTI) of Universitas Sumatera Utara, Department of Computer Engineering and Informatics of Politeknik Negeri Medan, AMIK Tunas Bangsa Pematang Siantar, STMIK Bumigora, and Mataram University as the co-organizer.

As the conference chair for ICoCSIM 2021, I am well aware that the conference's success is ultimately dependent on the numerous people who assisted us in preparing and organising the technical programme as well as the supporting social arrangements. We thank the General Chairs in particular for his wise counsel and brilliant suggestion on how to organise the technical programme, as well as the Program Committee for their careful review.

Finally, I am looking forward to meet you in ICoCSIM 2021 and to share a most pleasant, interesting and fruitful conference.

KEYNOTE SPEAKER 1

PROF. TS. DR. KAMAL ZUHAIRI ZAMLI
UNIVERSITI MALAYSIA PAHANG, MALAYSIA

Keynote Title: On Optimizing Automated Team Formation and Its Potential Applications

Lazada, Shopee, and Ali Baba may be one of the world's largest malls but without business premises. Subscribing to these new ideas, most organization tries to remain lean, that is, by extensively exploiting IR4.0 related technology. Rather than hiring the required expert workers permanently (and putting them on the company's monthly payload), most organizations favor outsourcing their work elsewhere to other pools of available experts across the globe. The challenge here is how to form a team for a particular task when there are millions of experts worldwide. Often, the selection of these experts (i.e. team formation) can be painstakingly difficult as they may be cross-organizational and with different costs and requirements. This talk will discuss on how to deal with an automated team formation problem as optimization problem. More precisely, this talk will highlight the automated methodology for addressing the team formation problem based on hybrid meta-heuristic algorithms.

Keynote Speaker Profile

Prof. Dr. Kamal Zuhairi Zamli obtained his BSc EE from WPI, USA in 1992, MSc in Real Time Software Engineering from the Centre for Advanced Software Engineering, UTM in 2000 and PhD in Software Engineering from University of Newcastle upon Tyne, UK in 2003. His current research includes Search based Software Engineering, SoftwareTesting and Optimization. Currently, Prof. Dr. Kamal Zuhairi Zamli is the Deputy Vice Chancellor of Research & Development, University Malaysia Pahang. Previously, he was also served as the Dean of Faculty of Computing, University Malaysia Pahang.

KEYNOTE SPEAKER 2

PROF. DR. JASNI MOHAMAD ZAIN
UNIVERSITI TEKNOLOGI MARA, MALAYSIA

Keynote Title: Cyber Security in Society with Advanced Technologies

Significant technological advances are being made across a range of fields, including Big Data Analytics; artificial intelligence (AI), Internet of Things (IoT) particularly in terms of machine learning and robotics; nanotechnology; space technology; biotechnology; and quantum computing to name but a few. These breakthroughs are expected to be highly disruptive and bring about major transformative shifts in how societies function. The technological advances in question are driven by a digital revolution that commenced more than four decades ago. These innovations are centered on the gathering, processing, and analyzing of enormous reams of data emerging from the information sciences with implications for countless areas of research and development. These advances promise significant social and economic benefits, increased efficiency, and enhanced productivity across a host of sectors. The exponential growth of the Internet interconnections has led to a significant growth of cyber attack incidents often with disastrous and grievous consequences. This talk will address the question of why the attacks have grown and try to find some solutions relating to current society's behavior.

Keynote Speaker Profile

Professor Dr Jasni Mohamad Zain received her Bachelor degree in Computer Science from University of Liverpool, England, UK in 1989; and PhD from Brunel University, West London, UK in 2005. She starts her career as a tutor in 1997 at University of Technology Malaysia (UTM). She currently holds the post as Director of Institute for Big Data Analytics and Artificial Intelligence (IBDAAI), UiTM Shah Alam, Malaysia. She was the Deputy Director (Cybertechnology) Research Nexus UiTM and the Head of Advanced Analytics and Engineering Centre (AAEC). Professor Dr Jasni Mohamad Zain was the Dean of Faculty of Computer Systems & Software Engineering, University Malaysia Pahang for 8 years. She has been actively presenting papers and keynote address in national and international conferences. Her research interests include Data Mining, digital watermarking, image processing and network security. She has graduated 15 PhDs and 6 Masters by research under her supervision and published more than 100 refereed articles. She has a patent file for digital watermarking (PI 2008047).

KEYNOTE SPEAKER 3

TS. DR. ASWAMI ARIFFIN
CYBER SECURITY RESPONSIVE SERVICES, CYBERSECURITY MALAYSIA

Keynote Title: Development of Cyberl3 - Intelligence, Incidence and Investigation Based Big Data System

Malaysia has developed a Malaysia Cyber Security Strategy (MCSS) that consists of 5 pillars – 1) Effective Governance and Management, 2) Strengthening Legislative Framework and Enforcement, 3) Catalysing World Class Innovation, Technology, R&D and Industry, 4) Enhancing, Capacity & Capability Building, Awareness and Education, 5) Strengthening Global Collaboration; and CyberSecurity Malaysia (CSM) has played a role in every each of the thrusts; for example Pillar 2 through our CyberDEF program. CSM is mandated to be a specialist agency that intended to ensure the effectiveness of all the pillars and the development of Cyberl3 system - intelligence, incidence and investigation based big data system, is to further strengthen the operationalization of the MCSS as a whole. It is the aimed of this presentation to share on the project governance, technical issues and solutions including its progress till to date. Some of the topics that will be covered are CyberI3 objectives, incidents in Malaysia, its framework (matrix/system), collaborators, research & development and big data forensics based on honeynet deployments, sensors and feeds. Included is the way forward as to ensure the system is successful in order to build and create a// secure and resilient cyberspace for Malaysia.

Keynote Speaker Profile

Dr. Aswami Ariffin is a cyber forensics strategist with more than 25 years working experience in cybersecurity; policy development, security assurance, threat intelligence, incident response and digital forensics investigation with various law enforcement agencies and provided expert testimonies in court.

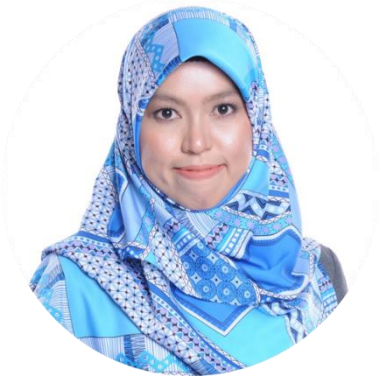
Due to his immense contribution in cybersecurity, Dr. Aswami Ariffin was awarded ISLA - Information Security Leadership Award in 2009 by (ISC)2 USA including commendation letter from the Attorney General's Chambers Malaysia and a certificate of appreciation from the Royal Malaysia Police in 2010. He also had been appointed as an expert referral by the New South Wales Police, Australia and now a member of the Interpol Digital Forensics Expert Group.

Dr. Aswami Ariffin is active in research and one of his papers was accepted for publication in the Advances in Digital Forensics IX. As the President of Digital Forensics Research Society (DFRS), he and his team have secured several large funds to develop digital forensics and cybersecurity capabilities in Malaysia. Dr. Aswami Ariffin is experience in DevSecOps and one of his projects was the analytics system of cyber threat intelligence, codenamed “CyberI3”.

Currently, Dr. Aswami Ariffin is Senior Vice President of Cyber Security Responsive Services Division at CyberSecurity Malaysia and President of Digital Forensics Society, Malaysia. He provides input on strategic direction, technical leadership and marketing strategy for Cyber Threat Intelligence Department (CTID), Malaysia Computer Emergency Response Team (MyCERT), Digital Forensics Department (DFD) and Secure Technology Services (STS).

Dr. Aswami Ariffin is regularly consulted by the government, industries, universities, communities and media on cybersecurity issues, operation and strategy including invitation as keynote speaker in conferences.

KEYNOTE SPEAKER 4



PUAN NURLIANA MUHAMMAD
FOUNDER, YOUTH DIGITAL HUB, MALAYSIA

Keynote title: National & Pahang Youth Digital Project: Research Opportunities & Funds

Government and economic organization play a potentially crucial role in regional development, both in terms of helping define and promote forward looking national digital development agendas. Malaysian is moving towards technology. My exclusive sharing more on funding and financing opportunities - cooperation with the governments and agencies. Digital society in youth and how via social entrepreneurship challenge the paradigm of ensuring that no one is left behind or is deprived of digital connectivity and its benefits.

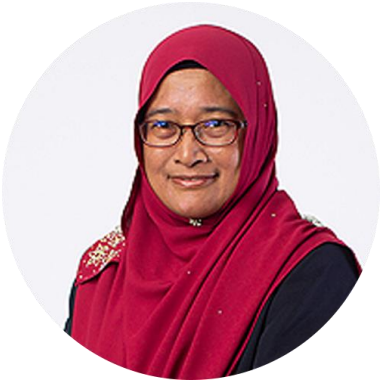
Keynote Speaker Profile

Puan Nurliana Muhammad obtained her Masters (Executive) in Project Management from Universiti Malaysia Pahang in 2019. She started her career as a Youth Development Trainer in 2008 when she was 19 years old.

She was awarded as a Malaysia Youth Icon in 2020, Pahang Youth Icon in 2020 and Young Entrepreneur Award (Digitalization on Social Economy) in 2017. Her interests include digitalization on social economy development, human capital development and empowering youth as entrepreneurs. She actively represents Malaysia in youth programs at national, ASEAN and international conferences.

She is currently on the advisor panel for youth and entrepreneurship NGOs, facilitating better networking and outreach. She is the founder of Youth Digital Hub Malaysia.

KEYNOTE SPEAKER 5



PROF. DR. ROSNI ABDULLAH
UNIVERSITI SAINS MALAYSIA, MALAYSIA

Keynote title: Convergence of Big Data and Artificial Intelligence: Current Research Trends

Today we are witnessing an exponential growth of data, coming from various sources such as smart phones, social media, and Internet of Things to name a few. There is now a need for new approaches and techniques to organize, manage, and analyze this massive amount of data. As data gets bigger, Artificial Intelligence provides new opportunities to gather insights from data in ways that were previously either cumbersome or impossible. In this talk, we present the convergence of big data and artificial intelligence and examine current research trends and some use cases.

Keynote Speaker Profile

Professor Dr Rosni Abdullah is a Professor in Computer Science at Universiti Sains Malaysia (USM). She obtained her PhD in April 1997 from Loughborough University, United Kingdom specializing in the area of Parallel Algorithms. Both her Bachelors and Masters degree in Computer Science were obtained from Western Michigan University, Kalamazoo, Michigan, U.S.A. in 1984 and 1986 respectively. Her research areas include Parallel & Distributed Computing and Computational Biology.

She was Dean for the School of Computer Sciences from 2004 to 2012, and January 2019 to June 2020. She was Director for the National Advanced IPv6 Center at USM from January 2015 to June 2020. Her major industry linkage was with Intel when she secured Intel Research Grants, followed by a joint initiative to train multicore programming to Malaysian researchers and embedding IOT programming based on Intel Galileo and Edison boards in the CS curriculum at USM.

Professor Dr Rosni Abdullah started her career as a lecturer at USM in Jan 1987, and has retired on 3 June 2020, after 33 years of service. Refer: https://news.usm.my/index.php/english-news/6648-a-humble-retirement-for-rosni-abdullah-mustafa-after-33-years-of-tireless-service-in-computer-science-2. She is now attached to the Division of Academic and International Affairs under the Flexible Scheme for Retired Scholars (FSRS) at USM, where her ongoing tasks includes fostering collaboration with an AI company to design and implement AI and Data Science literacy as co-curricular courses, using AI for academic governance and designing an integrated academic management system.

KEYNOTE SPEAKER 6

ASSOC. PROF. DR. MOHAMED ABDULLAH BAMATRAF
HADHRAMOUT UNIVERSITY, YEMEN

Keynote title: Implementing ERP Systems for the Public Sector: Challenges and Opportunities- Hadhramout Project a Case Study

ERP is considered as new technology aims to integrate business activities in one package, usually consists of various modules and its sub-modules each related to a one business activity. The public sector is the most effective sector in developing country economic. Unlike other sectors implementing this kind of systems requires more effort from several aspects and faces several challenges. Many countries tried and/or planned to do so, some of these trials successfully merged this technology and showed high business development, many others failed in implementing the system due to several reasons.

We will discuss some of these trials and share the learned lessons and experiences, considering our experience in implementing the ERP system for Hadhramout governorate in Yemen as a special case, considering the current political and economic situation. We will also share challenges, opportunities and experiences for this project.

Finally, we will draw conclusions and recommendation for Research and development institutions and researchers, and the shortage their role in this domain, considering what are the opportunities and open areas for future, joint and inter-disciplinary research areas in the field from different point of view both managerial and technical.

Keynote Speaker Profile

Assoc. Prof. Dr. Mohammed Abdullah BaMatraf received his BSc. and MSc. in Computer Science from India and PhD. in Computer Science from Egypt in 2009. His research interests are cybersecurity, data science and machine learning. He has authored and co-authored more than 20 articles. He worked as a Lecturer at Hadhramout University, Yemen for more than 10 years and as a Director of Hadhramaut University Information Center for more than 10 years. Currently, he is a Dean of College of Computers and Information Technology, Hadhramout University. He worked as consultant with several government departments, NGO's and private sector institutions specialized in business development and project implementation such as Nuffic, USAID, AL-AWN, Ministry of Communication, Egypt, and others before joined Hadhramout University. He also worked as reviewer and evaluator of projects and proposals with local and international organizations. He contributed in several government development projects and committees with local government, Ministry of Higher Education, and implementation of ERP systems for local government.

KEYNOTE SPEAKER 7

PROF. DR. ALAMGIR HOSSAIN
TEESSIDE UNIVERSITY, UNITED KINGDOM

Keynote title: Challenges in Implementing AI-enabled Real-time, Adaptive & Optimal Systems

Artificial Intelligence (AI) is one of the most important technology in the game-changing world of every domain to enhance efficiency and productivity with reduced costs. It offers new potential as well as challenges in our everyday activities. Particularly, the speed for real-time adaptive-intelligence based automation, expert systems for mobile healthcare apps, process optimisation, robot, chat-bot, avatar, e-Assistants, e-Buddy etc. solutions using AI are growing exponentially. These, with new AR, VR, HoloLens, game technology and emotional intelligence, pose an extra dimension of potential socio-economic growth. In his talk, Professor Hossain will discuss his research linked with the AI-enabled system design, particularly for implantation challenges.

Keynote Speaker Profile

Professor Dr. Alamgir Hossain received his PhD from the Department of Automatic Control and Systems Engineering, University of Sheffield. He is currently serving as a Professor of Artificial Intelligence and Research Lead of the Centre for Digital Innovation at Teesside University. Prior to this he also served in the Anglia Ruskin University at Cambridge (Director of IT Research Institute), University of Northumbria at Newcastle (Head of Computational Intelligence Group), University of Bradford, University of Sheffield, Sheffield Hallam University and the University of Dhaka (Head of the Department of Computer Science and Engineering). He has extensive research experience in applied AI, decision support system, digital diagnosis, adaptive control and mobile enabled expert system. He has led many large EU & UKRI funded projects as an International Lead Investigator, worth over £16m. He organised conferences, workshops and seminars in over 15 countries. He has published over 300 research articles including 60 research articles as a co-author with the academics of over 15 countries.

KEYNOTE SPEAKER 8

PROF. DR. ROBIN POSTON
THE UNIVERSITY OF MEMPHIS, USA

Keynote title: Advancing Digital Society with Advanced Technologies: A Quality Culture

Advancing Digital Society with Advanced Technologies: A Quality Culture. This talk discusses the importance of every organization developing a quality culture, especially as it relates to the creation and acquisition of software-intensive systems. We delve into what it takes to become a quality-driven culture and the role of a formalized Testing Center of Excellence. Furthermore, the role of software testing and software testing professionals is addressed in light of the creation of an organization's quality culture. This type of culture becomes even more important as we move into the future of testing new and challenging technologies, such as, autonomous cyber physical systems. Based on the work of researchers at the System Testing Excellence Program (STEP) at the University of Memphis, examples are provided of how academia, business, and government can partner to create synergistic repositories of state-of-the-art ideas and best practices that help to build a quality culture in advancing digital society with advanced technologies.

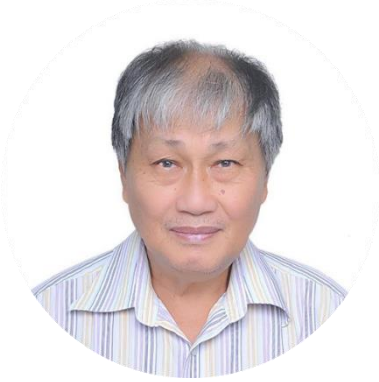
Keynote Speaker Profile

Professor Dr Poston serves as Dean of the Graduate School and is a Professor of Business Information and Technology at the Fogelman College of Business & Economics at the University of Memphis. She is the Director of the System Testing Excellence Program for the FedEx Institute of Technology at the University of Memphis. Dr. Poston is a recipient of the 2006-2007 University of Memphis Alumni Association Distinguished Teaching Award. She serves as an Associate Editor for the highly ranked journal, the European Journal of Information Systems, which publishes research about the theory and practice of information systems for a global audience, and recently served as an Associate Editor for the highly ranked Decision Sciences Journal, which publishes scholarly research that advances decision making.

Professor Dr Poston Poston's research focuses on understanding how individuals use credibility information in decision support systems, internet-based dissemination of information, and system testing management. Her research uses experimental laboratory techniques in a simulated on-line information environment and qualitative interview methods. She has published articles in publications such as Management Information Systems Quarterly, Decision Sciences Journal, Communications of the ACM, IEEE Computer, Information Systems Management, Journal of Organizational and End User Computing, International Journal of Electronic Business, Journal of Information Systems, International Journal of Accounting Information Systems, and in major international conference proceedings.

Professor Dr Poston Poston has over 10 years of experience in the information systems field working for KPMG Consulting, Educational Computer Corporation, Meta Group Research, and Convergys, as well as consulting with several Fortune 500 companies and government agencies. Today, she works with local organizations, such as FedEx Corporation, First Horizons, St. Jude/ALSAC, Pinnacle Airlines, Rhodes College, and the University of Memphis IT Division to conduct projects and educational programs. Dr. Poston received her bachelor's degree in Computer Science from The University of Pennsylvania (1987), master's degree in Accounting from The University of Central Florida (1992), and Ph.D. in Management Information Systems from Michigan State University (2003).

KEYNOTE SPEAKER 9



PROF. DR. HERMAN MAWENGKANG
UNIVERSITAS SUMATERA UTARA, MEDAN, INDONESIA

Keynote title: Geometric and Semi-Algebraic Regression Strategies For Uncertain Target-Environment Networks With Nonlinear Optimization

The environment can be regarded as a main factor in the context of system sciences. The expected role is to gain deeper insight regarding to the interconnection of complex systems. In terms of target, the conceptual structure of target environment networks could be useful for exploring the regulatory systems under various kinds of uncertainty. Parameter-dependent models are applied to predict the future states of the system with respect to uncertain observations. This paper deals with proposing a novel framework of semialgebraic gene-environment networks. This technique is an extension of systems which have complex interconnection based on stochastic, polyhedral, ellipsoidal or fuzzy (linguistic) uncertainty. It provides a reconstruction of the network under study from uncertain (semialgebraic) data sets and to predict the uncertainty futures states of the system.

Keynote Speaker Profile

Dr. Herman Mawengkang is currently working at Graduate School of Mathematics, University of Sumatera Utar. His research interest includes Applied and Computational Mathematics, Mathematics, Operations Research, Optimization (Mathematical Programming), Mathematical Modelling. He is serving as an honorary author for Global Journal of Technology and Optimization. He has authored of several H1research articles/books related to Engineering, Applied and Computational Mathematics, Mathematics, Operations Research, Optimization (Mathematical Programming), Mathematical Modelling.

KEYNOTE SPEAKER 10

ASSISTANT PROF. DR. SARACHANDRAN NAIR
MUSCAT COLLEGE, OMAN

Keynote title: Towards a Big Data Driven Society

Many articles indicate that it is neither digitalization nor technology that make a smart society. It is how governments define frameworks and draft policies supporting the end goal of providing a quality way of living to their citizens. There are various definitions and perspectives on what is a smart society. To narrow the discussions, smart cities are the focal points of various studies. For example, Haupt, 2017 involves the capturing of big data in making urban systems efficient in particular and in the overall smart city process. This presentation will tackle briefly the Smart Societies in the D5 Model Countries. Also, the Society 4.0 Model provides a perspective of a smart society successfully harnessing the potential of digital technology and connected devices and the use of digital networks to improve people's lives, and how data is used as feedback to generate more knowledge. This presentation aims to explore the concepts of smart societies and big data and their intrinsic relationships. It explores how society contributes to big data as a by-product of digital behavior and how there are used to predict and support governments and organizations to make data-driven decisions.

Keynote Speaker Profile

Assistant Professor Dr. Sarachandran Nair is the Head - Department of Computing and Assistant Professor at Muscat College. Assistant Professor Dr. Saran has more than 33 years of teaching experience in the field of Information Technology and Management. He holds a Post Graduated Diploma in Computer Applications with Master, MPhil and PhD degrees. He has been teaching University of Stirling programme courses since 2003, SQA programme courses since 2001 and University of Malaysia, Pahang programme courses since 2015.

Assistant Professor Dr. Saran is the Associate Fellow of Higher Education Academy (AFHEA), UK and been awarded as the best professor in Database Management Studies by Asian Education Leadership Awards held in Dubai on 10th October 2019.

Assistant Professor Dr. Saran is also the programme director of MSc in Big Data at Muscat college, offered in affiliation with University of Stirling, UK. He has been delivering courses for MSc in Big Data and BSc with Honours in Computing Science students. He was also the project coordinator for the University of Stirling' master and undergraduate dissertations. Assistant Professor Dr. Saran has published many papers in international referred journals and presented papers in international conferences. His current research interests are mainly in Big Data, Machine Learning, Cloud Computing and e-Learning Management Systems. He is the reviewer Oman's Ministry of Higher Education Research and Innovation funded projects. Assistant Professor Dr. Saran is currently involved in two funded projects of ministry. He is the member of editorial board of journals and technical committee of many international conferences. He has reviewed many research papers. He is also a certified Database developer, has conducted many corporate trainings and visiting faculty for top university colleges. He is the chairperson for many steering committees in Muscat College and also the member of various committees.

PROGRAM OVERVIEW

DAY 1: 24 August 2021		
Start	**End**	**Agenda**
OPENING CEREMONY **Facebook LIVE: https://www.facebook.com/fcomputing.ump**		
08:30am	09:00am	Conference Registration
09:00am	09:05am	Doa Recitation
09:05am	09:20am	Welcoming Speech by **Assoc. Prof. Ts. Dr. Adzhar Kamaludin** Dean, Faculty of Computing, Universiti Malaysia Pahang
09:20am	09:40am	Opening Speech by **Tan Sri Dato' Sri Dr. Abdul Aziz Abdul Rahman** Chairman, Universiti Malaysia Pahang
09:40am	09:45am	Opening Montage
KEYNOTE SESSION 1 **Facebook LIVE: https://www.facebook.com/fcomputing.ump**		
09:45am	10:30am	**Prof. Ts. Dr. Kamal Zuhairi Zamli** Universiti Malaysia Pahang, MALAYSIA Title: On Optimizing Automated Team Formation and its Potential Applications
10:30am	11:15am	**Prof. Dr. Jasni Mohamad Zain** Universiti Teknoloci MARA, MALAYSIA Title: Cyber Security in Society with Advanced Technologies
11:15am	12:00pm	**Ts. Dr. Aswami Ariffin** Cyber Security Responsive Services, CyberSecurity Malaysia, MALAYSIA Title: Development of Cyberl3 - Intelligence, Incidence and Investigation Based Big Data System
12:00pm	12:45pm	**Puan Nurliana Muhammad** Founder, Youth Digital Hub, MALAYSIA Title: National & Pahang Youth Digital Project: Research Opportunities & Funds
12:45pm	02:00pm	Break
KEYNOTE SESSION 2 **Facebook LIVE: https://www.facebook.com/fcomputing.ump**		
02:00pm	02:45pm	**Prof. Dr. Rosni Abdullah** Universiti Sains Malaysia, MALAYSIA Title: Convergence of Big Data and Artificial Intelligence: Current Research Trends

02:45pm	03:30pm	**Assoc. prof. Dr. Mohamed Abdullah Bamatraf** Hadhramout University, YEMEN Title: Implementing ERP Systems for the Public Sector: Challenges and Opportunities- Hadhramout Project a Case Study
03:40pm	05:00pm	**PARALLEL SESSION 1**
		END OF DAY 1

DAY 2: 25 August 2021		
Start	**End**	**Agenda**
KEYNOTE SESSION 3 **Facebook LIVE: https://www.facebook.com/fcomputing.ump**		
08:30am	09:15am	**Prof. Dr. Alamgir Hossain** Teesside University, UNITED KINGDOM Title: Challenges in Implementing AI-enabled Real-time, Adaptive & Optimal Systems
09:15am	10:00am	**Prof. Dr. Robin Poston** The University of Memphis, USA Title: Advancing Digital Society with Advanced Technologies: A Quality Culture
10:10am	11:40am	**PARALLEL SESSION 2**
11:40am	11:45am	Break
11:45am	01:15pm	**PARALLEL SESSION 3**
01:15pm	02:00pm	Break
KEYNOTE SESSION 4 **Facebook LIVE: https://www.facebook.com/fcomputing.ump**		
02:00pm	02:45pm	**Prof. Dr. Herman Mawengkang** Universitas Sumatera Utara, Medan, INDONESIA Title: Geometric and semi-algebraic regression strategies for uncertain Target-Environment Networks with nonlinear optimization
02:45pm	03:30pm	**Assistant Prof. Dr. Sarachandran Nair** Muscat College, OMAN Title: Towards a Big Data Driven Society
03:40pm	05:00pm	**PARALLEL SESSION 4**
END OF DAY 2		

PARALLEL SESSION DETAILS

24 August 2021 - DAY 1

PARALLEL SESSION 1 (3:40 PM – 4:55 PM)

Session:	1A	**Chairperson:**	Dr. Mohd Arfian Ismail
Track:	IoT, BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE	**Technician:**	Ruzainah Abdullah
Google Meet Link:	https://meet.google.com/bfj-ggou-deq		

No.	Presentation Title	Time
1.	**Infection Disease Classification in Indonesian Language using Machine Learning** *Mohamad Raychan Abdul Rosyid and Afiahayati*	03:40 PM – 03:55 PM
2.	**Internet of Things (IoT) Based Door Lock Security System** *Tommy Cha Hweay Rhunn, Anis Farihan Mat Raffei and Nur Shamsiah Abdul Rahman*	03:55 PM – 04:10 PM
3.	**A Proposed Requirements Prioritization Model Based on Cost-Value Approach with Collaboration Perspective** *Tan Amelia and Rozlina Mohamed*	04:10 PM – 04:25 PM
4.	**SonoNet: Despeckling of Medical Ultrasound Scans Using Convolutional Neural Network Architecture** *Prerna Singh*	04:25 PM – 04:40 PM
5.	**Existing Semantic Ontology and its Challenges for Enhancing Interoperability in IoT Environment** *Moseed Mohammed, Awanis Romli and Rozlina Mohamed*	04:40 PM – 04:55 PM

Session:	1B	Chairperson:	Dr. Nabilah Filzah
Track:	INFORMATION SYSTEMS	Technician:	Mohd Amerul Shuib
Google Meet Link:	https://meet.google.com/ztv-rbaw-dam		

No.	Presentation Title	Time
1.	**Modeling Reproductive Health Educational Games For Early Childhood using Goal-Directed Design** *Muhammad Sopian Putra Pratama, Veronikha Effendy and Danang Junaedi*	03:40 PM – 03:55 PM
2.	**Antecedents the use of Social Commerce in Small Medium Enterprise: A Conceptual Framework** *Erwin Sutomo, Nur Shamsiah Abdul Rahman and Awanis Romli*	03:55 PM – 04:10 PM
3.	**Web Engagement Readiness for Program Need Analysis (PNA) In Malaysian Community College** *Norita Ahmad and Aziman Abdullah*	04:10 PM – 04:25 PM
4.	**The Impact of Instagram E-Marketing in SME Fashion Industry on Customer Satisfaction** *Lim Sanny, Rorie Effendi, Dahlia Marselli and Lea Simek*	04:25 PM – 04:40 PM
5.	**Wireless Monitoring System for Motorcycle Tire Air Pressure with Pressure Sensor and Voice Warning on Helmet using Fuzzy Logic** *Mochammad Ikbal Tawakal, Maman Abdurohman and Aji Gautama Putrada*	04:40 PM – 04:55 PM

Session:	1C	Chairperson:	Dr. Liew Siau Chuin
Track:	IMAGE PROCESSING	Technician:	Mohd Naim Gati
Google Meet Link:	https://meet.google.com/ewe-ddbn-bex		

No.	Presentation Title	Time
1.	**Android Application for Posture Analysis using Tensorflow and Computer Vision** *Chee Ho Lee and Mohd Arfian Ismail*	03:40 PM – 03:55 PM
2.	**Reversible Face Watermarking Scheme using Hash Function for Tamper Localization and Recovery** *Kiung Siew Lian, Liew Siau Chuin and Ferda Ernawan*	03:55 PM – 04:10 PM
3.	**Performance Comparison of Spatial Domain-based Watermarking Techniques** *Jessie Ooi, Hui Liang Khor, Siau Chuin Liew and Syifak Izhar Hisham*	04:10 PM – 04:25 PM
4.	**Watermarking Scheme based on Chinese Remainder Theorem and Integer Wavelet Filters for Copyright Protection** *Prajanto Wahyu Adi, Ferda Ernawan, Eko Adi Sarwoko and Adi Wibowo*	04:25 PM – 04:40 PM
5.	**The Impact of AR/VR on Spatial Memory Performance of Learners: A review** *Mohammed Thamir Atta, Awanis Romli and Mazlina Abdul Majid*	04:40 PM – 04:55 PM

Session:	1D	Chairperson:	Dr. Al-Fahim Mubarak Ali
Track:	SOFTWARE ENGINEERING AND KNOWLEDGE ENGINEERING	Technician:	Amirul Husni
Google Meet Link:	https://meet.google.com/fbp-yvyi-gqg		

No.	Presentation Title	Time
1.	**Semi – Automated Software Requirement Specification (SRS) Document Generator: The Guideline to Novice System Analyst** *Siti Nur Fathin Najwa Mustaffa, Jamaluddin Sallim and Rozlina Muhammad*	03:40 PM – 03:55 PM
2.	**Performing User Acceptance Test with System Usability Scale for Graduation Application** *Nik Azlina Nik Ahmad and Puteri Norliana Nor'ain Megat Sazali*	03:55 PM – 04:10 PM
3.	**Examining the Actual System Use of CodePolitan' Consumers During the COVID-19 Pandemic Using TAM** *Joy Frans Marpaung, Rahmat Yasirandi and Muhammad Al Makky*	04:10 PM – 04:25 PM
4.	**A Review on DevOps Adoption in Continuous Delivery Process** *Muhammad Zulfahmi Toh and Shamsul Sahibuddin*	04:25 PM – 04:40 PM
5.	**Information Technology Hardware Services based on the Service Quality dimension to the IT Hardware Support Services: A Conceptual Framework** *Azham Ahmad, Ruzaini Abdullah Arshah and Adzhar Kamaludin*	04:40 PM – 04:55 PM

Session:	1E	Chairperson:	Dr. Mohd Izham Mohd Jaya
Track:	BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE	Technician:	Mohd Faizul Ghafar
Google Meet Link:	https://meet.google.com/oaq-gkjh-zyx		

No.	Presentation Title	Time
1.	**Iris Recognition System Using Convolutional Neural Network** *Amer Sallam, Hadeel Al-Amery, Somaia Al-Qudasi, Safaa Al-Ghorbani, Taha Rassem and Nasrin Makbol*	03:40 PM – 03:55 PM
2.	**Assistive Technology for harvesting footstep energy in IoT enabled Smart shoe for the visually impaired** *Mritha Ramalingam, Elanchezhian Chinnavan, R. Puviarasi and Ng Hui Yu*	03:55 PM – 04:10 PM
3.	**Model Evaluation of Various Supervised Machine Learning Algorithm for Heart Disease Prediction** *Hameetha Begum Sheik Mohammed and Nisha Rani Sheik Mohammed*	04:10 PM – 04:25 PM
4.	**Region-Based Distance Analysis of Keyphrases: A New Unsupervised Method for Extracting Keyphrases Feature from Articles** *Mohammad Badrul Alam Miah, Suryanti Awang and Md. Saiful Azad*	04:25 PM – 04:40 PM
5.	**An Experimental Comparison of Unsupervised Keyphrase Extraction Techniques for Extracting Significant Information from Scientific Research Articles** *Talha Bin Sarwar and Noorhuzaimi Mohd Noor*	04:40 PM – 04:55 PM

Session:	1F	Chairperson:	Dr. Yusnita Mohamed
Track:	INFORMATION MANAGEMENT, E-LEARNING	Technician:	Abdul Rahman Abdul Karim
Google Meet Link:	https://meet.google.com/fob-weas-did		

No.	Presentation Title	Time
1.	**Analysing The Impact of Social Presence on Student Satisfaction Through Small Group Discussion in A Synchronous Online Learning** *Mahaning Indrawaty Wijaya, Suzanna Suzanna, Diana Utomo and Kevin Adnyzio Sinuraya*	03:40 PM – 03:55 PM
2.	**Sleep Behaviour and Online Engagement in Learning Management System at Higher Education During COVID-19 Pandemic** *Aziman Abdullah*	03:55 PM – 04:10 PM
3.	**Web Page Classification Using Convolutional Neural Network (CNN) Towards Eliminating Internet Addiction** *Siti Hawa Apandi, Jamaludin Sallim, Rozlina Mohamed and Araby Madbouly*	04:10 PM – 04:25 PM
4.	**Project Management Students' Perception on E-learning** *Preeti Shrivastava, Nitha Mary and Araby Madbouly*	04:25 PM – 04:40 PM
5.	**Integrating Psychology Approach into Course Advisory System Framework for Higher Education Institution** *Ain Nadhira Mohd Taib, F. Zainuddin and M. Rahmah*	04:40 PM – 04:55 PM

25 August 2021 - DAY 2

PARALLEL SESSION 2 (10:10 AM – 11:40 AM)

Session:	2A	Chairperson:	Dr. Kohbalan Moorthy
Track:	IoT, BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE	Technician:	Ruzainah Abdullah
Google Meet Link:	https://meet.google.com/pju-czki-pit		

No.	Presentation Title	Time
1.	**Optical Character Recognition using Backpropagation Neural Network for Handwritten Digit Characters** *Mei Ing Yap, Kohbalan Moorthy, Kauthar Mohd Daud and Ferda Ernawan*	10:10 AM – 10:25 AM
2.	**Performance Evaluation of Hybrid Feature Selection Technique for Sentiment Classification based on Food Reviews** *Suryanti Awang and Nur Syafiqah Mohd Nafis*	10:25 AM – 10:40 AM
3.	**The Co-ChiLeRFE: Couple LBP and LTP Methods of Children-Learning Readiness Using Facial Expression** *Ulya Mahsa Anandiwa, Ema Rachmawati and Risnandar Risnandar*	10:40 AM – 10:55 AM
4.	**Blockchain and the Internet of Things: Opportunities and Challenges** *Ashwag Albakri*	10:55 AM – 11:10 AM
5.	**Topic Modelling and Clustering of Disaster-Related Tweets using Bilingual Latent Dirichlet Allocation and Incremental Clustering Algorithm with Support Vector Machines for Need Assessment** *Lady Angelica Buen Guerzo, Hans Aaron Kilkenny, Raphael Noel Osorio, Andrei Hart Villegas and Charmaine Ponay*	11:10 AM – 11:25 AM
6.	**Blockchain Technology for IoT based Educational Framework and Credentials** *Shams Tabrez Siddiqui, Mohammoud Fakhreldin and Shadab Alam*	11:25 AM – 11:40 AM

Session:	2B	Chairperson:	Dr. Nor Syahidatul Nadiah
Track:	NETWORK AND COMMUNICATION	Technician:	Mohd Amerul Shuib
Google Meet Link:	https://meet.google.com/sdc-hxgd-svc		

No.	Presentation Title	Time
1.	**Comparison of PPO and SAC Algorithms Towards Decision Making Strategies for Collision Avoidance Among Multiple Autonomous Vehicles** *Abu Jafar Md Muzahid, Syafiq Fauzi Kamarulzaman and Md Arafatur Rahman*	10:10 AM – 10:25 AM
2.	**Video Transmission in IEEE 802.15.4 Wireless Sensor Network Using Asynchronous TDMA** *Nor Syahidatul Nadiah Ismail, Fauzun Abdullah Asuhaimi, Sharifah.H.S.Ariffin and Farizah Binti Yunus*	10:25 AM – 10:40 AM
3.	**Improving Road Networks Using Network Optimization: Case Study of Aley Lebanon** *Rawad Rayess, Samer El-Zahab, Nabil Semaan and Abobakr Al-Sakkaf*	10:40 AM – 10:55 AM
4.	**Performance Comparison Between AODV and DSR In Mobile Area Network (MANET)** *Nor Ika Shahirah Ramli, Syifak Izhar Hisham, Nor Syahidatul Nadiah Ismail and Mritha Ramalingam*	10:55 AM – 11:10 AM
5.	**Geofence Alerts Application With GPS Tracking For Children Monitoring (CTS)** *M. Izham Jaya, Goh Xin Tong, Mohd Faizal Ab Razak, Azlee Zabidi and Syifak Izhar Hisham*	11:10 AM – 11:25 AM
6.	**Ransomware: stages, detection and evation** *Yus Kamalrul Mohamed Yunus and Syahrulanuar Ngah*	11:25 AM – 11:40 AM

Session:	2C	Chairperson:	Dr. Zahian Ismail
Track:	BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE, IMAGE PROCESSING	Technician:	Mohd Naim Gati
Google Meet Link:	https://meet.google.com/xuu-qyij-cgs		

No.	Presentation Title	Time
1.	**Machine Learning-Based Prediction Models of Coronary Heart Disease Using Naïve Bayes and Random Forest Algorithms** *Charles Bernando, Eka Miranda and Mediana Aryuni*	10:10 AM – 10:25 AM
2.	**The Neuropsychology Assessment for Identifying Dementia in Parkinson's Disease Patients using a Deep Neural Network** *Nur Hafieza Ismail, Nur Shazwani Kamarudin and Ahmad Fakhri Ab. Nasir*	10:25 AM – 10:40 AM
3.	**Data-oriented Approach for Detecting offensive Language in Arabic Tweets** *Eshrag Refaee*	10:40 AM – 10:55 AM
4.	**Vehicle Route Tracking System based on Vehicle Registration Number Recognition using Template Matching Algorithm** *Chor Kiew Lai, Abu Jafar Md Muzahid and Syafiq Fauzi Kamarulzaman*	10:55 AM – 11:10 AM
5.	**Video Tracking System Using Midrange Exploration Exploitation Searching-Particle Swarm Optimization (MEESPSO) in handling occlusion and similar appearance due to crowded environment** *Nurul Izzatie Husna Fauzi, Zalili Musa and Nor Saradatul Akmar Zulkifli*	11:10 AM – 11:25 AM
6.	**COVID-19 Analysis and Predictions Evaluation for KSA Using Machine Learning** *Rawia elarabi, Fatimah Alqahtani, Awatef Balobaid, Halah Zain and Najla Babiker*	11:25 AM – 11:40 AM

Session:	2D	Chairperson:	Dr Rahmah Mokhtar
Track:	SOFTWARE ENGINEERING, KNOWLEDGE ENGINEERING	Technician:	Amirul Husni
Google Meet Link:	https://meet.google.com/qns-afhd-kwn		

No.	Presentation Title	Time
1.	**Comparative Study of QoS Parameters for Different Web Services** *Md. Abul Kalam Azad, Salekul Islam, A.K.M. Muzahidul Islam and Md. Saddam Hossain Mukta*	10:10 AM – 10:25 AM
2.	**Improving Messenger Accessibility for Elderly Users using User Centered Design (UCD) Methods (Study Case: WhatsApp)** *Wafa Zahida, Veronikha Effendy and Aristyo Hadikusuma*	10:25 AM – 10:40 AM
3.	**Fruit Ordering System through Fruity Healthy Mobile Application** *Suraya Abu Bakar and Liew Pei Ling*	10:40 AM – 10:55 AM
4.	**A Review on Distance Measure Formula for Enhancing Match Detection Process of Generic Code Clone Detection Model in Java Application** *Noormaizzattul Akmaliza Abdullah, Mohd Azwan Mohamad Hamza and Al-Fahim Mubarak-Ali*	10:55 AM – 11:10 AM
5.	**Effects of Eye Health Among Youngster While Playing Computer Game** *Nurul Saidatul Akmal Ab Razak and Rahmah Mokhtar*	11:10 AM – 11:25 AM
6.	**Enhancing High-Quality User Stories with AQUSA: An Overview Study of Data Cleaning Process** *Siti Nur Fathin Najwa Binti Mustaffa, Jamaluddin Bin Sallim and Rozlina Binti Muhammad*	11:25 AM – 11:40 AM

Session:	2E ICoCSIM	Chairperson:	Dr Abdul Sahli
Track:	IoT, ARTIFICIAL INTELLIGENCE, IMAGE PROCESSING, E-LEARNING	Technician:	Mohd Faizul Ghafar
Google Meet Link:	https://meet.google.com/zwp-fqpg-uoi		

No.	Presentation Title	Time
1.	**Light Deep Learning Architecture for Chest X-ray based Covid-19 Detection** *Liang Han Sheng, Putra Sumari and Saqib Syed Jamal*	10:10 AM – 10:25 AM
2.	**Towards An Optimized Dragonfly Algorithm Using Hill Climbing Local Search To Tackle The Low Exploitation Problem** *Bibi Aamirah Shafaa Emambocus and Muhammed Basheer Jasser*	10:25 AM – 10:40 AM
3.	**The Abstract of Thesis Classifier by Using Naive Bayes Method** *Hairani Hairani, Anthony Anggrawan, Ahmad Islahul Wathan, Kurniadin Abd Latif, Khairan Marzuki and Muhammad Zulfikri*	10:40 AM – 10:55 AM
4.	**IoT Based Sport Healthcare Monitoring System** *Muhammad Naim Mohd Samsuddin, Anis Farihan Mat Raffei and Nur Shamsiah Abdul Rahman*	10:55 AM – 11:10 AM
5.	**Review on Target Tracking Method in Multimedia Wireless Sensor Networks** *Afritha Amelia, Muhammad Zarlis, Suherman Suherman and Syahril Efendi*	11:10 AM – 11:25 AM
6.	**Prediction Using A Neural Network Algorithm Approach (A Review)** *T.H.F Harumy, M. Zarlis, S. Effendi, M.S Lidya*	11:25 AM – 11:40 AM
7.	**Features of Single Value Coordinate System (SVCS) for Earthquake Forecasting using Single Layer Hierarchical Graph Neuron (SLHGN)** *Benny Benyamin Nasution*	11:40 AM – 11:55 AM
8.	**Neural Network as a Preferred Method for Microarray Data Classification** *Putri Tsatsabila Ramadhani and Benny Benyamin Nasution*	11:55 AM – 12:10 PM

Session:	2F	Chairperson:	Dr Bariah Yusob
Track:	INFORMATION MANAGEMENT, E-LEARNING	Technician:	Abdul Rahman Abdul Karim
Google Meet Link:	https://meet.google.com/mmc-ekjd-ihk		

No.	Presentation Title	Time
1.	**Sentinel: The Development of a Web and Mobile Application for the Development and Testing of an E-service Learning Interprofessional Telehealth Community Based Rehabilitation Program among Hypertensive Clients** *Rafael Benedict E. Bacungan, Kurt Martin C. Choi, Jansen Patrick A. Chua, Jericho P. Dupo, Noel E. Estrella*	10:10 AM – 10:25 AM
2.	**A Mathematic Educational Game Application For Primary School Slow Learner** *Nur Syakirah Kamarulzaman, Danakorn Nincarean Eh Phon and Mohd Syazwan Baharuddin*	10:25 AM – 10:40 AM
3.	**Serious Games and Preventive Self-Care for Diabetes: A Conceptual Framework** *Siti Normaziah Ihsan, Tuty Asmawaty Abd Kadir and Abdul Rafiq Abdullah*	10:40 AM – 10:55 AM
4.	**Usability Evaluation of MeMo Tutor: A Scaffolding-Based Pedagogical Agent to Facilitate Learning** *Ati Suci Dian Martha, Harry Budi Santoso, Kasiyah Junus and Heru Suhartanto*	10:55 AM – 11:10 AM
5.	**The Effectiveness of BIPA Learning Based on Blended MOOCs Learning Model** *Rahmi Yulia Ningsih, Endry Boeriswati, Wardani Rahayu, Ninuk Lustyantie and Uwes Anis Chaeruman*	11:10 AM – 11:25 AM
6.	**Learnability factors of AR usage performance: Validating through Survey** *Sayera Hafsa, Mazlina Abdul Majid and Ragad M Tawafak*	11:25 AM – 11:40 AM

PARALLEL SESSION 3 (11:45 AM – 01:15 PM)

Session:	3A	Chairperson:	PM. Dr. Noraziah
Track:	IoT, BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE	Technician:	Khairun Nissak
Google Meet Link:	https://meet.google.com/sxs-zkym-szg		

No.	Presentation Title	Time
1.	**An Organ Donation Management System (ODMS) based on Blockchain Technology for Tracking and Security Purposes** *Che Akmal Che Yahaya, Ahmad Firdaus Zainal Abidin, Yong Yew Khen, Che Yahaya Yaakub, Mohd Faizal Abd Razak*	11:45 AM – 12:00 PM
2.	**OriFeat: Origin of Replication Identification Using DNA Sequence Based Features** *Mashiyat Alam Promi and Swakkhar Shatabda*	12:00 PM – 12:15 PM
3.	**Non-Linear Autoregressive with Exogenous Input (Narx) Chiller Plant Prediction Model** *Azlee Zabidi, Mohd Izham Mohd Jaya,Wan Isni Sofiah Wan Din,Hasliza Abu Hassan,Ihsan Mohd Yassin*	12:15 PM – 12:30 PM
4.	**Tree-based Ensemble Learning for Stress Detection by Typing Behavior on Smartphones** *Adam Sukma Darmawan, Ferda Ernawan, Ivan Benawan, Zharfan Akbar Andriawan, Adi Wibowo, Aris Sugiharto, Eko Adi Sarwoko, Mandahadi Kusuma*	12:30 PM – 12:45 PM
5.	**C Programming Skill Levels Determination Using Fuzzy Logic** *Muhammad Aiman Al-Falah Muhd Yazid, Noor Azida Sahabudin, Anis Farihan Mat Raffei, Muhammad Akmal Remli*	12:45 PM – 01:00 PM
6.	**Application of Internet of Things for Early Detection of COVID-19 using Wearables** *Taki Uddin, Md. Borhan Uddin, A.K.M. Muzahidul Islam, Salekul Islam, Swakkhar Shatabda*	01:00 PM – 01:15 PM

Session:	3B	Chairperson:	Dr Noorlin Mohd Ali
Track:	BIG DATA ANALYTICS, ARTICIAL INTELLIGENCE, IMAGE PROCESSING	Technician:	Wan Md Naharruddin
Google Meet Link:	https://meet.google.com/oce-qyjo-okp		

No.	Presentation Title	Time
1.	**User Authentication Model based on Mobile IMEI Number: A Proposed Method Application for Online Banking System** *Waleed A. Hammood, Ruzaini Abdullah Arshah, Salwana Mohamad@Asmara, Omar A. Hammood*	11:45 AM – 12:00 PM
2.	**An Image Watermarking based on Multi-level Authentication for Quick Response Code** *Joanna Tan Lei Lei, Liew Siau Chuin and Ferda Ernawan*	12:00 PM – 12:15 PM
3.	**Performance Analysis on Denial of Service attack using UNSWNB15 Dataset** *Imran Edzereiq Kamarudin, Mohd Faizal Ab Razak, Ahmad Firdaus Zainal Abidin, Mohd Izham Mohd Jaya and Yau Ti Dun*	12:15 PM – 12:30 PM
4.	**Secure Storage of Data on Devices-Android based** *Sameera Abubaker Saeed Marei, Prof. Marghany Hassan Mohamed and Dr. Mamdouh Farouk Mohamed*	12:30 PM – 12:45 PM
5.	**Hilbert-Peano and Zigzag: Two Approaches Mapping Pattern of Digital Watermarking for Text Images Authentication** *Aqilah Abd. Ghani, Syifak Izhar Hisham and Nurul Wahidah Arshad*	12:45 PM – 01:00 PM
6.	**Comparison on Machine Learning Algorithm to fast detection of Malicious Web pages** *Wan Nurulsafawati Wan Manan, Mohd Nizam Mohmad Kahar and Noorlin Mohd Ali*	01:00 PM – 01:15 PM

Session:	3C	Chairperson:	PM Dr Mazlina Abdul Majid
Track:	BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE	Technician:	Ahmad Mustaqim
Google Meet Link:	https://meet.google.com/aqt-sgwu-aaz		

No.	Presentation Title	Time
1.	**Review on Skyline Query Processing Techniques over Data Stream** *Zarina Dzolkhifli, Hamidah Ibrahim and Mohd Hafiz Mohd Hassin*	11:45 AM – 12:00 PM
2.	**Comparison of The Use of Bigrams and Stopword Removal for Classification Using Naive Bayes (Case Study on Sentiment Analysis of By.U Internet Users)** *Manaarul Hidayat, Rahmat Hidayat and Dwi Otik Kurniawati*	12:00 PM – 12:15 PM
3.	**Bangladesh Crime Reports Analysis and Prediction** *Md Pavel Rahman, A.K.M Ifranul Hoque, Md. Faysal Ahmed, Iftekhirul Iftekhirul, Ashraful Alam, Nahid Hossain*	12:15 PM – 12:30 PM
4.	**Enhanced Colour Scheme Assessment Tool (COSAT 2.0) for Improving Webpage Colour Selection** *Seraphina Valerie Fernandez, Mazlina Abdul Majid, Noor Akma Abu Bakar, Muhammed Fakhreldin*	12:30 PM – 12:45 PM
5.	**Computer-aided system for extending the performance of diabetes analysis and prediction** *Saydul Akbar Murad, Zafril Rizal M Azmi, Zaid Hafiz Hakami, Nusrat Jahan Prottasha, Md Kowsher*	12:45 PM – 01:00 PM
6.	**Applications of Artificial Neural Networks in Engine Cooling System** *Suraya Abu Bakar, Md Munirul Hasan, Md Mustafizur Rahman, Md Shofiqul Islam, Muhammad Nomani Kabir*	01:00 PM – 01:15 PM

Session:	3D	Chairperson:	Dr Zuriani Mustaffa
Track:	INFORMATION SYSTEMS	Technician:	Khairil Chairy
Google Meet Link:	https://meet.google.com/pab-kifm-pnt		

No.	Presentation Title	Time
1.	**Mobile Health Monitoring and Treatment System for COVID-19 Symptoms Identification** *Yue Xien Wong, Nabilah Filzah Mohd Radzuan, Mohd Norshahriel Abd Rani*	11:45 AM – 12:00 PM
2.	**Hybrid Multi-Verse Optimizer for Covid19 Confirmed Cases Prediction: Cases in Malaysia** *Zuriani Mustaffa, Mohd Herwan Sulaiman and Bariah Yusob*	12:00 PM – 12:15 PM
3.	**Identifying Influencers On Twitter For Covid-19 Education And Vaccination Using Social Network Analysis** *Andy Andy Maulana Yusuf, Galih Mukhamad Rafi Galih Saputro, Maharani Dr. Warih Maharani*	12:15 PM – 12:30 PM
4.	**RSU-aided Mobility-aware Dynamic Resource Allocation for Vehicular Cloud Services** *Mohammad Mamun Elahi, Dr. Md. Mahbubur Rahman and Mohammad Mahfuzul Islam*	12:30 PM – 12:45 PM
5.	**Reducing Docker Daemon Attack Surface Using Rootless Mode** *Reyhan Rahmansyah, Vera Suryani, Fazmah Arif Yulianto and Nurul Hidayah Ab Rahman*	12:45 PM – 01:00 PM
6.	**Framework of the Employee Attendance System with QR Code in the Pandemic Covid-19** *Erwin Aji Nugroho, Sumarsono and Eko Hadi Gunawan*	01:00 PM – 01:15 PM

Session:	3E	**Chairperson:**	Dr Noorhuzaimi @ Karimah Mohd Noor
Track:	INFORMATION MANAGEMENT AND E-LEARNING	**Technician:**	Khairil Chairy
Google Meet Link:	https://meet.google.com/ivw-bnyj-wgu		

No.	Presentation Title	Time
1.	**Smell Sensory System In m-Commerce- A Case Study** *Jarina Begum Khan Mohamed, Juwairiya Anwar Ibrahim and Eshrag Refaee*	11:45 AM – 12:00 PM
2.	**Framework Of Strategic Alignment Through Enterprise Architecture For Organization Performance** *Yoppy Mirza Maulana, Zafril Rizal M Azmi, Ruzaini Abdullah Arshah, Muhammad Aliif Ahmad, Halah Zain*	12:00 PM – 12:15 PM
3.	**Factors influencing SaaS adoption by MSMEs** *Ayuningtyas Ayuningtyas, Zafril Rizal M Azmi, Ruzaini Abdullah Arshah, Muhammad Aliif Ahmad, Mousa Khobrani*	12:15 PM – 12:30 PM
4.	**Components For COVID19 Outbreak Control Model: A System Dynamics Perspective** *Aisyah Ibrahim, Tuty Asmawaty Abdul Kadir, Hamdan Daniyal and Adzhar Kamaludin*	12:30 PM – 12:45 PM
5.	**E-hailing from Service Quality Perspective: A Malaysian Based Study** *Mohamed Jalaldeen Mohamed Razi, Mohd Izzuddin Mohd Tamrin, Rizal Mohd Nor*	12:45 PM – 01:00 PM
6.	**Inventory Visibility Scenario to Reduce Safety Stock in Supply Chain Network Using Blockchain Hyperledger Composer** *Arwa Mukhtar, Awanis Romli, Noorhuzaimi Mohd Noor, Mansoor Abdullateef, Hael Al-bashiri*	01:00 PM – 01:15 PM

PARALLEL SESSION 4 (03:40 PM – 04:55 PM)

Session:	4A	Chairperson:	Dr Mohd Zamri Osman
Track:	BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE	Technician:	Khairun Nissak
Google Meet Link:	https://meet.google.com/dtb-yhab-inv		

No.	Presentation Title	Time
1.	**Word Embedding based Event Identification and Labeling of Connected Events from Tweets** *Proshanta Kumer Das, Minhaj Al Banna, Md. Abdullah Al Fahad, Salekul Islam and Md. Saddam Hossain Mukta*	03:40 PM – 03:55 PM
2.	**Deep Learning Models for Air Pollution Forecasting as Supervised Learning Problem** *Usfita Kiftiyani and Sri Azizah Nazhifah*	03:55 PM – 04:10 PM
3.	**Pixel-based Feature for Android Malware Family Classification using Machine Learning Algorithms** *Mohd. Zamri Osman, Ahmad Firdaus Zainal Abidin, Rahiwan Nazar Romli, Mohd Faaizie Darmawan*	04:10 PM – 04:25 PM
4.	**Thermoelectric Cooler Identification based on Continuous-Time Hammerstein Model using Metaheuristics Algorithm** *Julakha Jahan Jui, Mohd Ashraf Ahmad, Mohamed Sultan Mohamed Ali, Mohd Anwar Zawawi, Mohd Falfazli Mat Jusof*	04:25 PM – 04:40 PM

Session:	4B	Chairperson:	Ts. Dr Mritha Ramalingam
Track:	CYBER SECURITY, NETWORK	Technician:	Wan Md Naharruddin
Google Meet Link:	https://meet.google.com/hmq-pmps-sin		

No.	Presentation Title	Time
1.	**Multipath TCP Scheduling Performance Analysis and Congestion Control on Video Streaming on the MPTCP Network** *Muhammad Faris Imaduddin, Aji Gautama Putrada and Siti Amatullah Karimah*	03:40 PM – 03:55 PM
2.	**V-CRYPT: A Secure Visual Cryptography System** *Muhamad Ridhwan Bin Nashrudin, Abdullah B. Nasser, Antar Shaddad H. Abdul-Qawy*	03:55 PM – 04:10 PM
3.	**Applying Bayesian probability for Android malware detection using permission features** *Sharfah Ratibah Tuan Mat, Mohd Faizal Ab Razak, Mohd Nizam Mohamad Kahar, Juliza Mohamad Arif, Ahmad Firdaus and Azlee Zabidi*	04:10 PM – 04:25 PM
4.	**A Review: Static Analysis of Android Malware and Detection Technique** *Juliza Mohamad Arif, Mohd Faizal Ab Razak, Suryanti Awang, Sharfah Ratibah Tuan Mat, Nor Syahidatul Nadiah Ismail and Ahmad Firdaus*	04:25 PM – 04:40 PM
5.	**WiroTomo SourDuino: Instrument for Measuring the Acidic Level of Home-Industry Fruit Juice Production** *Wahyu Rangga Pratama, Genoveva Audrey Annabella Koo and Robertus Nugroho Perwiro Atmojo*	04:40 PM – 04:55 PM

Session:	4C	Chairperson:	Dr Ahmad Fakhri Nasir
Track:	IoT, IMAGE PROCESSING, ARTIFICIAL INTELLIGENCE	Technician:	Ahmad Mustaqim
Google Meet Link:	https://meet.google.com/rza-ymht-fnt		

No.	Presentation Title	Time
1.	**Alarming Assistive Technology: An IoT enabled Sitting Posture Monitoring System** *Mritha Ramalingam, R. Puviarasi, Elanchezhian Chinnavan, Quah Chia Shern, Mohamad Fadli Zolkipli*	03:40 PM – 03:55 PM
2.	**Whale Optimisation Freeman Chain Code (WO-FCC) Extraction Algorithm for Handwritten Character Recognition** *Muhammad Arif Mohamad, Jamaludin Sallim, Kohbalan Moorthy*	03:55 PM – 04:10 PM
3.	**Mellrak: An Ontology Driven Cdss For Symptom Assessment, Risk Assessment and Disease Analysis of Breast Cancer** *Reshmy Krishnan, Sherimon P C, Menila James*	04:10 PM – 04:25 PM
4.	**Word Embedding based News Classification by using CNN** *Faisal Ahmed, Nazma Akther, Mohammad Hasan, Kibtia Chowdhury and Md. Saddam Hossain Mukta*	04:25 PM – 04:40 PM
5.	**Towards Automated Threat Modeling of Cyber-Physical Systems** *Ameerah Muhsinah Jamil, Shifa Khan, Jian Kai Lee and Lotfi Ben Othmane*	04:40 PM – 04:55 PM

Session:	4D	**Chairperson:**	PM Dr Mohamed Ariff Ameedeen
Track:	SOFTWARE ENGINEERING AND KNOWLEDGE ENGINEERING	**Technician:**	Khairil Chairy
Google Meet Link:	https://meet.google.com/teh-dupg-hrc		

No.	Presentation Title	Time
1.	**Accuracy And Performance Analysis For Classification Algorithms Based On Biomedical Datasets** *Bassam Abdo Al-Hameli, AbdulRahman A. Alsewari, Mousa Khobrani, Mohammoud Fakhreldin*	03:40 PM – 03:55 PM
2.	**An Investigation of Mobile Pet Location Tracking System (PLTS) Success** *Tsu Ming Khor, Khoo Yuen Phan, Ai Ping Teoh, Yin Ping Yeck, Ean Heng Lim, Pei Voon Wong*	03:55 PM – 04:10 PM
3.	**Comparison Of Document Similarity Algorithms In Extracting Document Keywords From An Academic Paper** *M. Saef Ullah Miah, Junaida Sulaiman, Saiful Azad, Kamal Zuhairi Zamli, Rajan Jose*	04:10 PM – 04:25 PM
4.	**A Study on Mental Health Discussion through Reddit** *Nur Shazwani Kamarudin, Ghazaleh Beigi and Huan Liu*	04:25 PM – 04:40 PM
5.	**Question Classification of CoQA (QCoC) Dataset** *Abbas Saliimi Lokman, Mohamed Ariff Ameedeen and Ngahzaifa Ab. Ghani*	04:40 PM – 04:55 PM

Session:	4E	Chairperson:	Dr Abdullah Nasser
Track:	INFORMATION MANAGEMENT AND E-LEARNING	Technician:	Ruzainah Abdullah
Google Meet Link:	https://meet.google.com/xcm-dbuh-muz		

No.	Presentation Title	Time
1.	**Midrange Exploration Exploitation Searching Particle Swarm Optimization in Dynamic Environment** *Nurul Izzatie Husna Fauzi and Zalili Musa*	03:40 PM – 03:55 PM
2.	**Gender differences in Computational Thinking skills among Malaysian's Primary School Students using Visual Programming** *Osmanullrazi Abdullah, Adzhar Kamaludin and Nur Shamsiah Abdul Rahman*	03:55 PM – 04:10 PM
3.	**Analysis Youtube Activities as An Engagement Media (A Case Study at School of Information Systems BINUS University)** *Yohannes Kurniawan, Daniel William Wijaya, Diego Cabezas*	04:10 PM – 04:25 PM
4.	**A Conceptual Review on Integration of Cognitive Load Theory and Human-Computer Interaction** *Ruksana A, Wedad Salim Ali Al Siyabi and Yusra Al Minje*	04:25 PM – 04:40 PM

Session:	4F	**Chairperson:**	Dr Salwana Mohamad @ Asmara
Track:	INFORMATION MANAGEMENT AND E-LEARNING	**Technician:**	Mastura Sarkon
Google Meet Link:	https://meet.google.com/bzu-eaob-org		

No.	Presentation Title	Time
1.	**The Impact of Exponent Variable on the Performance and Effectiveness of FCM Algorithm for Ontology Construction in Structured Knowledge Management** *Mahmood Khalid, Rahmah M, Fauziah Z, Azhar A. Nor, Noraziah A, Norshita M. N.*	03:40 PM – 03:55 PM
2.	**Data pre-processing of website browsing record: An initial step for web page classification** *Siti Hawa Apandi, Jamaludin Sallim and Rozlina Mohamed*	03:55 PM – 04:10 PM
3.	**Speech Emotion Recognition Using 2D-CNN with Data Augmentation** *Auliya Mujaddidurrahman, Ferda Ernawan, Adi Wibowo, Eko Adi Sarwoko, Aris Sugiharto, Muhammad Didik Rohmad Wahyudi*	04:10 PM – 04:25 PM
4.	**Long Short-Term Memory approach for Wave Height Prediction: Study Case in Jakarta Bay, Indonesia** *Agnesia Peronika Lumban Raja, Annas Wahyu Ramadhan, Didit Adytia, Adiwijaya Adiwijaya*	04:25 PM – 04:40 PM
5.	**Dengue Dashboard for Forecasting the Future Trend of Dengue Cases in Pahang** *Muhammad Khairul Syafiq Mustafa and Junaida Sulaiman*	04:40 PM – 04:55 PM

CONFERENCE ABSTRACT

PARALLEL SESSION 1

SESSION 1A: IOT, BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE

PAPER ID: 9

Infection Disease Classification in Indonesian Language using Machine Learning

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Infectious diseases are still the main cause of death worldwide due to their dangerous and fast-spreading natures. One way to diagnose infectious diseases quickly and accurately is to create a machine learning model that aims to assist young doctors or health practitioners. In this study, we used the support vector machine, k-nearest neighbors, and the decision tree algorithm to classify types of infectious diseases based on the similarity of signs and symptoms. These methods were trained on documents in the Indonesian Language, which has its weight extracted using the Term Frequency-Inverse Document Frequency (TF-IDF). Model training and testing were carried out using 464 data with 20 classes of infectious diseases. Test results in this study indicate that support vector machine using stopword NLTK with unigram, bigram, and trigram get an accuracy of 87%, 81%, and 76%, followed by the K-nearest neighbors using stopword NLTK get an accuracy of 83%, 81%, and 77%. The decision tree using stopword NLTK gets an accuracy of 66%, 60%, and 53%, scoring the lowest compared to the other two.

Keywords: Infection Disease, Classification, Text-Mining, Supervised Learning, Tf-Idf.

PAPER ID: 11

Internet of Things (IoT) Based Door Lock Security System

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A door enables you to enter a room without breaking through a wall. Also, a door enables you for privacy, environmental or security reasons. The problem statement which is the biometric system sometimes is sensitive and will not be able to sense the biological pattern of the employer's fingerprint due to sweat and other factors. Next, people tend to misplace their key or RFID card. Apart from that, people tend to forget their pin number for a door lock. The objective of this paper

is to present a secret knock intensity for door lock security system using Arduino and mobile. This project works by using a knock intensity and send the information to mobile application via wireless network to unlock or lock the door

Keywords: Internet of things (IoT), Arduino, Mobile, Android, Security System.

PAPER ID: 13

A Proposed Requirements Prioritization Model Based on Cost-Value Approach with Collaboration Perspective

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Criteria analysis in requirement prioritization should always be transparent and holistic to increase the stakeholder's satisfaction. Different stakeholders have their views on the same criteria, making it challenging to agree on a specific set of criterion weights. In software development, the collaboration between client and developer is needed for requirements to be achieved. The cost-value approach to determining priority requirements requires a client perspective to determine the value and developer's concept to ascertain costs, then form a cost-value diagram for analysis. Therefore, the research conducted has not been detailed using a cost-value approach involving a client perspective and a developer concept. Usually, the criteria and alternatives weighted by the decision-maker are vague, uncertain, and subjective. Furthermore, using fuzzy numbers help solve different types of uncertainty and conflicting requirements to produce reliable work. This study proposes increasing the weighting of criteria in the requirements prioritization technique, based on cost-value, by doing a collaboration perspective through Fuzzy AHP and TOPSIS using linguistic terms by presenting a proposed model.

Keywords: Requirements Prioritization, Cost-Value, Fuzzy AHP, Fuzzy TOPSIS, Client Perspective, Developer Perspective, MCDM.

PAPER ID: 16

SonoNet: Despeckling of Medical Ultrasound Scans Using Convolutional Neural Network Architecture

[1]Prerna Singh

New Zealand

This paper proposes a deep learning framework using convolutional neural networks (CNNs), for the despeckling in ultrasound scans. The SonoNet model proposed in this paper consists of seven layers deep net along with activation function and batch normalization. Training of the network is carried out by utilizing synthetically modeled ultrasound frames with varying speckle content. The

network uses the assumption of multiplicative noise to adopt a division approach for filtering speckle content from input frames. Finally, edge features are extracted using the Canny operator and enhanced using a two-dimensional 3×3 convolutional mask. Thus, the proposed CNN method effectively accomplishes speckle elimination and visual feature preservation without inducing much blurring effects. The subjective evaluation by four subject matter experts and experimental analysis using three image quality metrics indicate that the proposed system gives a superior performance as compared to the state-of-the-art methods in the field, and therefore could find applications designed for speckle suppression in ultrasound imaging systems and real-time ultrasound video segmentation and classification algorithms.

Keywords: Breast ultrasound scan analysis, Speckle artifact, Convolutional neural network, Canny edge detector, Image quality analysis.

PAPER ID: 17-18

Existing Semantic Ontology and its Challenges for Enhancing Interoperability in IoT Environment

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Internet of Things technology is widely used in several domains including industry, society, and the environment. Heterogeneous data is a critical problem in the Internet of Things technology; this heterogeneity leads to a lack of interoperability which limits the possibility of sharing and reusing data for supporting decision-makers in different fields. The aim of this paper is to review the current IoT ontologies and their main challenges. Ontology has been used to solve the heterogeneity problem and enhance interoperability for the Internet of Things by using common core ontology. The main feature and success factor of ontology as a representation of knowledge is that the features being flexible, clearable, shareable, and reusable. This study is probable for contributing to developing common core ontology for the Internet of Things with a comprehensive view for solving the lack of sharing information and offer complete recommendations for supporting the interoperability processes for IoT application domains

Keywords: Iot, Semantic Ontology, Interoperability, Data Integration.

PAPER ID: 103

Modeling Reproductive Health Educational Games for Early Childhood using Goal-Directed Design

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Most Indonesian parents still consider reproductive health education in early childhood to be taboo. However, this education is the basis of sex education material which is very important to avoid violence or sexual harassment. A non-governmental organization paying attention to this education took the initiative to promote this education through a training program for child mentors. However, in its implementation, this program has limited resources. The Covid-19 pandemic has also indirectly become an obstacle to implementing this program because of the limitations and considerable risks of offline training. Educational learning through digital media is an alternative to continue providing education. In this case, child companions can use digital media to help provide education to children. The media must be exciting and fun learning for children and be in line with the institution's objectives to deliver educational material without causing worry from parents who still consider education taboo. For this reason, digital media designs are made in the form of fun educational games for children. Those are designed to align the goals of the institution and parents by using Goal-Directed Design (GDD). The children then tested the design using observation and the System Usability Scale (SUS) method. The test results are used to improve the design. The final design resulted in a SUS score of 87.16 (very good).

Keywords: Educational Games, Goal-Directed Design, Pandemic, Reproductive Health, SUS

PAPER ID: 40

Antecedents the use of Social Commerce in Small Medium Enterprise: A Conceptual Framework

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SMEs need to pay attention to several factors so that customers and SMEs can continue to use S-Commerce. The obstacle faced by SMEs is that they cannot consistently use S-Commerce. This study aims to produce a proposed conceptual framework to see the relationship between factors for using S-Commerce in SMEs. The proposed framework has developed through the literature related to using social commerce in SMEs, including the relationship between determinant factors using S-Commerce in SMEs. The reviews are viewing from technological, organizational, social factors, including customer and competitor factors. The results of this study indicate that 11 factors determine the use of S-Commerce in SMEs. The social connectedness and trust factors are some of the determining factors in using S-Commerce. The resulting proposed conceptual framework

contributes to a better understanding of the considerations for using S-Commerce in SMEs, especially for SME business owners.

Keywords: SME, S-Commerce, Social Connectedness, Trust.

PAPER ID: 42

Web Engagement Readiness for Program Need Analysis (PNA) In Malaysian Community College

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The purpose of college community is to provide education and training based on the needs of the local community. Before any new educational program can be offered, a program needs analysis (PNA) must be conducted to evaluate the demand of the program and rationalized the purpose of the college. Currently, PNA research is conducted manually with paper-based approach at the Malaysian Community College for acquiring feedback from the local community. This approach has causing longer time, higher cost, and high error in data collection. In line with the Malaysia government digital transformation policy, this paper aim to survey the readiness of web engagement strategies for PNA studies. This study adapted the Digital Maturity Model (DMM) in measuring the readiness with quantitative method based on the online survey from all community colleges nationwide. There are five (5) phases in the research methodology to ensure that each piece of information collected is done consistently. From 629 respondents, we found the readiness level to implement web engagement strategies in PNA research is at a Stage 3 -Managed. This study has contributed by shedding the light on the readiness for web engagement in PNA among community colleges nationwide as the first been reported in the context of community college in Malaysia. In practice, our work can impact the national policy in managing or conducting PNA at community colleges with more effective and efficient engagement strategy.

Keywords: Program Need Analysis, Web Engagement Strategy, Digital Maturity Level.

PAPER ID: 49

The Impact of Instagram E-Marketing in SME Fashion Industry on Customer Satisfaction

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This research explores the impact of e-promotion and e-service quality on consumer satisfaction and effect on repurchase interest. One hundred Instagram users who have purchased fashion products from online SMEs on Instagram were surveyed using online questionnaires with a

purposive sampling technique. The results indicate that, compared to service, promotion does not have a significant effect on customer satisfaction. However, promotion does have a significant effect on repurchase interest while service quality does not. This means that service impacts repurchase interest through customer satisfaction, whereas promotion impacts repurchase interest through other variables.

Keywords: Promotion, Service Quality, Consumer Satisfaction, Repurchase Interest, Instagram.

PAPER ID: 52

Wireless Monitoring System for Motorcycle Tire Air Pressure with Pressure Sensor and Voice Warning on Helmet using Fuzzy Logic

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Indonesia is a country that has a high level of motorcycle usage. This condition was not accompanied by adequate road conditions. Therefore, to maintain safety and driving comfort, every rider is recommended to check the tire air pressure before traveling. However, in checking the air pressure, most of them are still done manually which is still inadequate. This paper proposes a wireless monitoring system that functions as a real-time determinant of tire pressure conditions. The contribution of this paper is the system will be combined with a helmet as the output of the tire pressure in the form of sound. This system uses input variables in the form of tire pressure and ambient temperature which will later be processed on the helmet device with the help of fuzzy logic as a method for classifying the data. In this study also, the results of the analysis of the performance testing of the fuzzy logic method on a device with an accuracy rate of about 86.6 percent were obtained.

Keywords: Wireless Monitoring System, Air Pressure, Temperature, Fuzzy Logic, Helmet, Motorcycle, Tire.

PAPER ID: 163

Android Application for Posture Analysis using Tensorflow and Computer Vision

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Human posture is an important body part that indicates the fundamental structure of the human body. Hence, the aim of this project is to develop an android application that can analyze on the human body posture by capturing an image of the body and provide guide to improve it. It is decided that using Microsoft Azure AI: Custom Vision and Tensorflow as the machine learning approaches for this project is reasonable. The development of this project used the Rapid Application Development (RAD) model which consists of the requirement planning that required the collection requirements for the project from the users. The user design that needed to build prototype for deciding system design, the construction phases that focus on coding and testing, while lastly the cutover phase that last test will be conducted, and the project will be published. The expected outcome of this project is that the application can conveniently help the people that needed to improve their body posture in a

more simple and effective way. In the future, this project is hoped to be enhanced with more features and reliable functionalities that improve the effectiveness of improving human body posture.

Keywords: Human posture, Mobile Application, Machine learning, improve body posture, Microsoft Azure, Tensorflow

PAPER ID: 30

Reversible Face Watermarking Scheme using Hash Function for Tamper Localization and Recovery

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Recently, since digital cameras are widely used, face recognition has attracted great attention. Face recognition used in different fields which are airport security management and IC cards for e-commerce. For advanced technologies, the biometric data such as face image can be compromised and faked. Hence, the security is needed to protect face image in the face recognition system in order to prevent from modified image and manipulated image. This research proposed an image watermarking scheme for protecting original face image and maintaining confidentiality of the information contained in the face image in image recognition system from unauthorized attack. The proposed scheme is to detect the tampered sector on the face image after embedded watermark into original face images. The proposed scheme able to detect the

tampered sector and recover back to its original image. This research also evaluated the recovered face image towards its original image in terms of image quality. This paper also investigated an efficient way to authenticate face image, tamper localization and lossless recovery for the face image. The imperceptibility of the recovered face image and computational time are evaluated on the watermarked image. The experimental results show that the proposed scheme successful detect the tampered sector and the scheme able to recover back the tampered face image to its original image. The proposed scheme achieved average PSNR value of 47.66 dB with computational time of 1.14 second. The proposed scheme has potential to provide security for authenticating and recovering face image with high imperceptibility and fast embedding process.

Keywords: Hash Function, Face Image, Tamper Localization, Image Recovery, Image Authentication, Fast Embedding Watermark.

PAPER ID: 85

Performance Comparison of Spatial Domain-based Watermarking Techniques

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Watermark is one of the main methods used to authenticate and secure the security of digital media. There are multiple watermarking schemes proposed over the years. Often the proposed watermarking scheme was focused on general grayscale images. Their performance on medical images is rarely evaluated. This study compares the performance of various general watermarking schemes using multi-frame medical images and general gray-scale images in terms of 3 main factors, (1) computational complexity, (2) imperceptibility, and (3) embedding capacity. The result has shown that the Least Significant bits have the highest imperceptibility and embedding capacity. However, it is the least secure where outside can modify the watermarked images as long as they have the basic information

Keywords: Watermarking, Medical Images, Predictionbased, Spatial Domain Watermarking, Histogram Shifting, Difference Expansion.

PAPER ID: 39

Watermarking Scheme based on Chinese Remainder Theorem and Integer Wavelet Filters for Copyright Protection

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The development of image watermarking schemes has grown rapidly especially in non-block watermarking. However, non-block watermarking produced less robustness against compression and filtering attacks. This study proposed a new model to improve the robustness using a Euclidean distance on the wavelet sub-bands of Integer Wavelet Transform (IWT) with the Chinese Remainder Theorem (CRT). The watermark is then embedded on a low-frequency coefficient according to a predetermined location. CRT is used on the embedding scheme by utilizing integer wavelet filters for decomposing the host images. Both methods are work on signed integer values to avoid the truncation process that usually occurs in the embedding process. The experimental results show that the proposed method produced a better robustness level compared to the CRT method under Gaussian filter, rescaling, cropping, JPEG and JPEG2000 compression. Meanwhile, in the imperceptibility test, both algorithms produced similar results with an average SSIM value of 0.998. The results show that our method is able to improve the robustness and maintain the visual quality of the watermarked image.

Keywords: Watermarking, Wavelet Filter, Euclidean Distance, Integer Wavelet Transform, Chinese Remainder Theorem.

PAPER ID: 108

The Impact of AR/VR on Spatial Memory Performance of Learners: A review

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Today, the advancement in Augmented Reality (AR) and Virtual Reality (VR) pave the way for establishing a simulated three-dimensional world for educational purpose and interactive learning. AR technology witness an increasing usage in recent years in the learning process of several areas of knowledge. However, using AR in education is still a big challenge and limited. There are certain constrains linked to the perception of learners to use AR as well as it is unclear to what extent this technology improves the spatial performance of learners in certain academics. Another question this study tries to answer, why AR is more effective than VR in preserving knowledge in learners' minds. The aim of this study is to review the most important theories and reports on AR in education, and its connection to human spatial memory. The review of literature reveals that VR is an efficient technology and provide good tools for spatial memory research, but it still not compared with respect to spatial performance with AR. The significant impact of AR on learning ability of student is high by creating a sustainable and immersive education environment which enhance students' spatial memory, especially in academic fields that are based on visual topics.

Keywords: Augmented Reality, Virtual Reality, Spatial Memory.

PAPER ID: 87

Semi – Automated Software Requirement Specification (SRS) Document Generator: The Guideline to Novice System Analyst

[1]Siti Nur Fathin Najwa Binti Mustaffa, [2]Jamaludin Bin Sallim, [3]Rozlina Binti Mohamed

[1]Faculty of Computing Universiti Malaysia Pahang (UMP) Pekan, Pahang

Studies have emphasized that software requirements act as skeleton foundation of the digital project. This would help in the basis of detailed-design, development, test apps and maintenance. The Software Requirement Specifications (SRS) reflect functional and technical requirements that being used for the design and development process. There is, in any case, no impressive research between duplication requirement information and automated requirement tools to summed up issues in producing quality SRS documentation during requirement engineering phases. Issues such duplicate or redundant textual requirement information need to be heads up. This study is to investigate the quality of SRS document and factors of common problems during requirement engineering phases specially to solve the redundant and duplicate textual, analyze on how SRS is generated and the challenge on using requirement tools. The requirement may be missing, questionable, conflicting, unimplementable such the factor of project constraints. Thus, using semi-automated tool on generate SRS document can help in terms of feasible, relevant, clear, comprehensive, and accepted by all stakeholders as the deliverables. This is part of involvement in development process. Through evaluation and comparison with existing tool, the rule and guideline are adopted for this study with a proposed methodology. It purposely to deduce the necessity for examining the quality of SRS and an approach for evaluating the quality of the requirements in projects. As project more innovative, complex, and multi-disciplinary, it is essential to define and ensure the quality of the requirements at the preliminary stages. The findings of this study will distribute as guidelines for System Analyst as a factor of project success.

Keywords: Requirement Engineering, Software Requirement Specification and Automated Tools.

PAPER ID: 92

Performing User Acceptance Test with System Usability Scale for Graduation Application

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The evolution of technology creates opportunity for numerous sorts of application to be produced, and education is one of the sectors that has a significant influence on technology. As such, we can witness variety of mobile applications designed for higher education recently. Therefore, it is

important to produce an application which contributes to better degree of user satisfaction in higher education context. This study involved performing user acceptance test and measuring the users' satisfaction using System Usability Scale (SUS) towards a graduation mobile application that runs on two platforms (web and mobile). A number of 45 participants involved in the assessments and the results disclose a significant correlation between the SUS scores and number of issues reported, where the application has agreeably met the users' satisfaction by passing the acceptable marginal level with 73.7 score. Insights from this study offers a ground basis on measuring the user satisfaction where the individual item scores could also be analyzed in order to provide insight into the application's possible problems and improvement.

Keywords: Convocation, Mobile Application, Satisfaction, SUS, System Usability Scale, Usability, User Acceptance

PAPER ID: 105

Examining the Actual System Use of CodePolitan' Consumers During the COVID-19 Pandemic Using TAM

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The pandemic COVID-19 has resulted in a serious movement to several activities, one of which is Education. To reduce the spread of COVID-19, learning activities in the classroom are no longer possible. Multi Online Open Course (MOOC) is a solution in creating digital classrooms. There are many classes offered online today. One of Indonesia's popular online subscriptions is CodePolitan, which provides educational services in the field of Information Technology. Previous research found that ease of use was the most influencing factor for students in using e-learning applications. In this study the Technology Acceptance Model is used to measure the level of user adoption when using digital services from CodePolitan. The study was conducted using the five basic constructs of TAM and analyzed through three stages starting from the Outer Model Analysis then the Inner Model Analysis and finally Testing the Hypothesis. The results show that six hypotheses were accepted and have positive significant. The strongest significant relationship is 65.7%, namely the relationship between Ease of Using CodePolitan and Attitudes towards the Use of CodePolitan on Behavioral Intentions of CodePolitan Users. When the CodePolitan application is easily handled, the implication is that it will be chosen by the user to support learning activities.

Keywords: COVID-19 Pandemic, Indonesia, CodePolitan, MOOC, Technology Acceptance Model.

PAPER ID:

A Review on DevOps Adoption in Continuous Delivery Process

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DevOps is recognized as a set of software development and operation practices that advocates a tight integration between development and operation in software delivery and operation activity to achieve faster software delivery time. DevOps produce significant Agile practice to reduce software cycle time in delivering software products. Meanwhile, Continuous Delivery (CD) is one of the DevOps process that enables the software production team to release both new function and new product rapidly, however, the fixed and official services guideline for DevOps is still ambiguous. This paper to identify the problems and issues in DevOps practice adoption that can improve the CD process. This was achieved by conducting a literature study to identify the DevOps and Continuous Delivery. The method used to conduct this research is by filter internet artifact from Scopus database. Thus 96 internet artifacts had been identified for further studied and analyzed. As the result, there are four significant adoption factors that need to be considered in determining the success of the DevOps adoption in Continuous Delivery process.

Keywords: DevOps, Continuous Software Engineering, Continuous Integration, Continuous Delivery, Agile, Agile Operations

PAPER ID: 60

Information Technology Hardware Services based on the Service Quality dimension to the IT Hardware Support Services: A Conceptual Framework

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Information Technology hardware services is one of the crucial services to the organization that has an Information Technology department or using Information Technology technical support services. The services offer to the users or inter-department in the IT hardware services. The study's goal is to improve the quality of Information technology hardware services by focusing on issues that arise in daily Information Technology operations, especially in Information Technology hardware support and services. Issues on the ITHS involve people, processes, and technology. These three issues, brings difficulty in Information technology hardware services operation in daily routine service and contribute to the poor services in Information Technology hardware support to users. On the research perspective, minimal research in scholar in the Information Technology hardware area. Most of studies reflected the state-of-the-art research (Information Technology Services Management). Additionally, minimum research to the information system based on the IT hardware services and only general policy based on the service level agreement reflected to the Information Technology hardware services. The Information Technology hardware service conceptual framework is a new step forward to the development on the IT hardware assessment model. The idea, new proposed conceptual framework introduces develop, area in IT hardware services using all the components from the IT Framework and aligned with the SERVQUAL concept of organizational culture and services. Previously, a minimal specify framework or model that direct to the Information Technology hardware services, based to the state-of-the art with

service level agreement and only generic policy use on the organization that has the information technology services. Again, the new develop Information Technology Hardware Services conceptual framework integrates with the most relevant IT framework adoption from ITIL, COBIT 5, and CMMI-SVC, to provide more understanding and richer findings to the ITHS conceptual framework. This conceptual framework constructs the relationships between the SERVQUAL dimension and ITHS elements that reflect the quality of services. It's also contributes to the new element's creation to the ITHS that only apply the incident management component from the three selected IT framework as mentioned. The first section of the paper provides an overview of information technology hardware services. Second, literary and theoretical basis on service quality and creation to the information technology hardware service dimension are presented. Third, the theoretical framework leads to a new creation on the conceptual framework in information technology hardware services.

Keywords: SERVQUAL; Information Technology Hardware Services; Quality of Services (QoS); IT Services; IT Framework.

PAPER ID: 197

Iris Recognition System Using Convolutional Neural Network

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Identification system is one of the important parts of security domains of the present time. The traditional protection methods considered to be inefficient and unreliable as they are subjected to theft, imitation or forgetfulness. In contrast, biometrics such as facial recognition, fingerprints and the retina have emerged as modern protection methods, but still also suffer from some defects and violations. However, Iris recognition is an automated method that considered a promising biometric

identification due to the stability and the uniqueness of its patterns. In this paper, an iris recognition system based on Convolutional Neural Network (CNN) model was proposed. CNN is used to perform the required processes of feature extraction and classification. The proposed system was evaluated through CASIA-V1 and ATVS datasets, after the required preprocessing steps have taken place, and achieved 98% and 97.83% as a result, respectively.

Keywords: Fuzzy Operation, Deep Learning, Segmentation, Convolution Neural Network.

PAPER ID: 198

Assistive technology for harvesting footstep energy in IoT enabled Smart shoe for the visually impaired

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This paper proposes an IoT enabled smart shoe tracking system for the visually impaired (VI) people. This IoT based innovation is an assistive technology for the VI people which assists them in navigation and tracking their location by using mobile application. The proposed smart shoe provides obstacle detection, navigation, tracking location and harvest energy from the footsteps. In this paper, what authors have presented is that when a VI person is walking, how the energy generated from the footsteps is harvested and utilized in the proposed design. From the harvested

energy, the power is generated which is utilized for charging the battery and mobile phones that are interconnected to the smart shoe.

Keywords: Internet Of Things, Footstep Energy, Obstacle Detect, Tracking, Sensor.

PAPER ID: 199

Model Evaluation of Various Supervised Machine Learning Algorithm for Heart Disease Prediction

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Machine Learning (ML) is a type of Artificial Intelligence (AI) that allows the machine to learn from data and become more accurate in predicting outcomes without human intervention. The fundamental idea of machine learning is to mimic the way our brain works. In a variety of application domains, including medicine and healthcare, ML techniques have demonstrated strong prediction abilities. This study evaluated and compared several popular supervised machine learning techniques for predicting heart diseases using medical records from the UCI Machine learning repository. This paper examines the performance of multiple models such as Support Vector Machines (SVM), K-Nearest Neighbor (KNN), and Logistic Regression models. The performance of these algorithms was analyzed based on the (Area Under ROC Curve) AUC score. AUC is an evaluation metric that helps us validate our machine learning algorithm how good it is, and the decision is made to implement if the AUC score is more significant than 0.5. The trial result verifies that the Logistic regression algorithm has achieved the highest AUC score of 0.87 compared to other ML algorithms.

Keywords: AI, KNN, Logistic Regression, and SVM.

PAPER ID: 202

Region-Based Distance Analysis of Keyphrases: A New Unsupervised Method for Extracting Keyphrases Feature from Articles

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Due to the exponential growth of information's and web sources, Automatic keyphrase extraction is still a big challenging issue in the current research area now. Keyphrases are very helpful for various tasks in information retrieval (IR) systems and natural language processing (NLP). Feature

extractions

for those keyphrases play a vital role in extracting the topquality keyphrases and summarising the documents at a superior level. This paper proposes a new region-based distance analysis of keyphrases (RDAK) unsupervised technique for feature extraction of keyphrases from articles. The proposed system consists of six phases: data acquisition and preprocessing, data processing, distance calculation, average distance, curve plotting, and curve fitting. At first, the system inputs the collected different dataset to the pre-processing step by employing some text pre-processing techniques. Afterwards, the pre-processed data is applied to the data processing phase, and then after distance calculation, it is passed to the region-based average calculation process, then curve plotting analysis, and afterwards, curve fitting technique is utilized. Finally, the proposed system has tested and evaluated the performance through implementing them on benchmark datasets. The proposed system will significantly improve the performance of existing keyphrase extraction techniques..

Keywords: Distance Analysis, Region-Based Distance Analysis, Data Processing, Feature Extraction, Keyphrase Extraction Technique, Goldkey.

PAPER ID: 81

An Experimental Comparison of Unsupervised Keyphrase Extraction Techniques for Extracting Significant Information from Scientific Research Articles

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The automatic extraction of key information from an article that expresses all of the document's main elements is referred to as keyphrase extraction. The number of scientific research articles each year is growing. Finding a research article on relevant topics or summarizing a particular research article using important information has become time-consuming by going through the entire article. Therefore, the textual information processing task involves the automatic keyphrase extraction from a document that expresses all of the document's main elements. This article aims to make an experimental comparison of different unsupervised keyphrase extraction approaches, namely statistical-based, graph-based, and tree-based. The experiment is conducted upon 120 research articles from different subject areas of the computer science. The comparison between different techniques is made by calculating the precision, recall, and F1-score. The overall performance of the experimental result shows that KP-Miner, a statistical-based technique, outperforms all the other graph-based and tree-based techniques. Among the other techniques, the tree-based technique TeKET performs better after KP-Miner. The statistical-based and tree-based approach performs better than the graph-based approach.

Keywords: Automatic Keyphrase Extraction, Unsupervised Keyphrase Extraction, Statistical-Based Technique, Graph-Based Technique, Tree-Based Technique, Comparison Analysis

PAPER ID: 8

Analysing The Impact of Social Presence on Student Satisfaction Through Small Group Discussion in A Synchronous Online Learning

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Online learning has been put into practice since a long time ago by universities around the world, but still few were practicing it full mode such as what happened in the pandemic situation nowadays. Some research explained online learning practice during the pandemic cause a low motivation to study, high level of stress, and eventually may lead to the rise of drop-out rate. One of the reasons is that learning from home degrades social activity in the learning process. Previous research stated that one approach that may increase social presence in online learning is by dividing students into small group discussions. This approached is believed able to improve student satisfaction toward the course. This research aims to systematically examine the impact of social presence on student satisfaction through small group discussion. The study surveyed students who were experiencing small group discussion in synchronous online learning through breakout room in Zoom application. This study found that small group discussion in synchronous online learning environment able to facilitate social presence among the students. Further, social presence was found to have a positive relationship with student satisfaction in three constructs, namely; social sharing, open mind, and social identity.

Keywords: Online Learning Technology, Social Presence, Small Group Discussion, Satisfaction.

PAPER ID: 88

Sleep Behaviour and Online Engagement in Learning Management System During COVID-19 Pandemic: Case Study of Universiti Malaysia Pahang

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During COVID-19 pandemic, many higher education institutions have shifted their teaching and learning operation towards full online learning. As a result, using learning management system (LMS) become more intensive, crucial and compulsory. The issue is, there is lack of research to prove that online learning engagement may cause sleep disorder among student and instructor in higher education. Therefore, this paper aim to investigate user engagement in LMS and it associate with the risk of sleep disorder. This study adopts educational data mining (EDM) to extract the data from Moodle LMS log to discover the potential insights with business intelligence software tools. The outlier's detection using box-plot visualization manage to determine the indicators of sleep disorder behavior pattern. The findings from this study show that there are

some student and instructor that potential to have experience sleep disorder. This novel finding is critical for institution to respond by developing a policy and risk mitigation strategy associated with unhealthy sleep behavior in online learning engagement.

Keywords: Sleep Behavior, Online Learning, Pandemic.

PAPER ID: 136

Web Page Classification Using Convolutional Neural Network (CNN) Towards Eliminating Internet Addiction

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In the modern world, everyone has access to the internet as a source of information by surfing the web pages. The most popular web page surf is on Game and Online Video Streaming. Users who are spending too much time on these kinds of web pages may lead to a negative impact on Internet addiction. To overcome the internet addiction problem, access to Game and Online Video Streaming web pages needs to be restricted. Thus, a mechanism that can classify the category of the incoming web page based on the web page content is needed. This paper is proposing a web page classification model using a Convolutional Neural Network (CNN) to classify the web page, then identify whether it is a Game or Online Video Streaming based on the pattern of words in the word cloud image taken from the web page text content. The proposed web page classification model has achieved 82.22% accuracy to detect the pre-classified web pages.

Keywords: Web Page Classification, Topic Classification, Convolutional Neural Network, Deep Learning, Internet Addiction.

PAPER ID: 200

PROJECT MANAGEMENT STUDENTS' PERCEPTION ON E-LEARNING

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This paper examines students' perceptions about the advantages and disadvantages of e-learning of Project Management courses in Muscat, Oman. It also paves light into the academic institution's online delivery and assessment methods to assess Project Management students. While many studies have focussed on general delivery and perception about e-learning, there is a lack of studies specifically for the Project Management (PM) Programme and that too in the context of Oman. The study is based on Qualitative research and investigates the student perception from

one college, which is the only Private College offering a PM programme in Muscat, Oman. An interview guide consisting of 13 open-ended questions was used for 21 respondents. The study's findings revealed that flexibility, comfort, easy access to resources, recorded sessions, and learning new IT skills were top advantages of e-learning project management courses. The disadvantages were isolation, class duration, network problems, distractions at home, and technical issues. The student perception related to online delivery and online assessments was satisfactory with recommendations of more usage of whiteboards and short recorded tutorials, which can guide them in technical sessions. The paper has further discussed the strategies like mind maps, simulation games, guest lectures, virtual tours, benchmarking with other HEIs, etc., which can strengthen e-learning platforms for this programme. This research can help other academicians to enhance their teaching practices related to technical subjects effectively.

Keywords: Project Management, E-Learning Advantages, E-Learning Challenges, E-Learning Delivery, E-Learning Assessments

PAPER ID: 131

Integrating Psychology Approach into Course Advisory System Framework for Higher Education Institution

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The advisory system is used to guide and support decision-making in such circumstances where more than one decision is viable. High school students are having difficulties in making the right decision in choosing a course while considering their personality. Hence, this study is aiming at proposing a framework that integrates the course advisory system with psychological elements, this integration is expected to penetrate both intelligent elements (advisory system) in advising the best course suits with student's qualification, and psychology elements (student's personality). The framework is then used to develop a prototype system and tested in a case study. Based on gathered data, the proposed advisory system framework gives a positive impact to most of the respondents.

Keywords: Advisory System, Course Advisory System, Decision Making, Psychology, Education.

PARALLEL SESSION 2

SESSION 2A: IOT, BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE

PAPER ID: 19

Optical Character Recognition using Backpropagation Neural Network for Handwritten Digit Characters

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Recognizing handwritten characters, the accuracy of the optical character recognition is usually not relatively high due to every person having their unique way of writing characters. Therefore, we focus on finding a high recognition accuracy of optical character recognition by using a backpropagation neural network. The input layer of the backpropagation neural network is the pixel number of the one-character image, which is 784 input nodes that will be the input layer of the neural network. Then the output layer of the neural network will be the 10-digit characters which are 0 to 9. The dataset that used for this research has a total of 280,000 data. The output of the neural network will a computerized digit representing the recognized digit characters. The performance measurement is the recognition accuracy where the recognized data and the expected output data are compared and calculated. Additionally, the dataset was applied with salt and pepper noise to represent the corrupted data and use a median filter to repair the image. The recognition accuracy for the corrupted image and the corrected image are obtained and discussed.

Keywords: Optical Character Recognition, Backpropagation Neural Network, A Handwritten Digit Character.

PAPER ID: 21

Performance Evaluation of Hybrid Feature Selection Technique for Sentiment Classification based on Food Reviews

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In this paper, the performance efficiency of sentiment classification using a hybrid feature selection technique is evaluated based on food reviews. This technique is able to overcome the issue of lack in evaluating features importance by using a combination of TF-IDF+SVM-RFE (Term Frequency- Inverse Document Frequency (TF-IDF) and Supports Vector Machine (SVM-RFE)). It aims to measure features importance and to select the significant features recursively based on

the number of significant features known as k-top features. We tested this technique with a food reviews dataset from Kaggle to classify a positive and negative review. Finally, SVM has been deployed as a classifier to evaluate the classification performance. The performance is observed based on the accuracy, precision, recall and F-measure. The highest accuracy is 80%, precision is 82%, recall is 76% and F-measure is 79%. Consequently, the technique is able to reduce 24.5% of the features to be classified in obtaining these highest results. This reduction is able to utilize the computational resources optimally and the efficiency of the classification performance able to be maintained

Keywords: Sentiment Classification, Sentiment Analysis, NLP, Computational Intelligence.

PAPER ID: 69

The Co-ChiLeRFE: Couple LBP and LTP Methods of Children-Learning Readiness Using Facial Expression

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Children's emotions can affect the learning process, especially positive emotions, making them more focused on learning. In addition, in terms of identifying someone's emotions, we can represent them through facial expressions by combining the local binary pattern (LBP) and the local ternary patterns (LTP) method, known as Co-ChiLeRFE. The reasons for combining the two methods are that the LBP has proven to be very good at performing feature extraction, especially in describing textures. At the same time, LTP is adept at dealing with uniform motifs such as those on the face area. Subsequently, in this study, we used the NIMH child emotional faces picture set (NIMH-ChEFS), which has five-class expressions: sad, neutral, happy, angry, and afraid. To achieve optimal results in the Co-ChiLeRFE method, we set the LBP parameter as P = 8, R = 8, and the LTP parameter threshold value of one. The results we got from this experiment achieved a system performance superior accuracy of 92.51%.

Keywords: Children, Learning, Face Expression, LBP, LTP.

PAPER ID: 37

Blockchain and the Internet of Things: Opportunities and Challenges

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Since the emergence of Bitcoin, the cryptocurrency, Blockchain technology has received substantial attention from researchers, businesses, and governments. Due to its distinctive feature in which a Blockchain allows for the creation of a trustworthy ledger of transactions that is shared

by all entities in the network; eliminating the need for a third party to manage the transactions. The blockchain utilizes cryptographic mechanisms to protect tampering with the transactions stored in the ledger. With such features, blockchain technology shows a great potential to be applied to domains other than finance. It can be utilized in healthcare, transportation and smart cities in which data generated from great many devices (i.e., sensors, IoTs) needs to be stored and managed in a secure way. Throughout this paper, we will discuss how Blockchain could provide security services in environments that encompass IoT devices. We will further explore the possible integration of these two technologies and challenges.

Keywords: Blockchain, IoT, Security, Confidentiality, Integrity.

PAPER ID: 48

Topic Modelling and Clustering of Disaster-Related Tweets using Bilingual Latent Dirichlet Allocation and Incremental Clustering Algorithm with Support Vector Machines for Need Assessment

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The occurrence of various types of disasters are thoroughly described in social media websites like Twitter which can be a useful source of data. This research aimed to solve the problem of bilinguality of data which caused a complexity that yielded inaccurate results during clustering. The researchers were able to develop a system which adds a bilingual topic model, Bilingual Latent Dirichlet, to an existing system. This research was able to compare in terms of precision, recall, accuracy, and area under the curve metrics, the clustering accuracy of the incremental clustering module with and without the bilingual topic model, while also classifying the needs that the Tweet will require.

Keywords: Bilingual Topic Model, Disaster-related Tweets, SVM, Incremental Clustering.

PAPER ID: 51

Blockchain Technology for IoT based Educational Framework and Credentials

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The Internet of Things (IoT) and blockchain are two of the most impactful and inventive technologies of the previous decade. Due to its unique qualities, such as security, data integrity, decentralization, and reliability, blockchain is attracting practitioners and researchers. IoT, on the other hand, refers to a network of connected things that use wearable devices and software to communicate and exchange data with other devices through the internet. These technologies are growing fast in many computer science fields; therefore, it is essential to improve the current state of knowledge of blockchain practices into IoT enabled education sector to utilize the thoroughgoing features to benefit the students, teachers, employers, organizations and lifelong learners. This research article investigates the benefits of the blockchain, to keep the information of stakeholders cryptically secure on the internet. Especially in the field of education where IoT enables an efficient

interaction system among developers, facilitators, students, teachers, recruiters and employers, while also preserving valuable data on the internet. Several of the challenges of adopting blockchain for IoT-enabled education systems are addressed so that practitioners can acquire innovative technologies in the field of education more quickly in the future. The most significant accomplishment of this research is the establishment of a framework for the educational system to communicate through IoT devices and enlighten the utilization of blockchain for producing certificates and securing other credentials as well.

Keywords: Blockchain Technology, Iot, Education, Security, Data Integrity, Decentralization, Lifelong Learner.

PAPER ID: 147

Comparison of PPO and SAC Algorithms Towards Decision Making Strategies for Collision Avoidance Among Multiple Autonomous Vehicles

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Multiple vehicle collision avoidance strategies with safe lane changing strategy for vehicle control using learning base technique are the most crucial concern in autonomous driving system. Statistics shows that the latest autonomous driving systems are usually prone to rear-end collision. Rear-end

collisions often result in severe injuries as well as traffic jam and the consequences are much worse for multiple-vehicle collision. Many previous autonomous driving research focused solely on collision avoidance strategies for two consecutive vehicles. This study proposes a centralised control strategy for multiple vehicles using reinforcement learning focused on partner consideration and goal attainment. The system depicted as a group of vehicles are communicate and coordinate each others by a set of rays and maintain a short following move away. In order to address this challenge, a simulation was implemented in the Unity3D game engine and two state-of-the-art RL algorithms PPO (Proximal Policy Optimization) and SAC (Soft Actor-Critic) were trained by an agent using Unity ML-Agents Toolkit. In terms of success rate, performance, training speed and stability two algorithms are comparable. The potency of algorithms has been assessed by the traffic flow (1) change in vehicle speed, (2) differ in the vehicle beginning positions, and (3) switch to next lane. The agent performed similarly at a 91% success rate in PPO or SAC applications

Keywords: Autonomous driving, Multiple vehicle collision, Robotics, Reinforcement Learning.

PAPER ID: 82

Video Transmission in IEEE 802.15.4 Wireless Sensor Network Using Asynchronous TDMA

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Nowadays, the Wireless Sensor Network (WSN) technology is extensively used in a large variety of applications. WSN has engaged humans and computers in many applications such as health monitoring and security. IEEE 802.15.4 wireless standard is the current demand on WSN which is used to transmit video or real-time data at low data rates. Reliable data transmission for video applications is a critical issue in low data rate transmissions due to the high collision from conventional protocol, which is Carrier Sense Multiple Access (CSMA). Therefore, a MAC layer with token approach protocol called MAC-TA protocol is proposed to solve this issue. In this protocol, the only node that holds the token can transmit the data. If other nodes intent to do the transmission, they have to wait for the token before sending the data. Token Holding Time (THT) is a duration time set at the node that holds the token, and the token is pass to the next node when the THT is finished. This paper is focusing on the development of the MAC-TA protocol onto test-bed TelG motes. Three types of MPEG-4 video samples have been tested which are Akiyo, Foreman, and Mobile both in Quarter Common Intermediate Format (QCIF) and Common Intermediate Format (CIF) format. The proposed protocol is compared with existing CSMA protocol in IEEE 802.15.4 standard. The experimental results presents that the MAC-TA protocol has improved the packet delivery ratio by 70%. Moreover, the results prove that MAC-TA provides good reliability of multimedia data and makes it possible to send over IEEE 802.15.4 environment

Keywords: Asynchronous TDMA, Token Approach (TA) Protocol, Video transmission, Parameter Estimation, IEEE 802.1.5.4 Standard.

PAPER ID: 93

Improving Road Networks Using Network Optimization: Case Study of Aley Lebanon

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Traffic congestion in Lebanon is a growing issue with no remedy insight. Traffic is so severe that an 80 km road may take between two to four hours to cross. This is mainly due to the old and poor planning techniques that are applied in the design, expansion, and maintenance of the Lebanese road network. The following article will propose and investigate the utilization of novel tools in network modeling and management to existing networks. Specifically, this article will apply nodal and grouped shortest path analysis for the existing road network in the historical city of Aley. The main aim is to utilize a modern and effective solution that helps in reducing design and implementation costs while providing the maximum network state improvement. The following article presents that this approach is not only time efficient and simple to apply, but also capable of finding unique and impactful solutions that can easily conducted by governmental bodies. This will help governmental institutions with limited budgets and technological capabilities of developing unique and advanced solutions for their road networks.

Keywords: Computer Science, Transportation, Network Modeling, Management.

PAP

PAPER ID: 106

Performance Comparison Between AODV and DSR In Mobile Ad-Hoc Network (MANET)

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Wireless communication technology has advanced rapidly, thanks to the proliferation of wireless devices and services. The spectrum depletion issue was discovered due to the growing number of users and to the fixed spectrum assignment strategies. A mobile ad hoc network (MANET) is a network that doesn't require a central server, specialized gear, or fixed routers to function. As it operates in a distributed peer-to-peer style, each system acts as an individual router and produces individual data where MANET may be used as a stand-alone network or as part of a cellular network that connects to the internet. There are different types of a routing protocol can be applied in MANET, each with its capabilities, advantages, and disadvantage. There is a need to investigate the performance of routing protocol for better network planning. The Ad Hoc On-Demand Distance Vector (AODV) and Dynamic Source Routing (DSR) are two MANET routing protocols investigated in this paper. Four different performance metrics are used to measure these protocols: throughput, path discovery time, traffic received and sent delay, and media access delay. To investigate the behavior of these protocols in the Manet context, a Manet simulation is run using OPNET Modeler Student Edition. According to the data, AODV outperforms other protocols in terms of throughput, amount of traffic received, and transmit performance, whereas DSR has the longest delay. Even when run in the same environment with the same number of nodes, different protocols produce different readings and behaviors. This proves the theory that AODV performs better in terms of performance, delay, and packet transfer ratio.

Keywords: Throughput, Delay, Packet Received, Packet Send, Security.

PAPER ID: 5

Geofence Alerts Application with GPS Tracking for Children Monitoring (CTS)

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Geofence Alerts Application with GPS Tracking for Children Monitoring (CTS) is a mobile application that helps parents to track the location of their child. It provides the parents with the route and real-time location of the children. Parents often face difficulties in getting hold of the whereabouts of their children when they are not in sight. This situation increases the insecurity of parents toward the safety of their children. The first objective of this paper is to obtain a latitude, longitude, and time information of a child's location in real-time using GPS tracker. The second objective is to develop a smartphone application that capable to track the location of children in real-time. The third objective is to evaluate the functionality of the developed smartphone application in tracking children's location. Features, advantages, and disadvantages of three commercialized application are compared to collect requirements for the CTS application. The

requirements are then used to design and develop the interface of CTS application using Rapid Application Design (RAD) framework. Three main modules, which are the View Current Location module, View History Route module and Setup Geofence module are proposed for the application. Additionally, a GPS tracker based on Arduino Uno board is developed to provide the longitude and latitude of children's current location. The functionality of the CTS application and the GPS tracker is then evaluated to determined bugs and its usability. It was discovered that CTS is in helping parents to track the location of their child in real-time, view the past route taken by the child, set up geofence area, and receive notification when their child enter or leave the geofence area within the scheduled time.

Keywords: Geofencing, GPS Tracker, Child Tracking, Internet Of Things, Mobile Application.

PAPER ID: 150

Ransomware: Stages, Detection and Evation

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Ransomware attacks has been increasing lately with companies suffer monetarily, wasted business opportunity and wasted time. Big companies are now targeted as they are more profitable for ransomware threat actor. This paper discuses on stages of ransomware attacks starting from reconnaissance to extortion. It also discusses on steps that organization should take to prevent ransomware attack and several detection methods for ransomware. Other than that, it lists anti-analysis and evasion method used by ransomware to evade detections. Lastly, it discusses the latest ransomware attacks.

Keywords: Ransomware, Detection, Evasion, Stages.

PAPER ID: 142

Machine-Learning-Based Prediction Models of Coronary Heart Disease Using Naïve Bayes and Random Forest Algorithms

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Coronary heart disease (CHD), alternatively known as cardiovascular disease (CVD) is the number one cause of death in the world. Accordingly, a plethora of research have been conducted to predict the early diagnosis of the heart disease and determine the most important risk factors associated with the disease. Despite these considerable efforts, the accuracy of the prediction has remained inadequate and the most important risk factors have remained elusive. This research paper discusses many risk factors associated with the disease and presents the prediction models of coronary heart disease using supervised machine learning algorithms, namely Gaussian Naïve Bayes, Bernoulli Naïve Bayes and Random Forest algorithms. It uses the public dataset from the Cleveland database of UCI repository of coronary heart disease patients. The results show that the Gaussian Naïve Bayes, Bernoulli Naïve Bayes and Random Forest algorithms have accuracies of 85.00%, 85.00% and 75.00%, respectively. Moreover, the precision, F-measure and recall of the Gaussian and Bernoulli Naïve Bayes are higher than those of Random Forest algorithm, signifying its importance in predicting the early diagnosis of the disease.

Keywords: Heart Disease, Gaussian Naïve Bayes, Bernoulli Naïve Bayes, Random Forest, Machine Learning, Risk Factors.

PAPER ID: 155

The Neuropsychology Assessment for Identifying Dementia in Parkinson's Disease Patients using a Deep Neural Network

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Parkinson's Disease (PD) patients have high risk of developing dementia at least a year after the diagnosis. PDDementia affect both the physical and mental function that can gradually worsen the condition of the patients over time. This work proposed a framework in detecting dementia among PD patients based on neuropsychological assessment. This work classifies samples using the Montreal Cognitive Assessment (MoCA) scores as a guideline. It is classified into three categories, which are No Dementia, PD-MCI, and PD-Dementia. The work continues with designing a Deep Neural Network (DNN) architecture specific for analyzing electronic health records for PD-Dementia

detection. Then, it compares the proposed model with other five baseline methods. The experiment results present that the proposed DNN presents the highest result of 97.5%. This result shows that this proposed model able to identify early dementia in PD patients from non-motor symptoms

Keywords: Dementia, Parkinson's Disease, Multivariate Data, Machine Learning, Deep Learning, Montreal Cognitive Assessment

PAPER ID: 160

A Data-oriented Approach for Detecting offensive Language in Arabic Tweets

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The growing popularity of social media (SM) platforms has made these platforms a crucial part of modern societies. Users from different cultures, backgrounds, demographics get aboard in an increasing manner to express their views, stances, and opinions on a varied range of topics. Since users on SM can easily hide their real identity, a closer look at daily posts on social medial platforms shows that users do not seem to reflect only their stances and views, but also, they get an opportunity for revealing their behaviors, which could be negative towards the others. Although only a small population of SM users can show negative behavior towards other individuals, groups, and society in general, the impact could be catastrophic. This has resulted in the emerge of terms like cyberbullying, online extremism/hatred/threatening, online trolling, online political-polarity discourse. To ensure safe

social networking, the domain of automatic detection of offensive/hatred language has lately grown notably. This work focuses on utilizing a publicly available dataset of Arabic tweets labeled for offensive/non-offensive language. Unlike previous work which focuses merely on developing and tuning machine learning models to be as accurate as possible on the benchmark dataset used, we turn to focus on the characteristics of the offensive language used in SM. The purpose is to have an in-depth look into the dataset to disclose what seems to be hidden patterns in offensive language expressed daily online. Our findings reveal the benefit of using larger training dataset that covers a wide range of offensive language patterns to build robust machine learning classifiers with a better ability to generalize well on highly sparse data used in SM.

Keywords: Offensive Language, Arabic NLP, Machine Learning, Classification, Twitter.

PAPER ID: 1

Vehicle Route Tracking System based on Vehicle Registration Number Recognition using TemplateMatching Algorithm

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Object Recognition Technology has become widely applied in various field in order to increase efficiency, security and lifestyles. One field particularly requires the utilization of such technology is for vehicle recognition system. Vehicle Recognition System provides access to information of particular vehicles whether for security or service purposes. This paper proposes a vehicle route tracking system that provide recognition of vehicles and tracking of these vehicles within a network surveillance camera range. The system obtained data from cameras, conduct analysis on those data and finally can trace the route and present location of the targeted car to the user. The system utilizes a Template Matching Algorithm for recognition of the registration number and together with Global Positioning System information, a tracking system was developed. The system provides an accuracy around 80% confidence when detecting a vehicle plate number and successfully display the path of the vehicle based on the time and location of the vehicle detected.

Keywords: Artificial Neural Network, Pattern Recognition, Vehicle Tracking, Network Camera.

PAPER ID: 157

Video Tracking System Using Midrange Exploration Exploitation Searching-Particle Swarm Optimization (MEESPSO) In Handling Occlusion and Similar Appearance Due to Crowded Environment

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Detecting the correct object plays a key role in generating an accurate and precise object tracking result. In addition, the usage of conventional method still brings the uncertainty in the accuracy and precision of the detected object motion. Besides, the process of object tracking in an individual frame is also challenging due to the problems such as occlusion, crowded environment, and similar appearance Therefore, a Midrange Exploration Exploitation Searching Particle Swarm Optimization (MEESPSO) algorithm with color-shape feature pattern matching methods was introducing to address the problem of the similar appearance or color that comes close to target object in crowded environment, and the presence of occlusion problem cause motion of the crowded object or the camera views. The proposed method is tested by using the MOT16-11 benchmark video dataset. This benchmark video faced the challenges such as partial occlusion, fully occlusion and similar appearance due to crowded environment in the video scene. The experiment has shown that the tracking performance of the proposed method has increased more than 92.69% accuracy and 94.67% precision..

Keywords: Object Detection, Object Tracking, Particle Swarm Optimization, Occlusion, Similar Appearance, Crowded Environment

PAPER I

COVID-19 Analysis and Predictions Evaluation for KSA Using Machine Learning

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D:75

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The unprecedented rise in the number of new coronavirus infections worldwide has prompted many researchers to use mathematical and machine-learning-based prediction models to predict future epidemic patterns that will help governments, health service providers, and society understand how to deal with this situation. Using different machine learning methodologies helps researchers to understand the trend curve clearly. These may lead to a better and more effective fight against the epidemic and reduce or end preventive measures, allowing people to return to their everyday lives. This study is based on an analysis of COVID-19 data of KSA. Also, it demonstrates the prediction of the new confirmed cases and death of COVID-19 in the next ten days from 8th July in KSA, which is considered the period of the performing Hajj in 2021. It uses machine learning models such as Support Vector Machine (SVM), Bayesian Edge (BR), Linear Regression (LR), and Moving Average (MA). Each model provides two types of predictions: the number of newly infected cases and deaths over the next 10 days. The results indicate that SVM and MA forecasts have high accuracy, followed by LR which performs well. The BR performs poorly in forecast scenarios when applied with the available data set in forecasting new confirmed cases. All models were accurate in predicting mortality, with the best performing model being SVM, followed by MA, LR, and BR. It also expects an increase in confirmed cases under the SVM model scenario to 511,257 on 17th July from 496,516 on 7th July in the actual daily cumulative cases. The number of deaths will rise to 8,113 on 17th July from 7,921 on 7th July in actual cumulative daily data.

Keywords: Coronavirus, COVID-19, Pandemic, Preventive, Precautionary, Respiratory, Support Vector Machine, Linear Regression and Future Forecasting.

PAPER ID: 112

Comparative Study of QoS Parameters for Different Web Services

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Web service plays an important role in the new paradigm of distributed computing over the Internet. Web service allows to combine different publicly available services together to create new functionalities. Many public web services can be used at free of cost. Two important elements of web services are Web Services Description Language (WSDL) used for describing and locating web services and Simple Object Access Protocol (SOAP) used for communicating between applications via the Internet. The consumers of web services are always keen to differentiate between QoS-aware and QoS-unaware web services. Measuring QoS is the prerequisite for designing QoS-aware web services. Therefore, a number of metrics need to be identified. Because of the dynamic and unpredictable nature of the web services infrastructure, providing the acceptable QoS is really a challenging task. In this paper we have identified three dominating features–response time, reliability and security–that governs the QoS of a web service. The objective of this work is to carry out a comparative study between publicly available web services by measuring different metrics of QoS for these web services. Hence, using different open-source tools we propose a simplified approach to measure those QoS metrics for publicly available web services. Based on our approach, QoS-aware web services can easily be built from publicly available services

Keywords: Web Services, Qos, Response Time, Reliability, Security.

PAPER ID: 113

Improving Messenger Accessibility for Elderly Users using User Centered Design (UCD) Methods (Study Case: WhatsApp)

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In Indonesia, the definition of elderly is a person who has reached the age of 60 years and over. In addition to increasing age, the elderly also experience a decrease in perceptual, cognitive, and psychomotor functions. Most of the existing applications are designed for young users, not old users, one of which is the WhatsApp mobile application. The elderly use the WhatsApp mobile application to communicate with family and friends. This application is considered quite familiar to use. However, there are several difficulties experienced by an elderly group in using the WhatsApp application. The difficulties experienced by the elderly cause the elderly to often need help using the WhatsApp application and it is felt that this application is not accessible. By using the User-

Centered Design method, a user interface design is built based on the guidelines that have been researched by previous researchers that can increase the accessibility of elderly users to the WhatsApp application so that it can be more accessible. The results show an increase in accessibility based on the user-based evaluation carried out. This research provides useful information regarding the right design solution to be used to improve the accessibility of the messenger application to elderly users

Keywords: Elderly, Accessibility, User Centered Design, WhatsApp, User Interface Design.

PAPER ID: 133

Fruit Ordering System through Fruity Healthy Mobile Application

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Mobile application is the software that uses for portable devices such as smartphones and tablet computers. It can be run on the platform of Android, iOS, Harmony OS and Windows phones. Currently, people tend to order food through online using available applications or systems. Especially during movement control order (MCO) in 2020 in Malaysia as the pandemic spread through globally. In this project, we will focus on fruit ordering application named Fruity Healthy that allow users to purchase fruits just by one click. Users can just stay at their own place without stepping out to the market to purchase. Moreover, to help the farmers to increase their market sales, fruit ordering application is going to help them to share their market in order to boost their sales. The objectives of this project are to help farmers increase their sales market, to develop a mobile application that used for fruit ordering and compare the scalability of the new application with the existing applications. In order to propose the application, Android Studio is the software that has been chosen. Java language will be used throughout this application. At the end of this project, users can use the application for their purpose of fruit ordering. It makes farmers to be easier to earn for the expected salary through online as a second platform. The customers' details will be saved into the database so that sellers can know where to target and the strategy to increase their sales

Keywords: Mobile Application, Fruits, Ordering.

PAPER ID: 140

A Review on Distance Measure Formula for Enhancing Match Detection Process of Generic Code Clone Detection Model in Java Application

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Code clones are source code that repeatedly being implemented in a software program. Four types of code clones are available which are clone Type-1, clone Type-2, clone Type-3 and clone Type-4. In the past

decades, variegated code clone approaches and tools have been utilized for detecting code clones. However, the minimum comprehensiveness or lacking of generality in detecting all four types of code clone, has prompted other researchers to develop a code clone detection model. Generic Code Clone Detection (GCCD) Model is the model that implemented a clone detection for the four types of code clone. The model consists of five process namely Pre-processing, Transformation, Parameterization, Categorization and Match Detection process. This research study intends to improve the code clone detection of GCCD Model through Match Detection process of the respective model. A literature review is done to analyze a few other models and techniques and distance measure formula that available for calculating the code clones in Match Detection process. Based on the analysis, there are ten distance measure formula will be used to decide on the best method for calculating the code clone in Match Detection process. This study hopes to be used as reference for other researchers in aiding their research regarding code clone detection model.

Keywords: Code Clone, Code Duplication, Code Clone Detection Model, Java Application, Distance Measure Method

PAPER ID: 164

Effects of Eye Health Among Youngster While Playing Computer Game

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Computer games have become popular among youngsters for entertainment and education nowadays. Due to this situation, the youngster faces a problem that can lead to eye health problems such as eye fatigue, eye strain, redness of the eye and dry eye. This paper aims to find the relationship between eye blinking and eye health for the youngster while playing computer games. A survey has been done on 232 parents to find out their worriedness about their youngster's eye health. The result shows that 99% of parents worry about their youngster's eye health and 89% agree that prolonged computer usage can lead to eye health issues. Also, an experiment on ten youngsters has been done based on eye blinking to find the relationship between eye blinking and eye health. Experiments show a 95% confidence interval, indicating a relationship between eye blinking and eye health, where less eye blinking can harm the eye. Therefore, the guideline of games should be implemented in the future.

Keywords: Computer, Game, Eye Health, Eye Blinking, HCI.

PAPER ID: 178

Enhancing High-Quality User Stories with AQUSA: An Overview Study of Data Cleaning Process

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Agile software development has ended up profoundly prevalent over the final two decades. In conjunction with the increment of notoriety sum of these methodology, amount of scientific research on this topic has also increased. This research concentrates on one component from Agile Software Development which is User Stories. In a recent paper, quality framework for User Stories was proposed together with a tool implementing which is still minimal finding to achieve high quality

of user story document. It is closely related to the data requirement as part of the success factor in development project. The main goal is to analyze US requirement written and identification of potential errors in datasets that bring the effectiveness in forecasting the quality of User Stories for monitoring purpose. One of the steps require to identify the quality User Stories is by the route passing through data cleaning process. The research analysis considers performing data cleaning and pre-processing towards existing dataset of user story requirement from open-source agile software projects. Results of analyzing the User Stories will reveal the possibility step of data cleaning as initial step to extend the AQUSA tools and forecast the quality of User Stories. Thus, it can be related to the requirements quality based on the number of issues report in the dataset where highest number of issues report can be categorized as poor requirement statement.

Keywords: User Story, Agile Software Development, Data Cleaning, Quality User Story

PAPER ID: 2

Light Deep Learning Architecture for Chest X-ray based Covid-19 Detection

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Covid-19 is a serious public health problem worldwide. To date, it has spanned worldwide with 12.8 million infected and 566,909 confirm death. Covid-19 screening is indeed an important task and has to be done quickly as possible to many people so that early treatment can be done. The current world RT-PCR standard screening for Covid-19 detection no longer can cope to the demand of large world population. There is a need of other quick diagnosis procedure such as to use chest x-ray images and light computing algorithm to accelerate the covid-19 screening. This paper proposes Covid-19 detection based on chest X-ray image with a light computer processing. The proposed work introduces the combination of Gray Level Co-occurrence Matrix (GLCM) and Convolutional Neural Network (CNN) methods to detect Covid-19 symptom. The light version is coming from GLCM simplicity and convolutional neural network (CNN) single layer. It is fast and suitable method for places where computing resources are minimal. With light processing component, the proposed work still gives the highest classification performance with 97.06% accuracy compare to other similar works.).

Keywords: Deep learning, Covid-19, Chest X-ray image, Convolutional Neural Network, Gray-Level Co-Occurrence Matrix.

PAPER ID: 25

Towards an Optimized Dragonfly Algorithm Using Hill Climbing Local Search to Tackle the Low Exploitation Problem

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The Dragonfly Algorithm (DA), a swarm intelligence algorithm inspired by the behavior of dragonflies,

has been recently proposed and it was found to have a higher performance as compared to other swarm intelligence algorithms. However, it still has certain limitations, and its performance can be further improved. DA has a low exploitation phase, and this leads to problems such as low accuracy of solutions, falling in local optima and low convergence rate. We propose to enhance the exploitation of DA by using the hill climbing algorithm as a local search so as to increase its effectiveness and efficiency in producing high accuracy solutions. The hill climbing algorithm is

chosen to be used as a local search for DA since it always optimizes the current solution until the local optima is obtained. However, it has not been employed in any existing hybrid of DA. The proposed algorithm performance is to be evaluated by employing it as a training algorithm for an Artificial Neural Network (ANN) to optimize its connection weights. A classification dataset will be used for the training and testing of the ANN trained by the proposed algorithm. The root mean squared error of the ANN will be taken as the objective function of the optimized dragonfly algorithm. The accuracy of the resultant neural network will be compared to that of an ANN trained by the original DA and the time taken for the training process by both algorithms will be compared. Based on the analysis, the optimized algorithm is expected to outperform the original DA by allowing the resultant neural network to have a higher classification accuracy.

Keywords: Swarm Intelligence, Dragonfly Algorithm,Optimization.

PAPER ID: 8

The Abstract of Thesis Classifier by Using Naïve Bayes Method

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The thesis is a requirement for graduation from Bumigora university. The final year student's problem is determining the research topic because the undergraduate thesis collection of Computer Science is not grouped or classified based on student competencies. The purpose of this study was to compare the performance of the naïve Bayes method with TFIDF weighting and without TF-IDF weighting for the classification of thesis topics based on the abstract. The stages of this research are data collection, text pre-processing, term weighting with TF-IDF and without TF-IDF, Naïve Bayes method implementation, and result evaluation. Based on the results of the tests that have been done, the naïve Bayes method with TF-IDF has an accuracy of 81.74%, a precision of 86.1%, and a sensitivity of 80.15%. While the naïve Bayes method without TF-IDF weighting produces 88.69% accuracy, 89.76% precision, and 90.49% sensitivity. Thus, the naïve Bayes method without TF-IDF weighting has better performance than TF-IDF weighting for the classification of thesis topics based on the abstract.

Keywords: Naïve Bayes, TF-IDF Weighting, Abstract Classification.

PAPER ID: 1

IoT Based Sport Healthcare Monitoring System

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6	Universiti Malaysia Pahang, 26600 Pekan, Malaysia The Internet of Things is considered now as one of the feasible solutions for any remote value tracking especially in the field of health monitoring. Monitoring the athlete in aspect of fitness and training progress performances are very important to avoid accident happened during training. The proposed system developed the IoT based sport healthcare monitoring system using Arduino and several sensors. A fuzzy logic algorithm is also developed to provide decision for the athlete health condition. A web-based application is also developed to allow the instructor to store and retrieve the athlete information as well as monitor the fitness training performance of the athlete. **Keywords:** Internet of Things, Arduino, Fuzzy Logic, Sport Healthcare, Taekwondo
PAPER ID: 18	**Review on Target Tracking Method in Multimedia Wireless Sensor Networks** [1]Afritha Amelia, [2]Muhammad Zarlis, [3]Suherman Suherman, [4]Syahril Efendi [1,2,4] Computer Science, Faculty of Computer Science and Information Technology, Universitas Sumatera Utara Medan-Indonesia [3] Electrical Engineering, Faculty of Engineering, Universitas Sumatera Utara Medan-Indonesia Target detection and search requires a target recognition algorithm and a target search algorithm on a multimedia wireless sensor network (MWSN). One of the main problems in MWSN is energy efficiency of image transmission and MWSN also is hard to able to multiple object tracking. Apart from pattern recognition techniques, it is necessary to coordinate between nodes and nodes in real-time. Regarding the existence of targets, current research focuses only on target recognition and prediction of target locations. Meanwhile, the target position in the video has not been well explored. The video traffic generated by each node in the system is very abundant and taxing on resources. Therefore, the target search algorithm for video traffic generated by each involved node has the potential to accelerate target tracking and minimize traffic flow (capacity) in the system, through a target search approach that combines target recognition techniques, direction prediction and prediction of recording time on multimedia sensors. This paper reviews related works on target tracking in multimedia wireless sensor network (MWSN) and possible scenario to find solution accelerating the target tracking. This paper ensures that target tracking must be low energy consumption at nodes and minimum transmission capacity to base station and end user. **Keywords:** Multimedia Wireless Sensor Network, Target Recognition, Target Search, Traffic Reduction.
PAPER I	**Prediction Using A Neural Network Algorithm Approach (A Review)** [1]T.H.F Harumy, [2]M. Zarlis, [3]S. Effendi, [4]M.S Lidya [1,2,3,4] Faculty of Computer Sciences, Universitas Sumatera Utara , Medan, Indones

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One of the methods used for prediction is Artificial Intelligence Neural Network. The development of this Neural Network is growing rapidly. Currently, Neural Network has many methods such as Recurrent Neural Network, Long/short term memory, Convolutional Neural Network, MLP, RNN, and others. The problem that occurs is the level of performance and accuracy of the results based on the model, data, and variables used. But sometimes it takes a long time to determine how many layers to use, how many filters to use, and others. So that analysis and review of the current methods are needed to compare several methods that have been used and try to provide an analysis of the best possible methods that can be used, especially for data time series. The analytical method used is a review method by comparing one method with another. The analysis is expected to be an input for discoveries in improving the performance of prediction algorithms in existing systems, especially for time series data.

Keywords: ANN, Prediction, Protis, Algorithm.

PAPER ID:19

Features of Single Value Coordinate System (SVCS) for Earthquake Forecasting using Single Layer Hierarchical Graph Neuron (SLHGN)

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In order to increase its accuracy, the earthquake forecasting using the Single Layer Hierarchical Graph Neuron (SLHGN) requires particular capabilities related to earth coordinates. As the current coordinate system cannot provide the SLHGN with such capabilities, this work has developed Single Value Coordinate System (SVCS) as a solution. The main principles of SVCS that are different to the current coordinate system are: 1) The SVCS coordinate points to an area, not to a dot (point), therefore it is suitable for SLHGN; 2) The SVCS only utilizes basic mathematical operations, therefore it is fast; 3) The SVCS treats each area on the earth equally, therefore it is reliable. Based on these, the work has successfully discovered three main features of the SVCS that will be beneficial for the SLHGN. The SVCS provides earthquake forecasting using the SLHGN with these three main features: 1) Conversion from current coordinates to the SVCS coordinates; 2) Shortest distance calculation in different areas; 3) Simplest direction formulation between two areas.

Keywords: Earthquake Forecasting, Single Value Coordinate System (SVCS), Single Layer Hierarchical Graph Neuron (SLHGN)

PAPER ID:

Neural Network as a Preferred Method for Microarray Data Classification

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According to a WHO on World Cancer Report published in February 2020, one of six cancer survior

3 died each year. The cancer can be known and detected early have possibility to get better treatment, so do minimized death rates affected by cancer. A person can be detected with cancer by performing an accurate analysis and classification of microarray data. Several methods and algorithms have been used in various related studies, one of them is Neural Network. In this paper, presents recent works proposing Neural Network models as classifier for cancer prediction purposes used gene expression datasets to know how capable Neural Network is in classifying microarray data.

Keywords: Classification, Microarray Data, Neural Network

PAPER ID: 44

Sentinel: The Development of a Web and Mobile Application for the Development and Testing of an E-service Learning Interprofessional Telehealth Community Based Rehabilitation Program among Hypertensive Clients

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Hypertension has been a leading health issue in the Philippines where more than 500 thousand deaths in 2016 are a result of cardiovascular diseases and cases are rising from low- and middle-income areas. To address this issue, the team had developed a web and mobile application capable of providing synchronous and asynchronous telerehabilitation for patients in selected barangay in the province of Laguna. The mobile application is designed for healthcare providers to provide synchronous consultation for patients through evaluations and personal messaging and asynchronous functions where patients can download brochures provided by healthcare providers to treat their condition without the healthcare provider's supervision. The admin web application holds the records of the accounts that have registered on the mobile app, while being able to modify certain functionalities, such as assigning teams of healthcare providers to provide group evaluations for a specific patient, approve pending registrations from healthcare providers, and being capable of uploading the brochures for the patients to use. The team conducted a User Acceptance Test (UAT) with 17 users consisting of healthcare providers who will be using the application in the future. The results were determined through a System usability Score (SUS) and with a resulting score of 71.53 or "OK", the Sentinel application has met the requirements for the development of the Web and Mobile application, with recommendations of optimization for IOS users, the addition of video call features, file uploading features through messaging, and brochure recommendations adjusted to the patient's condition.

Keywords: Hypertensive, Telehealth, Cardiovascular, Healthcare, Patients, Web Application, Mobile Application.

PAPER ID: 78

MATHEMATIC EDUCATIONAL GAME APPLICATION FOR PRIMARY SCHOOL SLOW LEARNER

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Slow learner is a person who have low level intelligence of thinking skills compare to other people

at average age rate. In Malaysia, slow learner has been recognized as a student who need special education. Ministry of Education has created class for special needs in several schools in order to help them in learning. In class, slow learner students have difficulty in memorizing and understanding a topic especially in mathematic subject. Using a new technology as educational tools will help them in better understanding of a concept. Implementing educational game application in learning will help them more focus and enjoy. However, an educational game that focus on mathematic for slow learner are rarely found. Therefore, the aim of this paper is to develop an educational game for primary school slow learner that focus on mathematics subject. This project implements ADDIE model for the development of the project. There are five phases include this model which are Analysis, Design, Development, Implementation and Evaluation. The testing and evaluation had been conducted at school at Temerloh, Pahang involved slow learner's students and a teacher. The result indicated that the students and teacher give positive feedback and they agree that this application help the slow learner to get better understanding in mathematic subjects.

Keywords: Educational Game, STEM, Game Based Learning, Slow Learner, Gamification, Special Education.

PAPER ID: 91

Serious Games and Preventive Self-Care for Diabetes: A Conceptual Framework

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The types of diseases that diabetes causes include cardiovascular disease, renal disease, visual impairment, peripheral arterial disease, peripheral neuropathy, and cognitive impairment. According to WHO statistics, there are 422 million adults with diabetes. Diabetes and high blood glucose contribute to 3.7 million deaths, while diabetes causes 1.5 million deaths. Diabetes risk factors include genetics, age, family history, and behaviours such as unhealthy diets and physical inactivity. Reducing early behavioural risk factors, such as educating people about appropriate dietary habits for diabetics, is also possible. To overcome this challenge, a unique approach to education is needed, and maintaining a healthy diet is essential. Main objective of this research is to propose a conceptual framework for serious games to educate on awareness in healthcare. The prototypes games namely as Grab2BeHealthy has been developed as a teaching tool, as well as a prevention tool, using the proposed framework to proof the concept. This game will educate player about the types of foods that lead to diabetes. Players must get a healthy food with a game and diabetes-related facts. To test and learn about a game engine, 50 people of different genders and ages from diverse backgrounds took part in an evaluation study. Thus, in this study, we mapped the characteristics of the prototype games with the framework for increasing healthy food understanding in order to decrease the occurrence of diabetes.

Keywords: Serious Games, Preventive Healthcare, Framework, Diabetes.

PAPER ID: 97

Usability Evaluation of The MeMo Tutor: A Scaffolding-Based Pedagogical Agent to Facilitate Learning

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Nowadays, distance learning faces challenges in increasing students' cognitive engagement and motivation. Research on pedagogical agents is one of the solutions offered to overcome the challenges. MeMo Tutor, the pedagogical agent in this study, acts as a scaffold using integrated metacognitive and motivational scaffoldings. This study was conducted to evaluate the usability of the MeMo Tutor by measuring the level of user satisfaction when using the application. Measuring usability helps determine how usable (e.g., effective, efficient, easy to learn) the system from users' perspective, determine whether any issues need to be fixed, and monitor the performance of the system design over time. The usability evaluation process involved thirteen participants in the first iteration and fifty-six participants in the second iteration. Evaluation data were collected and analyzed using an online prototype analytical tool and System Usability Scale (SUS). In the first iteration, the usability score shows that users were often confused by ambiguous words, especially if the words were close together. This study shows that the average usability score of the online prototype analytical tool correlates well with the average SUS score in the second iteration. The usability results obtained were 88 from the online prototype analytical tool and 81.16 from SUS. The score indicates that users were satisfied with the MeMo Tutor application. We recommend focusing on developing mobile-based or responsive web interfaces to improve user experience. In addition, it is necessary to examine the relationship between the learner's experience and the learning achievement obtained by the user after using the MeMo Tutor.

Keywords: Usability Evaluation, Pedagogical Agent, SUS, Analytical Prototipe Tool, Memo Tutor, Online Learning, Scaffolding, Metacognitive, Motivation.

PAPER ID: 114

The Effectiveness of BIPA Learning Based on Blended MOOCs Learning Model

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This study aims to find out the effectiveness of BIPA learning based on the Blended MOOCs (Massive Open Online Courses) learning model. BIPA learning is Indonesian language learning for foreign speakers. The research method used was quantitative research with survey techniques and

Paired Sample T-test. The survey to assess students' perceptions of the effectiveness of BIPA learning based on the Blended MOOCs learning model. While the Paired Sample T-test was carried out on BIPA learning outcomes to determine the increase in BIPA learning outcomes that were applied to the Blended MOOCs learning model. The research population is 7 students who study and 5 BIPA teachers who teach with the Blended MOOCs model. The results showed that BIPA learning based on the Blended MOOCs learning model was considered effective because of the following factors: learning environment (18%), good teaching system (17%), curriculum (17%), student motivation (16%), general skills (16%)), and the scoring system (16%). Based on the results of the Paired Sample T-test, it was known that the pretest-posttest Sig value of 0.009 < 0.005 meant that there was a significant difference between learning outcomes in pretest and posttest data for BIPA students who studied with the Blended MOOCs learning model. The results of the study concluded that Blended MOOCs-based BIPA learning was effective in improving the Indonesian language learning outcomes of BIPA students.

Keywords: Games, Serious Games, Software Engineering, Software Development Life Cycle

PAPER ID: 105

Learnability Factors of AR Usage Performance: Validating Through Survey

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Augmented Reality has become an important learning medium in both educational and learning domain. AR has been in use within the game technology since long. Moreover, greater prospects of AR have been seen during learning and training, specifically in the developed countries. AR has contributed in enhancing the learnability of the users. In order to understand the impact of AR usage, this work starts by preparing the list of factors that influence the learnability with the AR usage. The list of seven (7) factors were identified through Literature Review (LR) using Kolb's Experiential Learning Theory (ELT) 1984. Survey method was used to validate the factor's questions, Next, the validated questions were given to student and academicians for answering through another survey for factor validation. Results showed the identified factors (Motivation, Better lab experience, Enhanced Focus, Satisfaction, Enable Visualization of Invisible Concepts, Better Learning and Performance and Confidence) within the Proposed Learnability Enhancement Model (LEM). Additionally, all the questions were validated with acceptance by experts and 32 academicians through the survey 1. Also, all the factors were accepted with 94% and above acceptance rate in survey 2. The significance of identifying these AR acceptance factors for enhancement of learnability will impact better learnability and performance with AR usage, the study will continue with testing the LEM efficiency through the simulation of AR usage on the real environment in the next phase of this work.

Keywords: E-Learning, BIPA, Blended MOOCs.

PARALLEL SESSION 3

SESSION 3A: IOT, BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE

PAPER ID: 73

An Organ Donation Management System (ODMS) based on Blockchain Technology for Tracking and Security Purposes

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Blockchain is a promising technology for assisting in deploying electronic medical records, particularly in terms of data integration and privacy. Several scholarly articles on the adoption of blockchain for medical records data management have demonstrated that using this technology will provide patients with complete ownership over their medical information. To make it efficient and sharp, the data must be consistent and correct throughout the data exchange process. To amplify the storage features, decentralized data storage is the most appropriate technique to store the data. Currently, the Organ Management System employs a client-server architecture. Because this type of technology stores data on a server, the data is lost and quite challenging to recover if the server crashes. This study proposes a blockchain-based organ donation management system (ODMS).

Keywords: Blockchain, Security, Organ, Medical, Industrial Revolution (IR4.0).

PAPER ID: 74

OriFeat: Origin of Replication Identification Using DNA Sequence Based Features

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In the genome of every species, there exists an origin, known as the origin of replication (ORI), from where the genome starts to replicate itself during the process of cell division. Finding out this origin is very important as this is the main responsible key-factor for DNA replication. In this paper, we propose a novel approach, OriFeat to predict the origin of replication. OriFeat uses a set of inexpensive features that are generated from sequences only and an effective feature selection method. The selected features are then trained by using a logistic regression classifier. We perform our experiments with a benchmark dataset of a yeast named Saccharomyces cerevisiae, and achieve 98.15%of accuracy with 10-fold cross validation. We also show a comparative study using a large number of classifiers. OriFeat significantly outperforms state-of-the-art methods

Keywords: Feature Selection, Origin of Replication, DNA Sequences, Classification.

PAPER ID: 245

NON-LINEAR AUTOREGRESSIVE WITH EXOGENOUS INPUT (NARX) CHILLER PLANT PREDICTION MODEL

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A chiller plant is a centralized system used for air cooling systems, commonly, for covering a large area of building with various components such as chillers, cooling towers, pumps, and chilled water storage tanks. Each component has several sensors or indicators with status information. Users can use the information to plan for maintenance and as guidance during troubleshot if an event occurs. It is crucial to ensure the chiller plant is operating efficiently without any faulty especially in critical buildings such as a hospital. The main problem of the chiller plant is to conduct preventive maintenance for avoiding the chiller plant failure and breakdown unexpectedly. Based on the literature, approximately 80 components in the chiller plant has found as the possible reason for the chiller plant faulty. In the current research, modeling chiller plants has been done by several researchers, objectively for preventative maintenance purposes. Study case for this project is for a chiller plant at Hospital Raja Permaisuri Bainun, Ipoh, Perak, Malaysia. A model for the proposed chiller plant system is to be designed using System Identification (SI) technique based on Nonlinear Autoregressive with Exogenous Inputs (NARX). Validation result shows, the proposed chiller plant system can be modelled and to be used as One Step Ahead prediction tool with residual Mean Square Error (MSE) of 1.018E-3 for training set and 1.017E-3 for testing set.

Keywords: Chiller Plant, Non-Linear AutoRegressive Model with Exogenous Inputs(NARX), Neural Network.

PAPER ID: 83

Tree-based Ensemble Learning for Stress Detection by Typing Behavior on Smartphones

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Stress is an emotional feeling that arises in a person in response to unpleasant external pressures or demands. Stress can be obtained from environmental, work, academic, economic, and other problems. The COVID-19 pandemic, which is changing people's lifestyles, has a major impact on people's mental health. The experiments used 1522 respondents that related to stress problems due to the COVID-19 pandemic from the Indonesian Association of Mental Medicine Specialists (PSDKJI), the prevalence reached 64.3%. There are many different ways to detect stress, but most of them require special tools to identify it. This paper presents a prediction based on machine learning for identifying the stress levels by typing behavior data on a smartphone keyboard. This study uses tree-based ensemble learning to make predictions. Based on the experimental results, the Random Forest model produces the best accuracy with a value of 94.77%. The most influential feature of the model is the standard deviation feature of the gravity sensor on the Z-axis.

Keywords: Stress Detection Software, Smartphone Sensor, Machine Learning, CRISP-DM, Random Forest.

PAPER ID: 98

C PROGRAMMING SKILL LEVELS DETERMINATION USING FUZZY LOGIC

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Programming language is known among computer science students. One should know at least one programming language throughout their studies. However, mastering one program-ming language is challenging. Most of the new student find challenging to learn and understand the language as they are not familiar with it. This can cause a problem throughout their studies or even in future jobs. Thus, implementing artifi-cial intelligence to identify students' understandability level towards programming skills is expected to improve their knowledge and weakness about that programming language. This paper presents proposed work for designing the level of programming knowledge for new computer science student. The level of programming knowledge is identified and ana-lyzed based on the student input. The fuzzy logic approach is employed in this study to obtain the target result based on several criterion. Several tools are used to develop the plat-form for collecting user input data. The output of this work shows that the student can identify their element on each spoke and the programming language level with a short de-scription by displaying data visualization as the output to user in the radar chart.

Keywords: Programming Language, Machine Learning, Artificial Intelli-Gence, Fuzzy Logic, Membership Function, Fuzzy Rule.

PAPER I

Application of Internet of Things for Early Detection of COVID-19 using Wearables

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D:139

As the latest pandemic spreads, the world's governing bodies have been forced to impose strict social distancing measures. This has impacted businesses and manufacturing industries worldwide, including Bangladesh's RMG sector. To aid in the rapid spread of this infectious disease, this paper illustrates a simulation of an IoT system centered on wristbands specifically designed to detect early symptoms of COVID-19 (SARS-CoV-2). The system, which includes a facemask detection system and a thermal camera, identifies potential employees who may be at risk of contracting the COVID-19 virus. We simulated the wristband system using a simulation software in order to conduct a few test cases to ensure its feasibility. The wristbands' results were largely consistent with expectations, demonstrating their ability to monitor a wearer's vitals throughout the day. When combined with an attendance system and a face mask detection system, the wristband system enables a workplace to track its employees and detect possible infected workers.

Keywords: Iot, Iiot, COVID-19, SARS-COV-2, Wearables.

PAPER ID: 14

User Authentication Model based on Mobile Phone IMEI Number: A Proposed Method Application for Online Banking System

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The conventional banking structure is improved with the incorporation of elements of electronic banking, such as transfers over the counter using bank books, where all transfers can now be carried out through the network due to globalization and the development of information and communication technologies. Major risks to this infrastructure, however, often arise at the same time, such as from financial fraud. Therefore, it is important to create trust among banking users by offering security mechanisms. Security frameworks in electronic banking concentrate primarily on demonstrating a safe environment for online transactions, especially the authentication of the user. Several scholars have recommended several methods for the banking industry to authenticate online consumer access. Most of the experiments are based on standard username and password types, but with various password type mechanisms. Password in arbitrary value through a protected channel, for example, as well as biometrics such as retina recognition, speech recognition, or fingerprint recognition. In this paper, we introduced our own model for online user access authentication for the banking industry. The gaps of the current research are identified, and finally, the new authentication model is proposed based on the research gap. The significant difference of the proposed model is that this model provides security to user access without entering a username and password.

Keywords: Banking Security, User Authentication, Banking Method, Mobile Banking.

PAPER ID: 36

An Image Watermarking based on Multi-level Authentication for Quick Response Code

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This research presented a digital watermarking scheme using multi-level authentication for protecting QR code images in order to provide security and authenticity. This research focuses on the improved digital watermarking scheme for QR code security that can protect the confidentiality of the information stored in QR code images from the public. Information modification, malicious attack, and copyright violation may occur due to weak security and disclosure pattern of QR code. Digital watermarking can be a solution to reduce QR code imitation and increase QR code security

and authenticity. The objectives of this research are to provide QR code image authentication and security, tamper localization, and recovery scheme on QR code images. This research proposed digital watermarking for QR code images based on multi-level authentication with Least Significant Bit (LSB) and SHA-256 hash function. The embedding and extracting watermark utilized region of Interest (ROI) and Region of Non-Interest (RONI) in the spatial domain for improving the depth and width of QR code application in the anti-counterfeiting field. The experiments tested the reversibility and robustness of the proposed scheme after a tempered watermarked QR code image. The experimental results show that the proposed scheme provides multi-level security, withstands tampered attacks and it provided high imperceptibility of QR code image.

Keywords: Digital Watermarking, QR Code Image, Multi-Level Authentication, Watermark Recovery, Tempered Image, Security.

PAPER ID: 99

Performance Analysis on Denial of Service attack using UNSW-NB15 Dataset

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With the advancement of network technology, users can now easily gain access to and benefit from networks. However, the number of network violations is increasing. The main issue with this violation is that irresponsible individuals are infiltrating the network. Network intrusion can be interpreted in a variety of ways, including cyber criminals forcibly attempting to disrupt network connections, gaining unauthorized access to valuable data, and then stealing, corrupting, or destroying the data. There are already numerous systems in place to detect network intrusion. However, the systems continue to fall short in detecting and counter-attacking network intrusion attacks. This research aims to enhance the detection of Denial of service (DoS) by identifying significant features and identifying abnormal network activities more accurately. To accomplish this goal, the study proposes an Intrusion Analysis System for detecting Denial of service (DoS) network attacks using machine learning. The accuracy rate of the proposed method using random forest was demonstrated in our experimental results. It was discovered that the accuracy rate with each dataset is greater than 98.8 percent when compared to traditional approaches. Furthermore, when features are selected, the detection time is significantly reduced.

Keywords: R Dos, Malware, UNSW-NB15, Cyberattack.

PAPER ID:

Secure Storage of Data on Devices-Android based

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Security in today's world is one of the most important considerations when one wants to send, receive and store files containing private information or files simply too large for an email attachment. People are becoming more and more dependent on their mobile phones for performing the mentioned critical functionalities. Therefore, it is very important to protect sensitive information when the mobile is lost or stolen. There are many algorithms and methods used to accomplish data security in mobile devices. In general, cryptography and steganography are two common methods used to secure communications. Recently, the field of biology has been combined with the field of cryptography to produce a new field called deoxyribonucleic acid (DNA) cryptography which is one of the most powerful tools to solve security problems.This paper proposes a DNA cryptography technique for securing data stored offline in the Android device where users are not aware of the confidentiality of their private data. It is very difficult to predict the one-time pad key that is used as randomly generated and just for one-time. The proposed algorithm uses DNA mapping for dealing with the data as a DNA sequence. Two approaches have been proposed for achieving desired outcomes.

Keywords: Android Security, DNA Coding, OTP Key, Encryption, Decryption.

PAPER ID: 192

Hilbert-Peano and Zigzag: Two Approaches Mapping Pattern of Digital Watermarking for Text Images Authentication

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With the global increase of information and communication technology nowadays in line with the usage of digital documents, the user from different organizations such as education, military, medical, business, and others tend to transfer any official file through various digital platforms. Thus, to secure this confidential data, a digital watermarking technique was chosen. This paper proposed an improved mapping pattern method of a fragile watermarking authentication algorithm for text images. They are various methods for watermark embedding, which mapping pattern is one of them. The main objective of this paper is to validate and compare the SCAN pattern for digital watermarking in other to produce a fast and efficient authentication algorithm. We proposed a Zigzag SCAN pattern algorithm and compared it with the proposed Hilbert_Peano scheme. The result from this paper shows that our proposed method contributed to a much better performance in terms of processing time, while PSNR and MSE are almost the same.

Keywords: Digital Watermarking, Authentication, Text Image, SCAN Pattern, Zigzag.

PAPER ID: 243

Comparison on Machine Learning Algorithm to fast detection of Malicious Web Pages

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The advance growth of technology today, has simply brought to the increasing of the Internet and online activities such as in business, management, education and other areas. However, this has exposed to the malicious activities and online threat to the users which will disrupt the method of every system and performance. Accurate and fast detection on such threats in a timely manner is vital. Furthermore, the scale of the web pages (i.e huge data) and with heterogeneous nature of the web itself has complicate the detection process, and unable to detect accurately. Defining features in detecting malicious web pages is a vital condition in order to generate accurate detection result. These may lead to misdetection of malicious web as it only focusses on certain criteria of feature selection. Furthermore, previous approached have used blacklist technique which a conventional method and have shown promising result in detecting malicious webpages. Therefore, implementing the principle of the machine learning, which is training the classification algorithm will be perform to improve the detection accuracy. Output will be evaluated using correctly classified instances, incorrectly classified instances, and the time taken to build the dataset, and the result will be discussed. The WEKA (Waikato Environment for Knowledge Analysis) will be used for testing and generating the comparison output. Selected dataset from well-known resources will be used based on identified features in order to verify the web pages form legitimates ones. Compared to several decision tree method, Random Forest has shown promising and higher sensitivity result towards malicious data which is 98.3% compared to other classification algorithm

Keywords: Malicious Web Pages, Machine Learning Algorithm, And Decision Tree Classifier.

PAPER ID: 165

Review on Skyline Query Processing Techniques over Data Stream

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Data stream management has received considerable attention lately, due to continuous sources of collection and devices and is delivered in a different variety of formats to be process within small period of time. Interesting objects will be extract from the continuous data stream by processing the skyline query. However, skyline query processing over data stream poses inherent challenges and demands and require non-traditional techniques. This paper reviews the aims and challenge of skyline approaches that are relevant for data stream. Moreover, studies on the types of queries, type of data and type of sliding window were presented. Finally, an interesting research topic over data stream that have not yet been explored is identified.

Keywords: Data Stream, Skyline Query Processing, Uncertain Data Stream.

PAPER ID: 166

Comparison of the use of bigrams and stopword removal for Classification using Naive Bayes (Case Study on Sentiment Analysis of By.U internet users)

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With the rapid growth of the number of youth, several providers have launched digital service provider innovations. By.U as a pioneer has been serving this segment for the past year, and its presence has received various responses from netizens. This response, if researched, can improve services and lead to other innovations. However, no research addresses this. Therefore, a final project was written regarding Sentiment Analysis on the provider by.U. In this reearch, a classification model was made with 3804 data using Naive Bayes Classifier and TF-IDF with Bi-Grams. The comparison was made by eliminating one of the preprocessing steps: stopword removal. The comparison found that TF-IDF and Bi-Grams without the application of stopword removal had the best performance values. The best performance value is obtained in the split validation scenario 90:10 with accuracy 86.88%, Precision 88.24%, recall 83.33%, and f1-score 85.71%.

Keywords: Sentiment Analysis, By.U, Classification, Naïve Bayes, TF-IDF, Bi-Grams.

PAPER ID: 167

Bangladesh Crime Reports Analysis and Prediction

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The systematic method of detecting crime, evaluating crime patterns, and anticipating crime trends is known as crime analysis and prediction. Crime is inherently unexpected and causes societal disruption. As Bangladesh's population grows, so does the prevalence of crime, which is wreaking havoc on our society in various ways. As a result, analyzing crime data has become crucial for a better understanding of future crime patterns. Machine learning and data mining techniques can be quite useful in predicting future crime trends and patterns in this situation. Various machine learning algorithms are utilized in this study to predict future crime patterns in Bangladesh. The crime statistics are gathered from the Bangladesh Police website to analyse and predict dacoity, robbery, murder, women and child repression, kidnapping, burglary, theft, and other crimes in Bangladesh's various regions. Another dataset from ACLED has been used to predict different kinds of events such as battles, explosions, protests, riots, strategic developments, violence against civilians with geolocations of the events. This research might assist Bangladesh police and law enforcement authorities to predict, prevent, and solve future crimes. The performance and success rate of the project are highly satisfactory. All resources of the project can be found at https://tinyurl.com/297yykmu.

Keywords: Bangladesh, Crime Prediction, Analysis, Bangladesh Police, ACLED, Crime Report.

PAPER ID: 168

Enhanced Colour Scheme Assessment Tool (COSAT 2.0) for Improving Webpage Colour Selection

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In website graphics, colour is utilized in coding to indicate or signal a user, and to augment the aesthetics of display. Correct determination of colour cause increment in usability as well as to ensure the selection of colour is suitable and its accessibility. However, incorrect determination of colour can decrease the data comprehensibility indistinctly, therefore, colour selection for a website is a crucial component to consider. Enhanced Colour Scheme Assessment Tool (COSAT 2.0) embodies the colour rules and colour selection guideline with an aim to improve the usability of the web page on colour selection by considering the colour combination, colour contrast, and colour luminance. The software development lifecycle used in developing the system is the agile methodology for this study. It takes a webpage and uses the rules of colour as limitations in determining colours selection based on the colour scheme guideline. The result reveals that the

webpage testing feature and colour palate testing feature rates at an average of 4.13/5 (about 83%) and 4/5 (80%) respectively. This result indicates that the features function well, and the users find the features useful in terms of functionality. Furthermore, the overall rating is given by respondents (from UAT evaluation) averages at 3.67 out of 5 which is more than 70% satisfied with the performance of COSAT 2.0. when using this tool, its overall performance, and its functionalities.

Keywords: Web Usability, Web Design, Colour Selection, Colour Scheme, Colour Combinations, Colour Scheme Guideline.

PAPER ID: 181

Computer-aided system for extending the performance of diabetes analysis and prediction

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Every year, diabetes causes health difficulties for hundreds of millions of individuals throughout the world. Patients' medical records may be utilized to quantify symptoms, physical characteristics, and clinical laboratory test data, which may then be utilized to undertake biostatistics analysis to uncover patterns or characteristics that are now undetected. In this work, we have used six machine learning algorithms to give the prediction of diabetes patients and the reason for diabetes are illustrated in percentage using pie charts. The machine learning algorithms used to predict the risks of Type 2 diabetes. User can self-assess their diabetes risk once the model has been trained. Based on the experimental results in AdaBoost Classifier's, the accuracy achieved is almost 98 percent.

Keywords: Diabetes, AdaBoost Classifier, Random Forest Classifier, K-Nearest Neighbors Classifier, Bernoulli NB, MLP Classifier and Impact Learning, Cloud Computing.

PAPER ID: 188

Applications of Artificial Neural Networks in Engine Cooling System

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Artificial neural network (ANN) is a powerful method for nonlinear regression, classification, object detection, and clustering and widely used in thermal analysis of cooling system. Cooling system is an invaluable part for removing waste heat from an internal combustion engine. From few decades

ago to till now, engine cooling system is becoming more and more advanced for developing higher-performance engine. To enhance the engine cooling system, ANN is a promising method. In this context, this paper presents a brief survey, which reviews the ANN based engine cooling system. For this purpose, we describe the different types of ANNs which are pertinent to engine cooling system. Different evaluation metrics which are used to evaluate the performance of ANN in engine cooling system as well as the activation functions and modelling of ANN are also introduced in this paper. Furthermore, the basic of engine cooling system and different applications of ANN in cooling system are described briefly. Finally, some limitations of ANN and future research scope are also presented here.

Keywords: Artificial neural network, engine cooling system, ANNs, FFNNs, RNNs, RBFNNs

PAPER ID: 68

Mobile Health Monitoring and Treatment System for COVID-19 Symptoms Identification

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Due to the current issue of COVID-19 virus, it is unadvisable to consult with a doctor at medical facilities such as clinics and hospitals unless the situation is really dire. This is because medical facilities are the most likely environment to be contracted with the virus. Hence, people are forced to undertake drastic measures by turning to the internet for solutions regarding their situation. People often misdiagnose themselves as they tend to opt for the dangerous and extreme results due to fear and paranoia. The purpose of this study is to develop a friendly mobile application which can help the user to identify their health status based on the inputs that they have keyed in such as symptoms, days passed with the symptoms, etc. Using the testimony given by the user, the system will then announce if they are safe from the COVID-19 virus or not. Additionally, it will also provide some effective medical advices in tackling the issue at hand. With the aid of this application, users would not need to consult with doctors to help diagnose themselves in order to determine the probability of being infected, and could quickly pop in to the pharmacy and make a quick purchase of medicine(s) if their current health condition is not dire. Though, it is still recommended for citizens to do a check-up at the medical facilities if the disease afflicted is severe. Besides, this mobile application would be accessible at all times as it does not require the connectivity to the internet to function. Therefore, enabling the user in avoiding the worst-case scenario from unprofessional self-diagnostic.

Keywords: Covid-19, Mobile Application, Iot, Prediction.

PAPER ID: 67

Hybrid Multi-Verse Optimizer for Covid19 Confirmed Cases Prediction: Cases in Malaysia

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At the end of 2019, World Health Organization (WHO) was notified of pneumonia cases of unknown cause in Wuhan City, China. These cases are later appalling the world globally, known as Covid19. In no time, the virus spread all over the world, which consequently caused many countries to declare lockdown. Even though there is time the number of cases is small and

economic activities can operate in an optimum range, nonetheless until today, the number of cases is still up and down which finally caused many countries to face with sequence of wave, including Malaysia. In this study, a prediction model for confirmed cases of Covid19 in Malaysia based on hybrid Multi-verse Optimizer-Least Squares Support Vector Machines (MVO-LSSVM) is proposed. The proposed model was realized on Malaysia daily data of confirmed cases recorded by WHO. Compared against two comparable prediction models namely hybrid Grey Wolf Optimizer (GWO) with LSSVM (GWO-LSSVM) and Salp Swarm Algorithm with LSSVM (SSA-LSSVM), the obtained results demonstrated the superiority of MVO-LSSVM over the identified algorithms by producing lower prediction error rates.

Keywords: Covid19, Least Squares Support Vector Machines, Multi-verse Optimizer, Prediction.

PAPER ID: 72

Identifying Influencers on Twitter for Covid-19 Education and Vaccination Using Social Network Analysis

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The Corona Virus Pandemic (COVID-19) causes changes in social interactions in society to become virtual, which has a serious impact on individuals, communities, and even countries, including the decline in the economy, loss of jobs, difficulty praying due to policies prohibited from gathering, and many lives being taken. A total of 119 million cases, 64.6 million recovered, and 2.54 million died, causing COVID-19 to become the worst pandemic, surpassing its predecessors SARS and MERS. Research on vaccines has been carried out, and in 2021 the vaccination process begins to be used by countries around the world. Still, there are problems where there are countries that dominate vaccines, so that small countries find it difficult to get vaccine rations, which then results in a slow process of vaccines in one country. The state, and exacerbated by the emergence of the anti-vaccine movement by a group of people, even some councils in the government reject the vaccine process, making COVID-19 cases increase. Therefore it is important to channel information about the usefulness of vaccines in fighting the spread of the coronavirus in society through digital advertisements, social media, and other media by utilizing community leaders who are much closer to interacting and becoming idols so that this research will focus on finding potential public figures discussing COVID-19 on the Twitter platform, with the hope that in the future it can be utilized as a basis for government agencies to invite these community leaders to collaborate in disseminating the vaccination program.

Keywords: Covid-19, Education And Vaccination, Social Network Analysis, Influencer, Degree Centrality, Graph, Network.

PAPER

RSU-aided Mobility-aware Dynamic Resource Allocation for Vehicular Cloud Services

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Efficient allocation of resources among the competing applications can pose many challenges in realizing vehicular cloud services (VCS). First, high mobility of vehicles and frequent change in topology makes formation and maintenance of vehicular cloud difficult. Second, applications representing vehicular cloud services are highly heterogeneous in nature in terms of resource requirements. Finally, available amount of resources at a particular time may be less than the required

resources. In this paper, we have studied the behaviour of dynamic resource allocation strategies in a vehicular cloud scenario, where a road side unit (RSU) will coordinate the information gathering and resource allocation among the competing services. We have used bandwidth as a resource and vehicles willing to share excess bandwidth will act as service vehicles. Vehicles requiring bandwidth will act as client vehicles and will broadcast their needs to the RSU mentioning minimum and maximum requirements of bandwidth. The RSU will use dynamic resource allocation algorithms to distribute the client vehicle service tasks to suitable service vehicles. Three different algorithms have been proposed based on different performance parameters. We have simulated and tested the performance of the proposed algorithms in different vehicular cloud scenarios and discussed the results to gain some insights on dynamic resource provisioning for vehicular cloud services.

Keywords: Vehicular Cloud Services, Road Side Unit, Resource Allocation, Mobility.

PAPER ID:90

Reducing Docker Daemon Attack Surface Using Rootless Mode

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Containerization technology becomes one of alternatives in virtualization. Docker requires docker daemon to build, distribute and run the container and this makes the docker vulnerable to an attack surface called Docker daemon Attack Surface - an attack against docker daemon taking over the access (root). Using rootless mode is one way to prevent the attack. Therefore, this research demonstrates the attack prevention by making and running the docker container in the rootless mode. The success of the attack can be proven when the user is able to access the file /etc/shadow that is supposed to be only accessible for the rooted users. Findings of this research demonstrated that the file is inaccessible when the docker is run using the rootless mode. CPU usage is measured when the attack is being simulated using the docker run through root privileges and rootless mode, to identify whether the use of rootless mode in the docker adds the load of CPU usage and to what extent its increased. Results showed that the CPU use was 39% when using the docker with the rootless mode. Meanwhile, using the docker with the right of the root access was only 0%. The increase of 39% is commensurate with the benefit that can prevent the docker

daemon attack surface.

Keywords: Docker, Container, Daemon, Rootless, Root, Privilege.

PAPER ID: 55

Framework of the Employee Attendance System with QR Code in the Pandemic Covid-19

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Attendance system is the process of identifying an employee's attendance as one of the foundation of the company in providing salary and other rewards. The problem of this research is working "work from office" priority in maintaining the health protocol of the new normal era covid-19 in the industrial world avoiding crowds, using non-touch attendance technology, and eliminate cheating in employee attendance data. The purpose of this paper is to develop a framework for employee attendance system in the pandemic period by considering the safety and accuracy of the data. Less contact economy minimizes direct interaction between employees and touch with the attendance device. The research methodology uses the approach of developing an attendance system framework using an android smartphone, qr-code scanner, RaspBerry Pi application server. The result of writing is a framework for employee attendance systems using a personal smartphone through detection from a QR-Code system scanner.

Keywords: Framework, Attendance, QR-Code, Covid-19.

PAPER ID: 46

Smell Sensory System In m-Commerce- A Case Study

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This paper analyzing two purposes. Purpose-i, the way by which the customers could buy perfume online; the basic level of smell could be identified then made combination and bringing to the multiple levels of smells. It discusses how to record the smell from the basic level to the multiple levels in smells, it could be done by deploying the autocorrelation method and recorded as binary bits then it could be stored as a data set in the memory, so that users could select/customize their desired perfume through online from any corner of the world; it could be given as a decimal number/ flavor names/ pointing some pictures of a flower at the user interface mode or sense the scent and choose the desired perfume by using our atomizer, o/p device directly. Then purpose-ii, a patient could be identified about his molecule range by his body odor/excrete matter's odor online, which could help the physician to diagnose the patient's health issue. This terminology could be referred as i/p device OIA, Olfaction Identifier & Analyzer. So that anybody could test their molecule range online. This paper is analyzing the smell sensory nervous system and also leads to a new output device (atomizer), and an input (OIA) device (to be implemented) to spray and absorb the smell through the mobile device respectively. Thus the commercial work could be successfully done either it's buying a perfume or finding the molecule range of health condition.

Keywords: Atomizer, OIA, Correlation, Dataset.

PAPER ID: 89

FRAMEWORK OF STRATEGIC ALIGNMENT THROUGH ENTERPRISE ARCHITECTURE FOR ORGANIZATION PERFORMANCE

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One of the topics in strategic planning of information systems is alignment between business and IT (or so-called business-IT alignment). Business-IT alignment is manifested by the strategic alignment between IT and Business, which is generally seen as an important and desirable factor as a driver in optimizing business performance. This strategic alignment related to the harmony between internal resources capabilities and external opportunities towards excellent performance. To realize the alignment of Business and IT strategies, a framework is needed, namely Enterprise Architecture (EA). Many studies have focused on aligning business and IT through EA, but none

has discussed how to relate it to organizational performance. Meanwhile, the goal of IT investment is to improve organizational performance by aligning IT with the business. For this reason, the solution is to develop a framework for alignment between business strategy and IT strategy through EA by linking organizational performance. The resulting output is a framework used to align business and IT and their relationship to organizational performance. This business and IT alignment framework are built through EA.

Keywords: Enterprise Architecture, Strategy Alignment, Business Strategy, IT Strategy, Organization Performance, Cloud Computing.

PAPER ID: 130

Factors influencing SaaS adoption by MSMEs

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Cloud computing has been around for quite long, yet some organizations have never used it, especially MSMEs in Indonesia. Several factors hinder its implementation by MSMEs, including unequal infrastructure for using the internet in Indonesia. This paper assesses the literature on cloud

computing, SaaS, e-Commerce, and e-wallet to determine the initial factors that affect technology implementation. The results showed that the frameworks widely used to obtain and assess variables include the DOI, TAM, and TOE. Furthermore, compatibility and the pressure from competitors to adopt technology are the highly considered variables. However, perceived usefulness and ease of use is also considered in implementing e-commerce and e-wallet.

Keywords: Cloud computing, SaaS, e-wallet, e-commerce, adoption frameworks, MSMEs.

PAPER ID: 189

Components for COVID19 Outbreak Control Model: A System Dynamics Perspective

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The world is facing a massive challenge as the COVID-19 outbreak strikes across the globe. Many efforts have been made to detect, control and contain the coronavirus proactively and aggressively

before a further catastrophe occurs. Indeed, ending the global COVID-19 pandemic is not a simple task. It requires adequate planning and implementation of sustainable strategies and interventions to control COVID-19 from keep spreading globally. One way to address this issue is using System Dynamics (SD). This paper presents an initial COVID-19 modelling work in the formulation stage of SD methodology. A literature review was carried out on published and unpublished papers to understand the essential outbreak model design structure. Within this process, a total of 15 COVID-19 models in SD were gathered and analysed. As the outcome, this paper highlights the components of the conceptual representation model for the COVID-19 outbreak, which later can serve as the core basis for modelling complex COVID19 outbreak dynamics and interventions for future development. As an implication, a comprehensive model can be developed to support decision making.

Keywords: Conceptual Representation Model, Model Components, Model Structures, COVID-19 Model, System Dynamics.

PAPER ID: 161

e-hailing from Service Quality Perspective: A Malaysia n Based Study

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On-demand vehicle acquisition with a driver on internet-based platform (e-hailing) has become one of the standard transport modes nowadays. Accordingly, different stakeholders have shown high interest in this concept, including the research community; thus, several types of research have been carried out from different perspectives. The current researchers investigate this phenomenon from Service Quality Perspective. Finding the antecedents of user/passenger use intention is the main objective of this study. A conceptual framework was developed mainly based on RECSA model. Affordability, Reliability, Safety, and Service were considered as the antecedents of customer intention to use. The proposed model was tested using data collected from 352 Malaysian university students. The outcome of the path analysis performed using SMART PLS (3.0) proved that all four factors considered in this study are statistically significant antecedence of user intention.

Keywords: e-hailing, Service Quality, Malaysia, RECSA.

PAPER ID: 10

Inventory Visibility Scenario to Reduce Safety Stock in Supply Chain Network Using Blockchain Hyperledger Composer

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Limited inventory visibility in supply chain networks increases stock levels and leads to negative

consequences of stock repetition, bullwhip-effect, inventory backlog, and out of stock situations. It is essential to increase the inventory visibility and reduce the safety stock level to exchanged inventory data between supply chain stakeholders to achieve inventory accuracy and efficiency accordingly. This paper presents a technical implementation of inventory visibility scenario to reduce safety stock level in Blockchain-based supply chain network. The proposed inventory visibility scenario provides access to accurate and up to date inventory levels and reduces the safety stock level accordingly. The scenario implemented using Blockchain Hyperledger Composer and tested in Blockchain Hyperledger Composer Bluemix. In the performance evaluation, the inventory visibility scenario compared to Cloud-based and traditional supply chain models in terms of reducing the safety stock level. Scenario results show improved inventory visibility and significant reduction in inventory safety stock compared to other models. This reduction prevents negative consequences of stock repetition, bullwhip-effect, inventory backlog, and out of stock situations which helps in efficient inventory management and hence improves supply chain performance.

Keywords: Supply Chain Management, Supply Chain Visibility, Blockchain, Smart Contact, Inventory Visibility.

PARALLEL SESSION 4

SESSION 4A: BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE

PAPER ID: 102

Word Embedding based Event Identification and Labeling of Connected Events from Tweets

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Events conceived as facts which are fine grained entities that happen around us such as completing graduation, birthday celebration, and death of an individual. Events are regarded as happening in a certain place, during a particular interval of time which can be occurred planned or unplanned way. Social media is a platform where users share their attending events with others. In this paper, we present a novel machine learning based approach to identify events from social media, i.e., Twitter, by using Bidirectional Encoder Representations from Transformers (BERT) based word embedding technique. Events might be connected with each other which might have real life implications such as identifying causal-effect, investigating criminal activities, etc. We also demonstrate a mechanism which can organize relevant events into a cluster based on their spatiotemporal properties. Later, we develop an unsupervised connected event labeling technique by using BERT word embedding approach by exploiting its semantic strength from the content of tweets. Our model shows an outstanding performance which has an accuracy of 91%. We also compare our approach with two competitive baseline techniques (i.e., word2vec and tf-idf) to identify events and our model shows better performance (on an average 5% better accuracy) than that of those baseline models.

Keywords: Event, Word Embedding, BERT, Classification, Twitter.

PAPER ID: 115

Deep Learning Models for Air Pollution Forecasting in Seoul South Korea

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Air pollution has been a major cause of health problems in several countries such as South Korea which is a country with rapid industrial and population growth, it urges the government to pay more attention to this issue. Due to the harmful effects of air pollution, many researchers conduct studies to predict the air quality index as an effort to prevent more severe health issues. In this paper, we propose three deep learning models, namely: Long Short-Term Memory (LSTM), Convolutional Neural Network (CNN), and combined CNN-LSTM to do air pollution forecasting.

We mainly focus on the performance of the models applied in the time-series forecasting task as a supervised learning problem. We use the data from Seoul Metropolitan Government collected hourly from 2017 to 2019 at some stations. The experiment was carried out on sulfur dioxide (SO2), carbon monoxide (CO), nitrogen oxide (NO2), ozone (O3), and two particulate matter (PM) concentrations. We evaluate our model using root mean squared error (RMSE) to compare the models' performance. The result shows that with normalization CNN model gives the lowest RMSE value, however without normalization the combined CNN-LSTM gives the lowest RMSE value. It proves that the model can predict the air quality index in Seoul South Korea.

Keywords: Air Pollution, Deep Learning, CNN, LSTM, RMSE.

PAPER ID: 134

Pixel-based Feature for Android Malware Family Classification using Machine Learning Algorithms

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'Malicious software' or malware has been a serious threat to the security and privacy of all mobile phone users. Due to the popularity of smartphones, primarily Android, this makes them a very viable target for spreading malware. In the past, many solutions have proved ineffective and have resulted in many false positives. Having the ability to identify and classify malware will help prevent them from spreading and evolving. In this paper, we study the effectiveness of the proposed classification of the malware family using a pixel level as features. This study has implemented well-known machine learning and deep learning classifiers such as K-Nearest Neighbours (K-NN), Support Vector Machine (SVM), Naïve Bayes (NB), Decision Tree, and Random Forest. A binary file of 25 malware families is converted into a fixed grayscale image. The grayscale images were then extracted transforming the size 100x100 into a single format into 100000 columns. During this phase, none of the columns are removed as to remain the patterns in each malware family. The experimental results show that our approach achieved 92% accuracy in Random Forest, 88% in SVM, 81% in Decision Tree, 80% in kNN and 56% in Naïve Bayes classifier. Overall, pixel-based feature also reveals a promising technique for identifying the family of malware with great accuracy especially using Random Forest classifier.

Keywords: Android Malware, Machine Learning, Naïve Bayes, Random Forest, Support Vector Machine, K-Nearest Neighbours, Decision Tree, Pixel-Based.

PAPER

Thermoelectric cooler identification based on continuous-time Hammerstein model using metaheuristics algorithm

ID: 1411

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This paper presents the identification of the Thermoelectric Cooler (TEC) plant using a novel metaheuristic called hybrid Multi-Verse Optimizer with Sine Cosine Algorithm (hMVOSCA) based continuous-time Hammerstein model. In the identification, a continuous-time linear system is used, which is more suitable for representing any real plant. The hMVOSCA algorithm is used to reduce the gap between estimated and actual output by identifying the coefficients of both the linear and the nonlinear Hammerstein model subsystems. Efficiency of the hMVOSCA algorithm also evaluated based on the convergence curve, bode plot of the linear subsystem, function plot of the nonlinear subsystem, and statistical performance value. The results demonstrate that the proposed hMVOSCA algorithm can produce the Hammerstein model that generates an estimated output like the actual TEC output. Moreover, the identified outputs also show that the hMVOSCA algorithm outperforms the conventional metaheuristic algorithms such as MVO and SCA by balancing exploration and exploitation and low searching capability.

Keywords: Thermoelectric Cooler, Hammerstein Model, Metaheuristics Algorithm, Multi-Verse Optimizer, Optimization.

PAPER ID: 53

Multipath TCP Scheduling Performance Analysis and Congestion Control on Video Streaming on the MPTCP Network

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TCP is a reliable protocol that works on a single communication stream to receive and send data. If either method is interrupted, communication will fail. On the other hand, a device such as a smartphone or laptop has multiple network interfaces that allow data to be transmitted over several lines simultaneously. Multipath TCP is an extension of TCP which can improve device performance to maximize transmission by sending data simultaneously through multiple network interfaces so that it will have an impact on throughput and reduce connection failures. MPTCP has scheduling features, some of which are minimum round-trip time (MinRTT) and Round Robin. MPTCP also has several types of congestion control algorithms such as Cubic, wVegas and Balia. With these mechanisms, MPTCP can provide better results on real time services such as video streaming. This study aims to compare the performance of each scheduling method, in which each scheduling mechanism will be combined with Cubic, wVegas, and Balia congestion control to run video streaming services. From the test results, Cubic has better throughput in both the minimum round trip and round robin times and is followed by wVegas and Balia. For the delay metric, Cubic performed best for both the minimum round-trip time and round robin, followed by Balia and wVegas. For packet transmission, wVegas gets the best performance for both round trip and round robin minimums, followed by Cubic and Balia.

Keywords: Multipath TCP, Scheduling, Congestion Control, wVegas, Balia, Cubic, round robin, MinRTT.

PAPER ID: 154

V-CRYPT: A Secure Visual Cryptography System

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Nowadays, peoples are very concerned about their data privacy. Hence, all the current security methods should be improved to stay relevant in this fast-growing technology world. Visual Cryptography (VC) is a cryptographic technique that using the image processing method. The implementation of VC can be varying and flexible to be applied to the system that requires an extra security precaution as it is one of the effective solutions in securing the data exchange between two or more parties. The main purpose of the development of V-CRYPT System is to improve the

current VC technique and make it more complex in the encryption and decryption process. V-CRYPT system will let the user enter the key, then select the image that they want to encrypt, and the system will split the image into four shares: share0, share1, share2, share3. Each pixel of the image will be splatted into a smaller block of subpixels in each of the four shares and encrypted as two subpixels in each of the shares. The decryption will work only when the user selects all the shares, and the correct text key is entered. The system will superimpose all the shares and producing one perfect image. If the incorrect key entered, the resulted image will be unidentified. The results show that V- CRYPT is a valuable alternative to existing methods where its security level is higher and the.

Keywords: Visual Cryptography, Cryptographic Techniques, Security, Election, Voting, Phishing Attack, Hacker.

PAPER ID: 63

Applying Bayesian probability for Android malware detection using permission features

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The tremendous rise of mobile technology has boosted malware and has raised the threat of malware. The proliferation of malware has given a great concern among mobile users. Various approaches have been applied to prevent malware spread, including firewalls, antivirus software and many more methods. Google has provided permission features as the main security to filter out the possibility of malware infected Android mobile. Nevertheless, some permissions are immediately granted by Android without user confirmation. To battle the malware issue, this paper aims to propose a malware detection system based on permission features using Bayesian probability. 96,074 samples retrieved from Androzoo were used in this study. By using static analysis, this study focused on permission features that are significant in Android applications. The experiments were conducted using chi-square as an algorithm and Naïve Bayes as a classifier. The accuracy of the detection is 85%. In conclusion, the detection of Android malware using the dataset has produced a good performance.

Keywords: Android Malware, Permission, Bayesian, Chi-square.

PAPER ID: 6

A Review: Static Analysis of Android Malware and Detection Technique

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Due to the extremely rapid growth of the Android operating system, Android malware issues have also increased in recent years. Android malware is run on a mobile device without the user's permission and poses significant risks to users, such as personal data disclosure and fraud. Furthermore, some malware may be hidden inside the mobile device using various obfuscation techniques and cause harm. To mitigate these risks, the researcher recommended a variety of detection techniques. Unfortunately, it remains challenging as Android malware continues to increase. Signature-based detection is currently used to detect malware, but unknown malware and the newest malware are not recognised in this approach. This demonstrates that developing an effective malware detection method is of crucial importance, with an enormous gap in recent studies and methods. This study aims to provide researchers with an overview of Android malware detection, the methods used, and the empirical experiments evaluation results of the Android malware detection method, focusing on static analysis. The research presented the trends of Android malware, Android vulnerabilities, static analysis approaches, and a summary of recent studies in static analysis. Moreover, future guidelines for researchers are suggested to improve Android malware detection in static analysis.

Keywords: Android Malware, Android Malware Detection, Static Analysis.

PAPER ID: 70

WiroTomo SourDuino: Instrument for Measuring the Acidic Level of Home-Industry Fruit Juice Production

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The Covid-19 epidemic makes the availability of vitamins and immune-enhancing supplements in Indonesia rare and costly. To deal with this situation, people produce and sell alternative vitamin products and supplements by themselves. One of the most frequently made and popular products is fruit juice. Fruit juice is believed to have a beneficial effect on maintaining body stamina from the disease. Unfortunately, many fruit drinks that are produced by the home industry do not fulfill some of the expected quality standards. One problem that is often experienced by consumers is a less-controlled sour taste. Therefore, in this research, an Arduino-based measuring instrument using SEN0161 pH Meter is designed to help home-grade fruit drinks makers to maintain the stability of their products' acidity. The instrument has a reasonably precise measurement accuracy with a very minimum error rate for the pH 4.01 standard of 0.25%. For the standard pH 7.01, it has an error rate of 2.71%. Also, the pH standard of 10.01 has an error rate of 3.9%. This pH meter instrument is considerably easy to build with affordable material costs. Furthermore, this study also provide the microcontroller source code to be developed and distributed freely.

Keywords: Arduino, Ph Sensor, Fruit Acidic Measurement System.

PAPER ID: 190

Alarming Assistive Technology: An IoT enabled Sitting Posture Monitoring System

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The usage of smart devices is tremendously booming up in recent years. The users of smart phones are increasing over years as well. However, there is a great tendency that users can gradually change their posture of sitting while using smart devices over long hours. This might potentially lead to several health risks such as damaged spinal cord or back pain on the users. In this paper, we propose a monitoring system with an IoT framework that could monitor the sitting posture of the user while using the smart devices. This proposed alerting system integrates the sensors and wireless networks for data accumulation for monitoring a person's sitting posture and alert them to correct their sitting posture.

Keywords: Internet Of Things, Posture Monitoring, Sitting Posture, Sensor, Wireless Network.

PAPER ID: 191

Whale Optimisation Freeman Chain Code (WO-FCC) Extraction Algorithm for Handwritten Character Recognition

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In Handwritten Character Recognition (HCR), interest in feature extraction has been on the increase with the abundance of algorithms derived to increase the accuracy of classification. In this paper, a metaheuristic approach for feature extraction technique in HCR based on Whale Optimisation Algorithm (WOA) is proposed. WOA is a swarm-based techniques that mimic the social behavior of groups of animals, which mimics the social behavior of humpback whales. Freeman Chain Code (FCC) was used as data representation of handwritten character images. However, the FCC representation is dependent on the route length and branch of the character's node. To solve this problem, the metaheuristic approach via WAO is proposed to find the shortest route length and minimum computational time for handwritten character recognition. At the end, comparison of the result with the previous proposed Flower Pollination Algorithm (FPA) in extracting the FCC was performed. The result shows that, in term of route length, WOA is slightly better compared to FPA by obtained shorten route length. Furthermore, in term of computational

time, the WOA compute faster computation time than FPA in extracting the features.

Keywords: Swarm Based Method, Whale Optimization Algorithm, Freeman Chain Code, Optimization, Feature Extraction, Handwritten Character Recognition.

PAPER ID: 196

Mellrak: An Ontology Driven Cdss For Symptom Assessment, Risk Assessment And Disease Analysis Of Breast Cancer

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Automated approach with increased ro- bustness and efficiency has proven its significant applications in the medical sector and offers a wide variety of growth opportunities. The paper proposes a Clinical Decision Support System (CDSS) for the Breast Cancer prediction named Mellrak for risk assessment, symptom assessment and breast cancer using the aid of Ontology and questionnaire. The risk assessment and breast cancer assessment are carried out with the help of clinical guidelines. The patient sorting using age group, weight and blood pressure to find the risk factor is performed using DL-Query that connects instances and inferred classes. This paper contains the architecture of the system and SWRL rule formation along with breast cancer stage determination through biopsy reports and mammography reports.

Keywords: Ontology, Breast Cancer, Web Ontology Lan- guage (OWL), Protégé, VOWL, SWRL, BIRADS, Risk Assess- ment, Symptom assessment, SPARQL, DL QUERY.

PAPER ID: 176

Word Embedding based News Classification by using CNN

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In this era of information technology, the number of online news portal is increasing day by day. These online news portals make a good profit by advertising different consumer products to their reader. However, due to the lack of intelligence, traditional news portals cannot identify what types of news are preferred by the users. As a consequence, these news portals most of the time show irrelevant advertisements to the readers and incur a great economic loss to the advertisers. If these news portals can identify what type of news a user is reading, then they can provide contextual advertisements (showing advertisements of news-related products) and gain more profit. Therefore, in this paper, we proposed a method integrating word embedding with Convolutional Neural Network (CNN) for the classification of English news into four different categories: Sports, Business, National and International. The performance of the proposed method is evaluated on our prepared dataset in terms of macrof1 and micro-f1 scores. The experimental result shows that our proposed method achieved macro-f1 and micro-f1 scores of 0.90 and 0.89, respectively which are

	significantly higher than that of all the baseline methods. **Keywords:** News Classification, Word Embedding, CNN, BoW, Contextual Marketing, Machine Llearning.
PAPER ID: 175	**Towards Automated Threat Modeling of Cyber-Physical Systems** [1]Ameerah-Muhsinah Jamil, [2]Shifa Khan, [3]Jian Kai Lee, [4]Lotfi ben Othmane [1-4] Iowa State University, Ames, USA Cyber-Physical System (CPS) seamlessly integrates the computation, communication, and physical components of the system. Often, a CPS controls physical objects through computation and communication and uses of real-time feedback. Threat models of such systems must consider their hardware, network, infrastructure, software, and human aspects and the interactions of these aspects. Commonly, threat modeling of such systems is based on the given system's architecture. In terms of components and interactions among these components, the architecture of a given CPS may change over time, making the threat model of the CPS rapidly obsolete–i.e., incomplete and invalid threat model. This paper poses the question: Can we automate threat modeling of a given CPS? A positive answer to the question helps to implement continuous up-to-date security assessments of CPSs–for different versions of the given system. It presents an approach to maintain the threat model of given CPSs up-to-date and reports about applying the proposed approach on Apollo Auto 3.5, an autonomous vehicle software. Unfortunately, the scalability limitation of the used architecture recovery technique prevents the recovering the Apollo Auto architecture and, consequently, the automated identification of the system's threat model. **Keywords:** Threat Model, Automated Threat Modeling, Cyberphysical System.

PAPER ID: 1110

Accuracy and performance analysis for classification algorithms based on biomedical datasets

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Diseases chronic, including heart disease, cancer, diabetes, and obesity, are the main causes of mortality in the United States and accounting for and consuming the majority of the country's healthcare expenditure. As indicated by recent researches. The main reason for the emergence of these diseases prominently is their relationship to each other, where diabetes is one of the causes of cancer and heart disease, hepatitis also is associated with diabetes, and heart disease. This paper focuses on data mining and machine learning techniques in healthcare classification and prediction of diseases and rebuild disease detection systems (DDS). The study suggests finding a classifier among the most common kinds of classification algorithms within a combined approach represent in Bayesian, Trees, Rules, Function, and lazy algorithms to automate a better performance of early detection of diseases from the medical datasets. This paper presents and analyzes five different machine learning (ML) algorithms: Function-based Neural Network (MLP) algorithm, Trees based Decision Tree (ID3) algorithm, Bayesian Theorem based Hidden Naïve Bayes (HNB) algorithm, Lazy based k-nearest neighbors (IBK) algorithm, and Rules-based OneR algorithm. The analysis is based on four benchmark datasets in the healthcare sector, including the Pima Indian Diabetes PID, the Breast Cancer, Heart Cleveland, and Hepatitis Datasets, which were obtained from several ML repositories. The results show that the HNB predicts the best result with a relatively higher Precision, AUROC Statistic, highest accuracy, and performance when compared to MLP, IBK, OneR, ID3 algorithms.

Keywords: Accuracy, Machine Learning, Hidden Naïve Bayes, Disease Detection System.

PAPER ID: 1

An Investigation of Mobile Pet Location Tracking System (PLTS) Success

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It is common for pet owners to post about their missing pets on social media. When pets are found missing, pet owners usually need to physically search for their lost or missing pets. In order to overcome this problem, a pet location tracking system has been proposed to recover the lost pets. The aim of this study is to examine the success factors of Information System (IS) namely System Quality, Information Quality and Service Quality on mobile pet location tracking system. This research is significant because there is still a lack of attention to the unbearable consequences of losing a pet. The online questionnaire survey was used to collect data. The outcome of this study shows that System Quality and Information Quality have the highest effect on the success of PLTS.

Keywords: Pet Location Tracking Systems, D&M IS Success Model, Pets, System Quality, Information Quality, Service Quality.

PAPER ID: 1211

Comparison of document similarity algorithms in extracting document keywords from an academic paper

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The idea of this study is to validate a list of keywords derived from a scientific article by a domain expert from years of knowledge with prominent document similarity algorithms. For this study, a list of handcrafted keywords generated by Electric Double Layer Capacitor (EDLC) experts are chosen, and relevant documents to EDLC are considered for the comparison. Then, different similarity calculation algorithms were employed in different settings on the documents such as using the whole texts of the documents, selecting the positive sentences of the documents, and generating similarity score with automatically extracted keywords from the documents. The experiment's outcome provides us with findings that the machine-generated keywords are mostly similar to the curated list by the domain experts. This study also suggests the preferable algorithms for similarity calculation and automated key-phrase extraction for the EDLC domain.

Keywords: Document Similarity Calculation, Relevant Document Selection, Keyword Extraction Comparison, Keyword Vali- Dation, Electric Double Layer Capacitor, EDLC, Keyword Based Recommendation System.

PAPER ID: 123

A Study on Mental Health Discussion through Reddit

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The massive growth of social media for the past few decades has given a new era to the open web. People are using social media to openly share opinions and also discussed sensitive subjects such as mental health. This paper study the online community on the Reddit discussion forum. We focused

on studying linguistic behavior in the online mental health community. We report linguistic analysis in order to understand the similarity and differences of each mental health community. We first study the sentiment per each Reddit community and followed by the topic modeling. By using the well-known LDA method, we extract the most discussed topic for each community. By utilizing all related posts from each subreddits in each community, we establish the following exciting insights: (a) We observe that the headline of the post does not indicate the whole content of the discussion post, (b) we found that sentiment across the mental health community was high on positive compared to negative, and (c) topic distribution for each community varies but there exist similarities among them.

Keywords: Online Forum, Social Network, Mental Health, Sentiment Analysis, Topic Modeling.

PAPER ID: 151

Question Classification of CoQA (QCoC) Dataset

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This paper proposes a new dataset for question classification process. Named QCoC (Question Classification of CoQA), this dataset is created based on Stanford's CoQA (A Conversational Question Answering Challenge) dataset. The total of QCoC datapoint is 116630 (total of combined question answer pairs in CoQA training and evaluation dataset). Common question classification datasets are classifying question based on its paired answer's knowledge (the semantic of answer's

context). For QCoC, classification is done differently that is per answer's feature (semantic and syntactic of answer's type). This paper discusses the question classification datasets, QA datasets, and justification of CoQA as selected base for QCoC. Then QCoC specification is discussed with class definition, classification method and result subsections. To the author's knowledge, such dataset is still nonexistent to date. This paper suggests that this type of dataset is useful in solving abstractive answers issue in Question-Answering (QA) system. While factual answers can be directly produced by regular QA system, abstractive answers need some additional components. Although it is a recognizable issue, lack of suitable dataset perhaps is the reason why such direction is not being pursued. With QCoC dataset made publicly available1, hopefully such

direction is open for further exploration.

Keywords: Dataset, QA System, Natural Language Processing.

PAPER ID: 158

Midrange Exploration Exploitation Searching Particle Swarm Optimization in Dynamic Environment

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Conventional Particle Swarm Optimization was introduced as an optimization technique for real problems such as scheduling, tracking, and traveling salesman. However, conventional Particle Swarm Optimization still has its weakness in finding optimal solutions, especially in a dynamic problem. Therefore, we proposed a new enhancement method of conventional Particle Swarm Optimization called Midrange Exploration Exploitation Searching Particle Swarm Optimization (MEESPSO). The main objective of this improvement is to enhance the searching ability of poor particles in finding the best solution in dynamic problems. In MEESPSO, we still applied the basic process in conventional Particle Swarm Optimization such as initialization of particle location, population evolution, and updating particle location. However, we added some enhancement processes in MEESPSO such as updating the location of new poor particles based on the average value of the particle minimum fitness and maximum fitness. To see the performance of the proposed method, we compare the proposed method with three existing methods such as Conventional Particle Swarm Optimization, Differential Evaluation Particle Swarm Optimization, and Global Best Local Neighborhood in Particle Swarm Optimization. Based on the experimental result of 50 datasets show that MEESPSO can find the quality solution in term of number of particle and iteration, consistency, convergence, optimum value, and error rate.

Keywords: PSO, Optimization, Dynamic Problem.

PAPER ID: 159

Gender differences in Computational Thinking skills among Malaysian's Primary School Students using Visual Programming

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Computational Thinking (CT) is a thought process which utilize computer science concepts to solve problem in the real life. One of the methods to develop CT among the Children is by using visual programming to create computational artifacts such as animation and games. This study collected 50 animation and 47 games projects created by the primary school students in standard 6 (12-year-old) from the eight-week lesson using visual programming Scratch. The purpose of the study is to investigate if there is a significant difference between male and female students on CT skills of flow control, logic, data representation, parallelism, synchronization, user interactivity and

abstraction. Source code projects were analyzed for CT skills score. Result from Mann-Whitney U test shows the different was not statistically significant between male and female students on CT skills mentioned previously.

Keywords: Computational Thinking Skills, Visual Programming, Gender, Primary School Students.

PAPER ID: 25

Analysis Youtube Activities as An Engagement Media (a case study at school of information systems BINUS university)

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Now the YouTube is one of the platforms that can help students to learn more easiest related the courses in University. The purpose of this study is to be able to analysis of content from School of Information Systems BINUS University (SIS BINUS) YouTube channel. And the benefit of this research is to increase interesting of students to watch the content related motivation and supporting material of courses in University on the YouTube platform. The method used for this research to get the best practice are to create comparisons via the viazle.com web to analysis secondary data related the content on YouTube of two universities and collect the data also from several existing journals. And to get the insights from student perspective, we did depth interviews with students that have the experience watched the YouTube channel of School of Information Systems. The results of this study are creating YouTube SIS BINUS more understandable students needs related the content that can attracting the student attention.

Keywords: Social Communication, Engagement, University, Analysis.

PAPER ID: 194

A Conceptual Review on Integration of Cognitive Load Theory and Human-Computer Interaction

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During the era of technological advancement and usage of the e-learning environment, it is vital to examine the integration between the human-computer interaction (HCI) and the theory of cognitive load. A systematic review of the literature was conducted by searching studies associated with cognitive load theory and human-computer interaction concepts. Around 47 published papers were

reviewed, and the analyses indicated that the cognitive load theory (CLT) is explicit in the context of HCI since the idea of relevant intellectual burden can be clarified and it minimizes the disadvantage of externalizing data on the interface and also supports to diminish memory load. Henceforth, it can be implied that cognitive load theory and human-computer integration approaches and ideas, enable users to learn the device based on the informative program and/or frameworks. Based on a review of the literature, a conceptual framework is proposed, which can be empirically tested in future studies. The researchers suggested that with the increase in an e-learning environment, there is a need for the study to understand and examine the integration between the HCI and CLT aspects, this will support the system developers to provide appropriate guidelines based on the user and task.

Keywords: Human-Computer Interaction, Cognitive Load Theory, E-Learning, Germane Load, Intrinsic Load.

PAPER ID: 125

The Impact of Exponent Variable on the Performance and Effectiveness of FCM Algorithm for Ontology Construction in Structured Knowledge Management

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Data Clustering is an effective mechanism for the clustering of similar data objects. Fuzzy logic based or soft data clustering technique is very suitable for the formation of data clusters semantically when a data object is the member of more than one clusters unlike hard data clustering techniques. Fuzzy exponent variable is one of the most important variable in fuzzy logic based clustering technique. This variable has significant impact on the performance and effectiveness of the clustering results. An experimental evaluation is performed to analyze the impact of fuzzy exponent variable in this study. The experiments are performed on textual web document dataset through Fuzzy C-Means soft clustering technique. The results retrieved with various values of fuzzy exponent variable, are analyzed and presented to represent the performance and effectiveness.

Keywords: Hard Clustering, Soft Clustering, Fuzzy C-Mean, Exponent Variable, Structured Knowledge Management.

PAPER ID: 77

A Development of Web Page Classification Model Using Convolutional Neural Network – A Mechanism to Eliminate the Internet Addiction

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In modern world, everyone has access to the internet as a source of information by surfing the web page. The most popular web page surf are in the category of Game and Online Video Streaming which consume too much time of the user and lead to time has a negative impact might lead to internet addiction with all its' negative implications. To overcome the internet addiction problem, access to Game and Online Video Streaming web pages needs to be limited. The mechanism here can be. The classification of incoming web page category based on the web

page content. This paper is proposed a web page classification model using a Convolutional Neural Network (CNN) to classify the web page either it is a Game or Online Video Streaming based on the pattern of words in the word cloud image taken from the web page's text content. The proposed web page classification model has achieved 82.22% accuracy.

Keywords: Web Page Classification, Topic Classification, Convolutional Neural Network, Deep Learning, Internet Addiction.

PAPER ID: 126

Speech Emotion Recognition Using 2D-CNN with Data Augmentation

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Speech emotion recognition becomes a challenging issue, especially interaction between human-machine. Each person expressed their emotions in various ways and the features of speech are still unclear to distinguish between existing emotions. Speech results caused by mental and psychological states where it is directly influenced by emotions. This research proposed speech emotion recognition based on the 2D-CNN model with log-Mel spectrogram as the input. The proposed method of the 2D-CNN model with log-Mel spectrogram was able to capture the significant speech signals. The experiments used the EMODB database to evaluate the proposed model with augmented data. The proposed model was able to produce higher accuracy of speech emotion than the existing models, which also used deep learning methods for recognizing emotions. The experimental results showed that the proposed model achieved an accuracy of 0.88.

Keywords: Speech Emotion Recognition, 2D Convolutional Neural Network (CNN), Log-Mel Spectrogram, Deep Learning, Data Augmentation, Human Computer Interaction (HCI).

PAPER ID: 182

Long Short-Term Memory approach for Wave Height Prediction: Study Case in Jakarta Bay, Indonesia

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Wave height prediction is important for sea navigation activities, operational activities in the offshore platform, and coastal areas such as in port. The traditional approach in wave height prediction systems is to utilize the numerical tool for simulating wave energy propagation by solving

the energy

balance equation. The method requires a very high computation resource. For calculating wave height prediction from wind field data in this study, we use a machine learning methodology, namely the Long Short-Term Memory (LSTM) method, which requires fewer computer resources. To create a dataset for the algorithm's training and testing, we simulate continuous wave simulation from wind field data by using SWAN model, which is based on a phase averaged wave model. As wind field input for the model, we use the ECMWF ERA-5 wind data collection as the model's wind field input. We chose a research area in Jakarta Bay, Indonesia, as a case study. In addition, we investigate the

impact of various wind data inputs on the results of wave height prediction in Jakarta Bay. With several wind inputs, the LSTM model predictions wave data with good results.

Keywords: Wave Prediction, SWAN, Long Short-Term Memory, Deep Learning.

PAPER ID: 193

Dengue Dashboard for Forecasting the Future Trend of Dengue Cases in Pahang

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The study is concerned about the rising number of dengue cases in Pahang. As a preventive solution, an analytical dashboard is proposed to forecast the trend of dengue cases in Pahang for the next two years using Auto Regressive Integrated Moving Average (ARIMA) model. Due to its efficiency to solve linear problems, ARIMA model is a popular model used by the researchers and economists to forecast a time-series data. The dashboard contains various information of dengue cases for instances the total number of dengue cases in Pahang, total number of dengue cases by district, a map that shows the green zone and the red zone which indicates the risk of the dengue infection in that area and a graph that displays the forecasted trend of dengue cases in Pahang from 2021 to 2023 using the best- fitted ARIMA model. The dashboard and the forecasted data trend of dengue is generated to assist JKN Pahang to plan a preventive measure regarding the rising number of dengue cases in the future.

Keywords: Dengue, Forecasting Future Trend, ARIMA Model, Dashboard, Dengue Dashboard, Data Visualization

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اونيۏرسيتي مليسيا ڤهڠ
UNIVERSITI MALAYSIA PAHANG

Universiti Malaysia Pahang (UMP) was established by the Government of Malaysia on February 16, 2002. UMP was set up as a competency based technical university which specialises in the fields of engineering and technology including high-level Technical and Vocational Education and Training (TVET).

UMP is located on the east coast state of Pahang, the biggest state in Peninsular Malaysia with vast areas of rainforest endowed with a wide range of biodiversity and natural resources. The campus is also strategically located in the East Coast Industrial Belt of Peninsular Malaysia which hosts a large number of multinational corporations (MNCS) in the chemical, petrochemical, manufacturing, automotive and biotechnology industries.

UMP has been ranked as one of the best in Research and Innovation within the classifications of Malaysia Technical University Network (MTUN) and Non-Research University (Non-RU). Through strategic collaboration, UMP is committed to innovating and developing a unique academic programme. A milestone of such innovation is UMP's world class dual-degree engineering programme offered in collaboration with Germany's Karlsruhe University of Applied Sciences (HsKA) – now seen as the benchmark for other public institutions of higher learning in Malaysia.

As for research, UMP focuses on applied research and industrial projects to enrich the teaching and learning processes as well as to promote the commercialization of research products, thus exposing students to the latest research and development activities in the industries. UMP is committed to the development of human capital and technology to fulfil the needs of industries as well as to contribute to the country's overall development.

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Faculty of Mechanical and Automotive Engineering Technology
Faculty of Manufacturing and Mechatronic Engineering Technology
Faculty of Chemical and Process Engineering Technology
Faculty of Electrical and Electronic Technology
Faculty of Civil Engineering Technology

College of Computing and Applied Sciences
Faculty of Computing
Centre for Mathematical Sciences
Faculty of Industrial Sciences and Technology

College of Management and Humanities
Centre for Human Sciences
Centre for Modern Languages
Faculty of Industrial Management

CORPORATE MISSION

VISION

A Distinguished Technological University

MISSION

We provide world class education, research and services in an ecosystem of creative and innovative engineering and technology to maximize human potential for societal good

OBJECTIVES

- To produce outstanding graduates by providing competitive engineering and technological programmes.
- To spearhead cutting edge industry-relevant research initiatives.
- To be a leading service provider to industries and community based on our niche and areas of expertise.
- To be recognized as an institution for excellent management and work culture.

PHILOSOPHY

Knowledge, a trust bestowed by Allah to man vicegerent on earth, is to be fully utilized. Emphasis is an applied knowledge guided by Islamic values to develop human capital towards universal harmony and prosperity.

CORE VALUES

Strong bond with the creator.
Steadfast in upholding shared principles.
Creative in making wise decisions.
Resolute in facing challenges.
Proactive in taking actions.

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ABOUT FACULTY OF COMPUTING

اونيۏرسيتي مليسيا ڤهڠ
UNIVERSITI MALAYSIA PAHANG
FAKULTI KOMPUTERAN

Faculty of Computing (formerly known as Faculty of Computer Systems & Software Engineering) was established on 16 February 2002 to produce knowledgeable, high skilled and competitive graduates within the sphere of software engineering, system and computer network.

The establishment of the faculty is in line with the vision and mission of the University to produce knowledgeable, highly skilled and competitive students in the field of software engineering and computer networks. The faculty has also embarked on research and development activities in the area such as information systems, software engineering, computer systems, communication systems, graphic and multimedia technology to produce technologies that are relevant to the needs of industries.

Five (5) research groups were introduced in the effort of enhancing the contents of the programs offered. These research groups are: Information Systems (INSYS), Software Engineering Research Group (SERG), Soft-Computing & Intelligent System (SPINT), Multimedia Computing & Visualization (MCVIS), Systems Network & Security (SysNetS).

The faculty emphasizes on the development and growth of its students' enrolment and graduates. Through high quality teaching (by completing specific quality outcome and generic skills), great laboratories facilities, proper and careful advising and numerous professional activities, our students have opportunity to excel in the classroom and laboratory session. In a personable atmosphere, the students become well prepared in the term of software engineering knowledge and technical skills. Thus, they are ready and confident to begin their professional career or further their studies. At present the faculty has four undergraduate programmes and postgraduate by research and coursework.

UNDERGRADUATE

Diploma of Computer Science
Bachelor of Computer Science (Software Engineering) with Honours
Bachelor of Computer Science (Graphics & Multimedia Technology) with Honours
Bachelor of Computer Science (Computer Systems & Networking) with Honours

POSTGRADUATE

Coursework

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Master of Science (Computer Networking)

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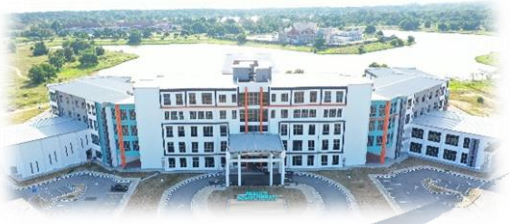


ABOUT TELKOM UNIVERSITY

Telkom University was established in 2013 and located at Bandung, Indonesia. Telkom University is determined to be a research and entrepreneurial university that benefits for society.

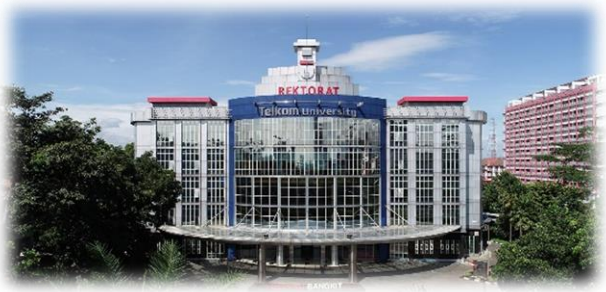
Telkom University has a commitment in providing quality education. It was proved by the achievement of “A” Accreditation or Excellence from the National Accreditation Board for Higher Education (BAN-PT) and International Accreditation for several study programs. Moreover, the Ministry of Education and Culture (Kemenristekdikti) has named Telkom University as the Best Private University in Indonesia.

- Telkom University mission is to be a Research and Entrepreneurial University in 2023, which actively involves the development of Technology, Science and Art with information technology-based.
- It aims to organize and develop international standardized education with information technology-based. Telkom University also aims to develop, disseminate and apply internationally recognized Technology, Science and Art.

Reputed as The Best Private Higher Education in Indonesia with various outstanding achievements both national and international, Telkom University has secured a collaboration with various best national and international universities, industry / companies and government. Currently, the university has seven (7) schools with 40 programmes consisting of Engineering, Art, Management, and Applied Science field.

- School of Computing
- School of Electrical Engineering
- School of Industrial Engineering
- School of Economics & Business
- School of Communication & Business
- School of Creative Industries
- School of Applied Science

For further information, please contact
Gedung Bangkit Telkom University
Jl. Telekomunikasi Terusan Buah Batu Indonesia
40257,
Bandung, Indonesia
(022) 7566456
info[@]telkomuniversity.ac.id



ABOUT SATHYABAMA

INSTITUTE OF SCIENCE & TECHNOLOGY

Sathyabama is a prestigious institution which excels in the fields of Engineering, Science and Technology for more than three successful decades. It offers multi-disciplinary academic programmes in various fields of Engineering, Science, Technology, Law, Dental Science, Pharmacy, Nursing, Management, Arts and Science and Allied Health Sciences. It is established under Sec.3 of UGC Act, 1956 and is been Accredited with 'A' Grade by the National Accreditation and Assessment council.

Sathyabama has been ranked in 39th position by the National Institutional Ranking Framework (NIRF), Government of India among the Universities in India for the year 2020 and ranked one among the top 50 Universities for five consecutive years. Times Higher Education and QS has ranked Sathyabama among the top Institutions worldwide.

- School of Computing
- School of Mechanical
- School of Electric and Electronics
- School of Building and Environment
- School of Bio and Chemical Engineering
- School of Science & Humanities
- School of Management Studies
- School of Dental Sciences
- School of Pharmacy
- School of Nursing
- School of Law

For further information, please contact

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E-mail: johnbruce@sathyabama.ac.in
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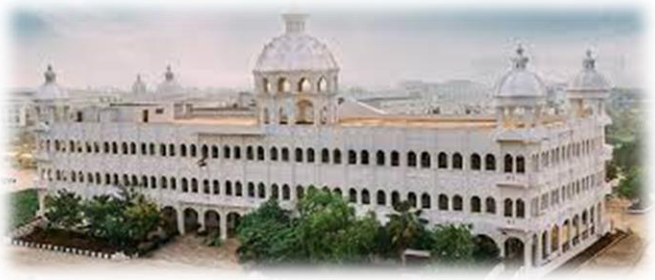
Fax: 044 - 2450 2344



ABOUT UNIVERSITY OF SANTO TOMAS

The University of Santo Tomas (UST), the Pontifical, Royal, and Catholic University of the Philippines, is a Dominican institution of learning founded in 1611, under the patronage of St. Thomas Aquinas. UST secures QS 5 stars rating for Teaching, Employability, Internationalization, and Facilities, while scoring 4 Stars for Academic Development.

The University mission is in pursuit of truth, guided by reason and illumined by faith, dedicates herself to the generation, advancement, and transmission of knowledge to form competent and compassionate professionals, committed to the service of the Church, the nation, and the global community.

While the University of Santo Tomas holds the distinction of being Asia's oldest existing university, its age is coupled with its pre-eminence in Philippine education. Not only does it boast of several firsts in the different realms of education. It also has administrators and faculty members who are holding leadership positions in the Philippines' policy-making bodies (e.g., Commission on Higher Education) and professional organizations, helping influence policies for the betterment of the society in general. The university offers 7 discipline clusters:

- Accountancy, Business and Management
- Sciences, Technology Engineering and Mathematics
- Humanities and Social Science
- Music, Art and Design
- Physical Education and Sports
- School of Management Studies
- Sacred Sciences
- Health

For further information, please contact

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Phone: +63-2-8786-1611

ABOUT UNITED INTERNATIONAL UNIVERSITY

United International University is a private university located in Dhaka, Bangladesh. The government of Bangladesh approved the establishment of United International University in 2003. Financial support came from the United Group, a Bangladeshi business conglomerate.

United International University (UIU) is established with the generous support and patronage of the United Group, a very successful conglomerate operating in diverse business areas in Bangladesh. The vision of UIU is to become the centre of excellence in teaching, learning and research in the South Asian region.

The mission of UIU is to create excellent human resources with intellectual, creative, technical, moral and practical skills to serve community, industry and region. We do it by developing integrated, interactive, involved and caring relationships among teachers, students, guardians and employers.

UIU is a top-ranked University in Bangladesh. With only 6 undergraduate and 6 graduate programs, UIU achieved the position within a short period of time. The academic units of UIU are comprised of two schools and several institutes, which offer a wide range of undergraduate, graduate and certificate program.

- School of Business & Economics
- School of Science & Engineering
- School of Humanities and Social Sciences
- Institute of Natural Sciences
- English Language Institute

For further information, please contact

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United City, Madani Avenue, Badda, Dhaka,
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Phone: +8801759039498

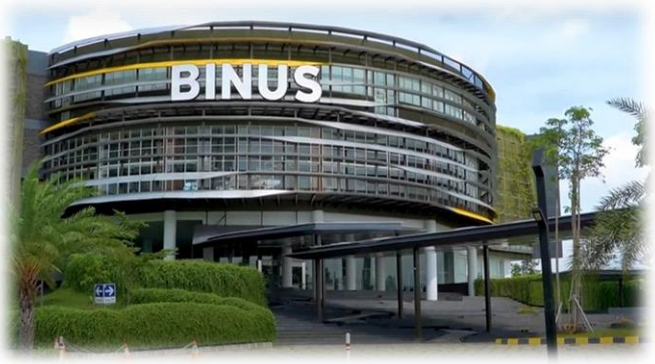
ABOUT BINA NUSANTARA UNIVERSITY

Bina Nusantara University, also known as BINUS University, is a private university in Indonesia. The main campus of the university is located at Alam Sutera, South Tangerang. Most of its campuses are located within the area of Greater Jakarta Region. It also has campuses at Bandung and Malang.

BINUS University aims to be a world-class university, fostering and empowering the society in building and serving the nation. BINUS University is also committed to providing a world class education with international learning experience that makes positive contributions to the global community.

BINUS University has been acknowledged internationally on 1997. BINUS is the first university in Indonesia that achieved ISO 9001 Certificate on November 17th, 1997 because of its application and contribution of quality management system in the scope of curriculum design and lecture materials, lecture operational, teaching and research.

- BINUS Business School
- Faculty of Economics and Communication
- Faculty of Engineering
- Faculty of Humanities
- School of Computer Science
- School of Design
- School of Information Systems



For further information, please contact

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Phone +62 21 534 5830, +62 21 535 0660
Fax +62 21 530 0244

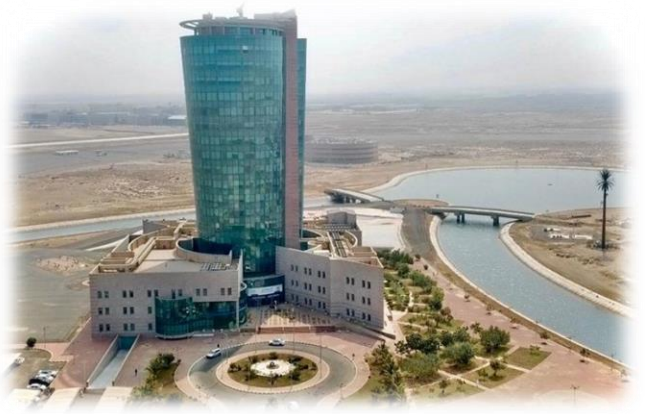
ABOUT JAZAN UNIVERSITY

Jazan University is a public research university based in the city of Jazan. Founded in 2006, it is the province's only university and one of the largest publics, non-profit institutions of higher education in the Kingdom of Saudi Arabia. Jazan University was established as per the Royal Decree No. (6616 /M/B) issued on 19 June 2005. The university vision is to be a regionally distinguished University with its educational output, innovative research, and community services.

Jazan University seeks to achieve the Kingdom's 2030 vision, which is characterized by achieving academic excellence and preparing graduates to be leaders at the national and international levels in the fields of business, industry, health, education and the public sector. They aim to serve the community by addressing the problems facing it and supporting economic and social development, as well as conducting internationally recognized research and creating new avenues for acquiring knowledge. The University shall strive to meet the needs of Jazan region, of the Kingdom of Saudi Arabia and the world at large, and this vision is part of the University's Strategic Plan.

Jazan University includes (23) colleges, including: (21) colleges that grant a Bachelor's degree and one college awards diplomas. A few colleges named here includes:

- Faculty of Computer Science and Information Systems
- Faculty of Applied Medical Sciences
- Community College
- Faculty of Medicine
- College of Engineering
- Faculty of Humanities
- Faculty of Science
- Faculty of Pharmacy



For further information, please contact

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Al Maarefah Rd, Jazan Saudi Arabia
Email: webmaster@jazanu.edu.sa
Phone: +966 17 329 5000
Fax: 00966173232760

ABOUT HADHRAMOUT UNIVERSITY

Hadhramout University (HU) was established in Hadhramaut as an official university in 1993. It includes a college of medicine. The university vision is to be regionally distinctive in learning outcomes, research and community development.

HU also has five research centres, University Advisory Centre and a number of service and training centres and facilities, such as: the University Hospital, HU Family Medicine Centre and the Model University Kindergarten.

The University has witnessed a remarkable development and a great social admission to education, and the total number of Bachelor students that are enrolled in the University in the academic year. While candidates for Master and PhD degrees come from various universities all around the world. A few colleges named here includes:

- Arts
- Law
- Education
- Medicine & Health Sciences
- Administrative Sciences
- Environmental Sciences & Marine Biology
- Woman's College / Mukalla
- Computers & IT
- Engineering & Petroleum
- Applied Science
- Science

For further information, please contact

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Fax:360864
Email: info@hu.edu.ye

ABOUT MUSCAT COLLEGE

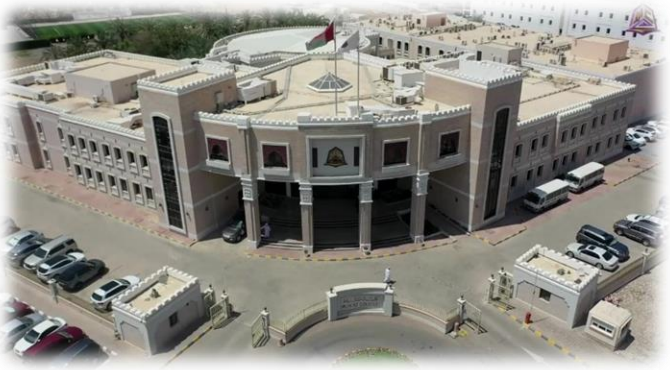
كلية مسقط
Muscat College

The Muscat College, formerly known as Muscat College of Management Science and Technology, is a private Higher Education Institution located in Muscat, the capital city of the Sultanate of Oman. The College is one of the first private higher education institutions and one of the pioneering colleges in Oman to initiate undergraduate studies at the bachelor with honours degree level.

Established in 1996 the College started its first academic year in 1997. Since then, the College has produced thousands of undergraduate students. Muscat College is well known for the quality of its academic programmes and supporting facilities and services, which aim at providing students with a true college education.

Muscat College vision is to be a dynamic institution that is distinctive in its focus on providing education for sustainable future. While the mission is to provide lifelong learning supported through teaching, research, training and community engagement. The College's Strategic Plan 2015-20 emphasizes on research activities in order to foster the environment of creativity and innovation as stated in the mission. The Strategic plan aims to "enhance research activities to contribute to the advancement of the country by liaising with external research bodies".

The College offers four Advanced Diploma programmes in affiliation with Scottish Qualification Authority (SQA), Four Bachelor with Honours Programmes and Two Master programmes in affiliation with the University of Stirling, Scotland in the field of Accounting, Business, Computing Science and Management. In addition, the College has a partnership with the Universiti Malaysia Pahang offering three focused Bachelor programmes in specific technological fields such as Computer Network Systems, and Software Engineering.



For further information, please contact

Muscat College
PO Box 2910, Ruwi, PC 112 Sultanate of Oman
Phone: +968 24 501181 / +968 24 594376
Fax: +968 24 504954
Email: info@muscatcollege.edu.om

ABOUT STATE ISLAMIC UNIVERSITY

SUNAN KALIJAGA YOGYAKARTA

Sunan Kalijaga State Islamic University Yogyakarta is an Indonesian state university that offers study programs in the field of Islamic science. Currently the university offers programs in Adab, Da'wah, Sharia, Tarbiya, Ushuluddin, science and technology and social science and humanities.

Initiated since 1951 the university began with the transformation of the Faculty of Religion, Islamic University of Indonesia (UII) into State Islamic University (UIN) Sunan Kalijaga as regulated by Presidential Decree Number 50 of 2004 dated June 21th, 2004.

The university vision is to excel and leading in Islamic integration and development for civilization. Mission of UIN are integrating and developing Islamic studies, disciplines, and nationalism in education and teaching. Besides, the university also diligence in multidisciplinary research which is beneficial for academic purposes and the society. In addition, contributing as an institution in resolving national problems based on Islamic perception and knowledge for civil society. Finally, building trust and developing cooperation with various parties to improve quality performance of the three pillars of higher education.

- Faculty of Adab and Cultural Sciences
- Faculty of Dakwah and Communication
- Faculty of Sharia and Law
- Faculty of Tarbiyah and Education
- Faculty of Ushuluddin and Islamic Thoughts
- Faculty of Science and Technology
- Faculty of Social Sciences and Humanities
- Faculty of Islamic Economics and Business

For further information, please contact

UIN Sunan Kalijaga
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Phone: +62-274-512474, +62-274-589621
Fak: +62-274-586117
Email: humas@uin-suka.ac.id

ABOUT UNIVERSITAS MATARAM

University of Mataram is a public university in Mataram, West Nusa Tenggara, Indonesia. It was established on October 1, 1962. The university vision is to become a research-based higher education institution with international competitiveness by 2025.

The process of establishing the University of Mataram began with the formation of the Preparatory Committee for the Establishment of a State University in Mataram based on the Decree of the Minister of PTIP number 89/62 dated June 26, 1962.

In 2007, the university had awarded as GreenMetric World University Ranking. Thus, in the Long-Term Development Plan (RPJP) 2011-2025, general strategic programs and policies are drawn up which are divided into 3 (three) stages of development. The first phase is strengthening competitiveness at the national level. In the second phase is strengthening competitiveness at the regional (Asia) level. And finally strengthening competitiveness at the international level.

Mataram University continues to develop into a university that plays an active role in nation building through the development of faculties in multiple areas.

- Faculty of Economics and Business
- Faculty of Law
- Faculty of Agriculture
- Faculty of Animal Husbandry
- Faculty of Engineering
- Medical School
- Faculty of Teacher Training and Education
- Faculty of Food Technology and Agro-Industry
- Faculty of Mathematics and Science

For further information, please contact

Universitas Mataram
Jl. Majapahit No.62, Gomong, Kec. Selaparang,
Kota Mataram, Nusa Tenggara Barat.
83115, Indonesia
Phone: (0370) 633007
Fax: (0370) 636041
Email: media@unram.ac.id

ABOUT AMIK TUNAS BANGSA

The Tunas Bangsa Academy of Informatics and Computer Management (AMIK) aspires to be the best, through the vision of "Making AMIK Tunas Bangsa the best Vocational College in Informatics". Thus, the academy will always improve the quality both in learning and other management governance. In addition, the AMIK strived to produce alumni who have superior competence, who are able to compete in the world of work both at the local, national and regional levels through professional certification of international standards.

In the strategic planning, AMIK Tunas Bangsa projected by 2030, the academy can be the best in Indonesia within the framework of the Tri Dharma of Higher Education. Therefore, a few aims were developed which includes:

- Producing professional Associate Experts in the field of Information Management and Computerized Accounting
- Producing quality research and service as a way of being responsive to Tri Dharma activities
- To produce human resources that meet the interests of the community in the field of information systems at present and in the future
- Produce national and international seminars and conferences and improve the quality of students in the field of research
- Produce good organizational governance supported by an integrated information system.

AMIK Tunas Bangsa plays an active role in nation building through the development of academy in two disciplines.

– Informatic Managements
– Computerise Accounting

For further information, please contact

AMIK Tunas Bangsa
Jl. Jend. Sudirman Blok A No. 1,2,3
Pematangsiantar, Sumatera Utara – Indonesia
Phone: +62 622 22431
http://amiktunasbangsa.ac.id

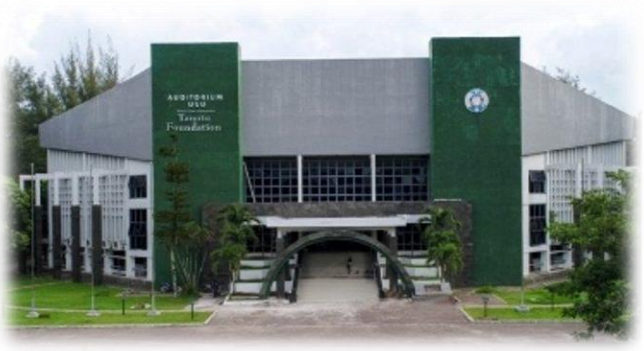
ABOUT UNIVERSITAS SUMATERA UTARA

The University of North Sumatra or USU is a public university located in the city of Medan in North Sumatra, Indonesia. It is situated in Padang Bulan, in the Medan Baru subdistrict of Medan, close to the City Centre, with a total area of 122 hectares. USU vision is becoming a university that has academic excellence as a barometer of the development of science that is able to compete on the global level.

Towards the vision, the university mission is organizing autonomous-based higher education as a vehicle for the development of character and professionalism of human resources based on empowerment that contains the spirit of democratization of education that recognizes pluralism with educational orientation that emphasizes aspects of finding alternative solutions to actual problems based on scientific, moral, and conscience.

In addition, to produce graduates who are change agents as a force of modernization in the life of the general public, who have strong scientific competence, relevance and competitiveness, and behave in ethical intellectual behaviour. Lastly, to implement, develop, and improve education, research culture and community service programs in order to improve academic quality by developing superior science, which is beneficial for a better change in the lives of the general public. In total, USU offers diploma, bachelor degree, and postgraduates programme at 16 faculties from different disciplines. A few faculties named here includes:

- Economy and Business
- Pharmaceutical
- Cultural Science
- Computer Science & Information Technology
- Mathematics and Natural Science
- Social Science & Political Science
- Medical
- Dentistry
- Public Health



For further information, please contact

Universitas Sumatera Utara
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ABOUT UNIVERSITAS BUMIGORA

Bumigora University (UBG) is a university resulting from the merger of 2 universities, namely STMIK Bumigora Mataram and STIBA Bumigora Mataram which are under the Computer Executive Education Foundation (YPEK) and at the same time transformed into a university.

UBG begin to venture education in the field of computer informatics, which was established in 1991 and until 2017 has a total of 4 study programs, namely: Informatics Engineering, Visual Communication Design, Informatics Engineering and Informatics Management. Now, the university has established 4 faculties which includes Faculty of Engineering and Design, Faculty of Health, Faculty of Economics and Business and Faculty of Social and Humanities.

Bumigora University's vision is " Becoming a Leading Higher Education in Eastern Indonesia that plays an active role in the development of science and technology (Science, Technology and the Arts) through the process of education, research and community service by prioritizing professionalism".

The university missions include producing a research and scientific publications in the field of science on a national and international scale that can support education and community service. Moreover, develop community service activities oriented on community empowerment to support national development, especially to realize a Civil Society. Finally, develop quality-oriented institutions in order to create Good University Governance.

UBG managed to build a trust by more than 2000 students related to quality and professional teaching staff graduates from well-known universities in Indonesia, as well as a very effective and enthusiastic student support staff. This shown by the number of graduates student that hits more than 3750 students.

For further information, please contact

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Nusa Tenggara Bar. 83127, Indonesia
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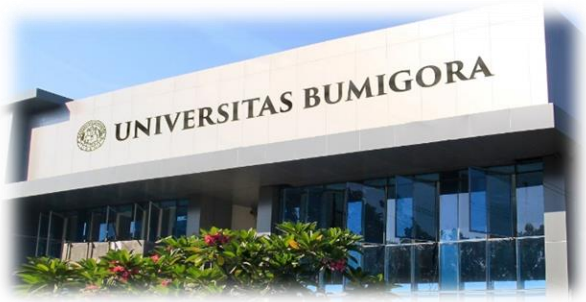


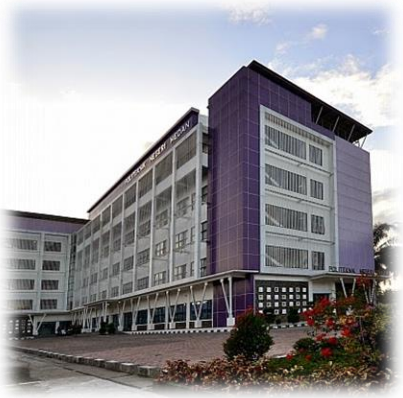
ABOUT POLITEKNIK NEGERI MEDAN

Medan State Polytechnic was established in 1997 in the field of engineering. The vision is to become a professional and superior vocational education institution. As one of the state universities in North Sumatra, Medan State Polytechnic is currently a centre for vocational education that focuses on developing human resource capabilities and has a global vision to participate in increasing the gross enrolment rate in education in Indonesia.

Medan State Polytechnic is building a new era in the form of campus digitization that makes it easier for the Academic Community in various ways to increase efficiency and also support the quality of Medan State Polytechnic. With 16 existing study programs and campus facilities covering an area of 8.5 ha, Medan State Polytechnic prepares a competency-based curriculum that is in line with industry needs. Medan State Polytechnic also provides scholarships for underprivileged students and participates in developing an entrepreneurial spirit for students. Currently Medan State Polytechnic educates more than 5,500 students and has graduated more than 20,000 alumni who have worked in various industrial sectors.

Medan State Polytechnic is also actively involved in various applied research. In addition, Medan State Polytechnic lecturers also participate in various community service activities as a sense of social responsibility. In addition, in the context of network development, Medan State Polytechnic also carries out various collaborations with various parties both regionally and internationally.

- Mechanical Engineering
- Civil Engineering
- Electrical Engineering
- Accounting
- Commercial Administration
- Computer Engineering and Informatics



For further information, please contact

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Faculty of Computing

College of Computing & Applied Sciences

Universiti Malaysia Pahang

26600 Pekan, Pahang

Malaysia

ORGANISER & CO-ORGANISER

Organiser

UNIVERSITI MALAYSIA PAHANG

Co-Organiser

Telkom University

United International University

Sathyabama Institute of Science & Technology

Hadhramout University

Bina Nusantara University

University of Santo Tomas

Jazan University

State Islamic University Sunan Kalijaga

Muscat College

Universitas Sumatera Utara

Universitas Mataram

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