4th IRCASET 2023

4TH INTERNATIONAL RESEARCH CONFERENCE ON APPLIED SCIENCES AND ENGINEERING TECHNOLOGY 2023 (4TH IRCASET 2023)

&

7TH INTERNATIONAL CONFERENCE ON SOCIAL SCIENCES, HUMANITIES AND TECHNOLOGY 2023 (7TH ICSHT 2023)

7th ICSHT 2023

PROGRAM BOOK

27-28 MAY 2023

DORSETT
PUTRAJAYA

Organized By:

GAE
GLOBAL ACADEMIC EXCELLENCE

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WELCOME NOTE

Bismillahirrahmanirahim.

Assalammualaikum warahmatullahi wabarakatuh and Salam Sejahtera.

On behalf of GAE, it is my great pleasure to welcome all the delegates to **7th International Conference on Social Sciences, Humanities and Technology 2023 (7th (ICSHT 2023)** and **4th International Research Conference on Applied Sciences and Engineering Technology 2023 (4th IRCASET 2023)**. The conference will be held at Dorsett Hotel, Putrajaya, Malaysia on 27th -28th May 2023. These conferences provide a platform for scholars, intellectuals, professionals, academicians and researchers from various fields and disciplines to share and generate forum on the current local and global issues, address solutions to the problems and to provide opportunity for participants to exchange and share knowledge and information, establish business or research relationships and find global partners for future collaboration.

The conferences will be held through Face-to-Face and Online Video Presentation (OVP). You may refer on tentative programme, timetable schedule and OVP and non-presenter information below to know about the presentation. Whereas, for the publication process you will be informed through email after the conferences. All delegates also will receive the e-certificates through email in a week after conferences.

Here, I also to give profound thanks go to the whole committee of conferences for the impressive work they have done. Nothing would be possible without the excellent work of a very hard-working committee. Additionally, I would like to warmly thank all the authors who, with their presentations, generously contributed to the lively exchange of knowledge and information that is so vital to the endurance of these conferences.

Thank you and my best wishes to all.

MUHAMAD FIRDAUS ABDULL RAZAB
CEO
Global Academic Excellence (M) Sdn Bhd

TENTATIVE PROGRAM

27th May 2023	
Time	**Activities / Program**
8.30 am – 8.45 am	Registration – Precinct 4, Level 3 (Dorsett Hotel)
8.45 am – 9.00 am	Welcoming Address by Global Academic Excellence (M) Sdn Bhd
9.00 am – 9.45 am	Keynote Session – How to get more citations of your article? Assoc Prof Dr Nor Azwadi Che Sidik
9.45 am – 9.55 am	Photography
9.55 am – 10.10 am	Tea Break
10.10 am – 12.50 pm	Session 1
12.50 pm – 2.00 pm	Break / Lunch (Citra Rasa Restaurant, Level 3)
2.00 pm – 4.20 pm	Session 2
4.20 pm – 4.35 pm	Tea Break
4.35 pm – 5.35 pm	Session 3
5.35 pm – 5.45 pm	Closing Speech

28th May 2023	
Time	**Activities / Program**
9.00 am – 5.00 pm	Online Video Presentation (YouTube/Facebook)

Notes:

- Each presentation will be 20 minutes, 15 minutes for presentation and 5 minutes for Q & A sessions
- Face-to-face presenter may use PowerPoint slide to present their paper.
- Face-to-face presentation will be schedule on 27th May 2023.
- Online Video Presentation will be schedule on 28th May 2023. The link of each video and slide presentation will be available on 28th May 2023 in conference website.
- Participant can view Online Video Presentation Slot through our YouTube Channel _ Global Academic Excellence GAE (https://www.youtube.com/channel/UCY0GQiQ5qY0kDT1VooKLrLw) and Facebook (https://www.facebook.com/GAExcellence/)
- Participant can respond if there is any comment in the video. Presenter should answer any comment/question from audience.

PRESENTATION TIME TABLE

SESSION 1 (10.10 am – 12.50 pm)
MODERATOR: TBA

NAME (INSTITUTION)	TITLE
Uswatun Hasanah Abdul Roni (Universiti Sains Islam Malaysia)	Polyethersulfone " Polyitaconic Acid Nanofiltration Membrane for High Selectivity Dyes Removal
Sallehuddin Ibrahim (Universiti Teknologi Malaysia)	Imaging of Bubbly Flow Using Ultrasound
Muhamad Shahril Mohd Abdullah (Universiti Tun Hussein Onn Malaysia)	The Relationship Between Building Condition specifically to Indoor Air Quality and Sick Building Syndrome (SBS) Symptoms Among Ward Staff at Hospital Pakar Sultanah Fatimah
Hing Ratana (Universiti Sains Malaysia)	Software Model Checking Distributed Applications: A Hybrid Approach
Nur Haslinda Mohamed Muzni (Multimedia University)	Influence of Tio2 And Al2o3 Nanoparticles Addition on The IMC Growth of Sn-3.0ag-0.5cu Lead-Free Solder at Different Reflow Temperature
Farah Hamizah binti Puad @ Paat (Universiti Sains Islam Malaysia)	Fabrication and Characterization of Nanocoils CNT/PLA Filament at Different Fillers Percentages as Electromagnetic Wave Absorbers
Niuma Mohamed (The Maldives National University)	Examining Students' Online Learning Readiness during COVID-19 Pandemic at The Maldives National University
Nabilah Saafie (Universiti Teknologi PETRONAS)	Optimization of Synthesizing Conditions for Mxene (Ti3C2) Photocatalyst: Effect of Lif: Ti3AlC2 Mass Ratio

SESSION 2 (2.00 pm – 4.20 pm)
MODERATOR: TBA

NAME (INSTITUTION)	TITLE
Kayalvizhi Subramanian (MAHSA University)	An Effective Air Pollution Prediction Model Using Machine Learning Algorithms
Nur Syaza Zainali (Universiti Teknologi MARA)	Design of Water Quality Monitoring System Based on Internet of Things Technology
Nur Syaza Zainali (Universiti Teknologi MARA)	A Multi-Criteria eNodeB Pre-Selection and Handover Triggering Scheme for LTE-A Heterogeneous Wireless Network
Azwati (Universiti Teknologi MARA)	A Framework Study on A Real-Time Operated System for Emergency Medical Services (Ems) Using Nodemcu Processor
Tareq Mohammed Al-Shami (Universiti Teknologi PETRONAS)	Effect of Matrix Permeability on A Horizontal Shale Gas Well Performance Using A Fully Coupled Fluid Flow with Geomechanics Model
Mohammed Bashir Abdullahi (Universiti Teknologi PETRONAS)	Pore Pressure Diffusion Waves Transmission in Oil Reservoir
Haithm Salah Hagar (Universiti Teknologi PETRONAS)	Chitin Nanocrystals: Synthesis, Characterization, and Their Role as Stabilizers for Emulsion Systems
Mohammed Al Aghbari (Sultan Qaboos University)	Improvement Geotechnical Properties of Salt-encrusted Desert Flats utilizing cement and Marble Waste

SESSION 3 (4.35 pm – 5.20 pm)
MODERATOR: TBA

NAME (INSTITUTION)	TITLE
Siti Shuhada (Universiti Teknologi MARA)	TBA
Hazirah Bee (International Islamic University)	TBA
Prof. Dr. Jen Chia Chang (National Taipei University of Technology)	TBA

ONLINE VIDEO PRESENTATION INFORMATION

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Presenter: *Wan Nurul Asikin Wan Ramli*
Institution: Universiti Malaysia Kelantan
Paper Title: Analysis of The Effectiveness of Online Advertising Methods Using Instagram As A Marketing Strategy for Maintaining the Hijab Brand, Duck.
Video Link:
Slide Link:

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Presenter: *Yusramizza Md Isa*
Institution: Universiti Utara Malaysia
Paper Title: Isu Perundangan Berkaitan Perkhidmatan E-Hailing Di Malaysia
Video Link:
Slide Link:

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Presenter: *Nor Azaruddin Husni Nuruddin*
Institution: Institut Kefahaman Islam Malaysia
Paper Title: Model Pengurusan Sisa Elektronik di Malaysia: Ulasan
Video Link:
Slide Link:

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Presenter: *Ghanim. Hamid. Al-Khattabi*
Institution: Ministry of Health, KSA
Paper Title: Hepatitis C infection in Hemodialysis Patients, Makkah, Saudi Arabia
Video Link:
Slide Link:
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Presenter: *Amalia Zukra*
Institution: University of Indonesia
Paper Title: Integration of Mode Transfer Facilities at Transit Node Based on Community Preferences
Video Link: https://youtu.be/xPo8nFAs4O0
Slide Link:

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Presenter: *Aladdin Ahmed*
Institution: Military Technical College
Paper Title: Experimental and CFD Resistance Validation of Naval Combatant DTMB 5415-51 Model
Video Link:
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Presenter: *Aladdin Ahmed*
Institution: Military Technical College
Paper Title: Comparative Investigation of Resistance Prediction for Surface Combatant Ship Model Using CFD Method
Video Link:
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Presenter: *Ariyani*
Institution: University of Indonesia
Paper Title: Risk Assessment to Improve Toll Road Business Resilience
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Presenter: *Faizal Hendrawan*
Institution: University of Indonesia
Paper Title: Industrial Trip Generation Model in Karawang International Industry City (KIIC)
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Presenter: *Hrishikesh B Vanjari Vanjari*
Institution: PCCOE, Pune, SPPU. Pune
Paper Title: Realization of Improvements to Compressive Sensing Based Speech Enhancement for Hearing Aid Applications
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Presenter: *Nor Hafiza Haron*
Institution: Universiti Poly Tech Malaysia
Paper Title: Big Data Analytics: Review on Challenges for IR 4.0 Era
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Presenter: *Zaid Amin*
Institution: Universitas Bina Darma
Paper Title: Social Media Tuning Attention Model for Information Sharing Behaviour
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Presenter: *Siti Fatimah Mohd Tawil*
Institution: Universiti Sains Islam Malaysia
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Presenter: *Atica Chairun Nissa*
Institution: Universitas Indonesia
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Presenter: *Sheikh Muhammad Rezwan*
Institution: BUET
Paper Title: Investigating A New Teaching Pedagogy in An Online Design Studio
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Presenter: *Agnes Grace Patricia Hutabarat*
Institution: University of Indonesia
Paper Title: Analysis of Transportation Accessibility in Bogor City
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Slide Link:

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Presenter: *Tommy Iduwin*
Institution: University of Indonesia
Paper Title: Contribution of Plastic Waste in Recycles Concrete Aggregate Paving Block
Video Link:
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Presenter: *Desi Marantika*
Institution: University of Indonesia
Paper Title: System Dynamics Modelling: The Impact of Fare Adjustment and Service Improvement to Public Service Obligation (Pso) Subsidies on Jabodetabek Commuterline
Video Link:
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Presenter: *Noorasyikin Mohammad Noh*
Institution: Universiti Tun Hussein Onn Malaysia
Paper Title: The Performance of Vetiver Root Growth With EM. PB Solution Toward Soil Slope – Physical Model
Video Link:
Slide Link:

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Presenter: *Noorasyikin Mohammad Noh*
Institution: Universiti Tun Hussein Onn Malaysia
Paper Title: Effect of Slope Gradient on The Application of Vetiver Grass for Slope Stabilization

Video Link:
Slide Link:

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NON-PRESENTER INFORMATION

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Participant: *Usman Hamza*
Institution: University of Science Malaysia
Paper Title: Devops Adoption Guidelines, Challenges, And Benefits: A Systematic Literature Review

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Participant: *Usman Hamza*
Institution: University of Science Malaysia
Paper Title: Organisational Leadership Challenges in Adopting DevOps in Northern Nigeria SMEs

==

Participant: *Gunasekar Thangarasu*
Institution: MAHSA University
Paper Title: Compressive Sensing Path for Optimal Data Transmission in Underwater Acoustic Sensor Network

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Participant: *Gunasekar Thangarasu*
Institution: MAHSA University
Paper Title: Improved Error Free Clustering in Cognitive Radio Networks Using Modified Particle Sawrm Optimisation

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Participant: *Kesava Rao Alla*
Institution: MAHSA University
Paper Title: Blockchain-Based Deep Learning for Sustainable Agricultural Supply Chain Management

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Participant: *Kesava Rao Alla*
Institution: MAHSA University
Paper Title: SecureML Based Classification for Internet of Things Based Secured Transaction of Data

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Participant: *Arko Pal Pal*
Institution: PES University
Paper Title: Real Time Patient Vital Monitoring and Alarm System with Prediction of Anomalies and Future Clinical Episodes Using Machine Learning Models

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Participant: *Hamidah Ramlan*
Institution: Universiti Tenaga Nasional
Paper Title: The Impact of Interest Rate, Exchange Rate towards Economic Growth at Malaysia

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Participant: *Sahaida Laily Md Hashim*
Institution: Universiti Tenaga Nasional
Paper Title: Analyzing The Factors Affecting the Firm Performance of Technology Companies in Malaysia

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Participant: *Fitriyah Razali*
Institution: Universiti Teknologi Malaysia
Paper Title: Maqasid Syariah for Elderly Cohousing Development in Malaysia

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Participant: *Farrah Azwanee Aminuddin*
Institution: Universiti Teknologi Malaysia
Paper Title: The Contractual Challenges and Strategies in Building Information Modelling

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Participant: *Rosmamuhamadani Ramli*
Institution: Universiti Teknologi MARA
Paper Title: A Review: Characterization of Aluminium Metal Matrix Reinforced with Zirconium Diboride

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Participant: *Adlina Syafura Ahmad Sabri*
Institution: Universiti Teknologi MARA
Paper Title: Elemental Analysis of Printing Ink with The Application of Laser-Induced Breakdown Spectroscopy (LIBS)- A Review

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Participant: *Thinesswaran Muniandy*
Institution: Universiti Pendidikan Sultan Idris
Paper Title: Green Computing Innovation for Young Inventors Framework Development: A Content Validity Analysis
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Participant: *Ali Saeed Alomari*
Institution: Universiti Sains Malaysia
Paper Title: Cryptocurrency adoption among Saudi Arabian public university students: Dual Structural Equation Modelling and Artificial Neural Network Approach
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Participant: *Nur Hajarul Falahi Abdul Halim*
Institution: University of Technology Malaysia
Paper Title: Numerical simulation of Reinforced Concrete Columns Internally Confined with CFRP Under Cyclic Loading

CONFERENCE COMMITTEE

7TH INTERNATIONAL CONFERENCE ON SOCIAL SCIENCES, HUMANITIES AND TECHNOLOGY 2023 (7TH ICSHT 2023)

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4TH INTERNATIONAL RESEARCH CONFERENCE ON APPLIED SCIENCES AND ENGINEERING TECHNOLOGY 2023 (4TH IRCASET 2023)

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Liaison Officer	**Muhamad Firdaus Abdull Razab** Global Academic Excellence, Malaysia

List of Abstract

IMAGING OF BUBBLY FLOW USING ULTRASOUND

**Sallehuddin Ibrahim[1*]
Mahdi Faramarzi[1]
Mohd Amri Md Yunus[1]**

[1] Department of Control and Mechatronics Engineering, Fakulti Kejuruteraan Elektrik, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia

*Abstract: The strict industrial and environmental regulations have lead researchers to utilize certain industrial process monitoring, control and instrumentation. Flow measurement is a vital issue in instrumentation and has been applied in the petrochemical, chemical and nuclear power generation industries. The behavior of a single phase flowing fluid, e.g. a liquid through a pipe, is well investigated. However, the characterization of a multi-component flowing mixture, such as oil and gas, is more difficult and conventional flow meters do not usually give satisfactory measurement results. In this regard, process tomography utilizing non-intrusive sensors is gaining considerable significance in industrial measurements because it does not disrupt the flow process. An ultrasonic tomography system is one of these techniques which is applicable for bubbly flow with high acoustic impedance difference.
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Keywords: Bubbles, Flow, Imaging, Ultrasound

EFFECT OF SLOPE GRADIENT ON THE APPLICATION OF VETIVER GRASS FOR SLOPE STABILIZATION

Azim Mustafa[1*]
Hasif Zulkafli[2]
Noorasyikin Mohammad Noh[3]

[1,2,3] Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia, 86400 Parit Raja, Batu Pahat,Johor, Malaysia

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Abstract: *This research describes the unique characteristics of Vetiver Grass, Vetiveria Zizanioides Nash, as a bioengineering technique to use for stabilizing slopes. The application of vegetation as part of slope stability and to control erosion has proof to be cost-effective for stabilising surface of the slope. The objectives of this research are to determine the physical properties of soil, identify root properties of Vetiver Grass and measure the mechanical properties and tensile shear strength of root with soil with different slope gradient (45°, 50° and 60°). The methodologies of this study carried out through modelling and lab work to analyses the objective. Root diameter, root length and root morphology observed to identify root properties of Vetiver Grass. Shear box applied to measure the mechanical properties and tensile strength of root with soil with different slope gradient. This study can be made as a reference to produce slope stabilization method by using Vetiver Grass as it medium of bioengineering technique in the future. As we know, slope stability issues become one of the main problems in construction industry that has been acknowledged as one of the most frequent natural disasters that can lead to great loss in property and life. So, it would be one of the best solutions in order to avoid the slope failure from happened again in the future.*

Keywords: *Vetiver Grass, Slope Stabilization, Root Enhancement, Physical Properties*

THE PERFORMANCE OF VETIVER ROOT GROWTH WITH EM PB AND COCONUT FIBRE – PHYSICAL MODEL

Nurul Izza [1*]
Nur Najwa [2]
Noorasyikin Mohammad Noh[3]

[1,2,3] Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia, 86400 Parit Raja, Batu Pahat,Johor, Malaysia

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Abstract: *Slope failure can cause serious problems such as infrastructure damage or death. Vegetation is one of the applications used to help slope stability. The problem is slope failure still occurs due to lack of shear strength or tension in the soil. This research aims to overcome the failure with the objective of identifying the morphology and the properties of the vetiver roots, measuring the shear strength and root tensile strength in the presence of EM. PB and comparison between two different planting methods of vetiver grass. Direct shear test and tensile test are conducted after one month and two months to find the tensile and strength of vetiver root that has been planted in PVC pipe. The average growth of vetiver grass plant with soil has the highest value compared to planting with coconut fibre with total of 111.9 cm of growth after 2-month planting compared to with coconut fibre 92.88cm. The result of comparison between two different method of planting shows the value for shear strength after one-month planting for vetiver grass plant with soil and coconut fibre have the highest value with 1.4936 N/mm^2 compared to vetiver without coconut fibre with the highest value are 1.3671 Nmm^2. While after 2 months, the highest value is 1.4936 N/mm^2 with coconut fibre and without coconut fibre are 1.4916 N/mm^2. Result for tensile after 1-month planting show vetiver root plant without coconut fibre have the highest value of tensile strength with 0.0287 N/mm^2 while with coconut fibre the highest value is 0.0214 N/mm^2. Planting in coconut fibre can improve the soil's shear strength contrast to the tensile strength data. By adding EM. PB solution to the soil, agriculture is improved while additionally promoting the development of vetiver grass roots, which can act as reinforcement for slope stabilization.*

Keywords: *Slope failure, vegetation, root reinforcement, Vetiver grass, slope stabilization*

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COMPRESSIVE SENSING PATH FOR OPTIMAL DATA TRANSMISSION IN UNDERWATER ACOUSTIC SENSOR NETWORK

Gunasekar Thangarasu [1*]
Kesava Rao Alla [2]

[1]Department of Professional, Industry Driven Education, MAHSA University, Saujana Putra, Malaysia
[2] Chancellery, MAHSA University, Saujana Putra, Malaysia

Abstract: *The research team has developed several methods to minimize the power consumption of underwater sensor networks, including clustering, compressive sensing, and the use of a block diagonal matrix. By combining the clustering process with either a block diagonal or compressive sensing matrix, we can significantly reduce the energy required for sending and receiving sensor data. This results in faster transmission and reception of data. To transfer the compressed sensing measurement data from the cluster head to the base station as quickly as possible, a routing strategy is devised based on the shortest possible path. Additionally, arbitrary directions are used to communicate the results of compressive sensing based on clusters. Overall, these techniques offer an efficient way to optimize energy usage and improve the performance of underwater sensor networks.*

Keywords: *Compressive Sensing, Optimal path, Routing, Underwater Sensor Network*

IMPROVED ERROR FREE CLUSTERING IN COGNITIVE RADIO NETWORKS USING MODIFIED PARTICLE SWARM OPTIMISATION

Gunasekar Thangarasu [1*]
Kesava Rao Alla [2]

[1]Department of Professional, Industry Driven Education, MAHSA University, Saujana Putra, Malaysia
[2] Chancellery, MAHSA University, Saujana Putra, Malaysia

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Abstract: *The goal of this paper is to develop and simulate a coverage and localization model that minimizes power consumption while maintaining maximum coverage. To achieve this, the sensor nodes are divided into multiple groups, with each group responsible for a specific aspect of monitoring. This approach is effective because there are more sensors available than strictly required, enabling them to be utilized efficiently. To optimize energy savings, the ad hoc node is strategically positioned to take advantage of the most effective energy-saving opportunities. By doing so, the capacity of cognitive radio network (CRN) sensor nodes to conserve energy can be improved significantly. Overall, this model offers an efficient and practical approach to power conservation while maintaining optimal coverage in CRN sensor networks.*

Keywords: *Energy consumption, Cognitive radio, Routing, PSO*

BLOCKCHAIN-BASED DEEP LEARNING FOR SUSTAINABLE AGRICULTURAL SUPPLY CHAIN MANAGEMENT

Kesava Rao Alla[1*]
Gunasekar Thangarasu[2]

[1*]Chancellery, MAHSA University, Saujana Putra, Malaysia
[2] Department of Professional, Industry Driven Education, MAHSA University, Saujana Putra, Malaysia

Abstract: *Food supply chain (FSC) is an important part of the food supply chain. It is essential to establish food supply chains that are open to the public, accountable for their actions, and available in real time. The development of blockchain technology has led to an increase in the amount of data that is passed between customers and businesses, as well as the data that are passed between them. Blockchain technology is a new type of information technology that has the ability to be decentralized, safe, and trusted, which makes it an excellent option for storing sensitive data. The purpose of this study is to evaluate how blockchain with deep learning is used to find the quality evaluation of food supply chain technology. The use of BC has improved the accuracy of food traceability, while the utilization of Deep Random Forest (DRF) has boosted the efficacy of computing and shortened the reaction time. The research compare the quality evaluation system that is based on BC-DRF with some of the most common existing methods in terms of accuracy, reaction time, and sensitivity, when applied to a variety of block sizes.*

Keywords: *Blockchain, Deep learning, Sustainable Agriculture, Supply Chain Management*

SECUREML BASED CLASSIFICATION FOR INTERNET OF THINGS BASED SECURED TRANSACTION OF DATA

Kesava Rao Alla[1*]
Gunasekar Thangarasu[2]

[1*]Chancellery, MAHSA University, Saujana Putra, Malaysia
[2] Department of Professional, Industry Driven Education, MAHSA University, Saujana Putra, Malaysia

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Abstract: *The Internet of Things (IoTs) is a rapidly developing technology that enables a wide range of applications to interact with each other. The IoT is an emerging technology that can be used to collect, and analyze data from various sources. In this paper, we present SecureML, a unique privacy-preserving CART training scheme that employs blockchain principles to develop a secure CART classifier for use in multipart scenarios in which data is collected from many data sources. SecureML uses the homomorphic cryptosystem to develop secure building blocks such as secure polynomial multiplication and safe comparison. The proposed method is capable of training classifiers in a risk-free manner while retaining an acceptable degree of accuracy.*

Keywords: *Secure, Machine Learning, Classification, Internet of Things, Data Transaction*

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SOFTWARE MODEL CHECKING DISTRIBUTED APPLICATIONS: A HYBRID APPROACH

**Hing Ratana[1]
Sharifah Mashita Syed-Mohamad[2*]
Chan Huah Yong[1]**

[1]School of Computer Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia
[2] Faculty of Ocean Engineering Technology and Informatics, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia

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Abstract: *Developing reliable distributed systems poses significant challenges due to the non-deterministic execution of threads, processes, and communication channels. Formal verification methods, such as model checking, play a crucial role in ensuring the reliability of safety-critical systems. Model checking explores the complete behavior of the system under test (SUT) systematically, investigating each reachable state with different thread schedules. Recent software model-checking techniques, namely cache and centralization, have been applied to distributed systems. However, the caching technique can only check one process at a time, while the centralization technique verifies all processes simultaneously. In the centralization technique, two "ArrayByteQueue" buffers are utilized to store communication and process data byte-by-byte. However, during the model-checking process, the read and write operations, involving data extraction and removal from the queue, become resource-intensive due to the backtracking process. As a consequence, existing interprocess communication (IPC) models encounter computational limitations and experience a rapid state space explosion. To address these challenges, our work proposes the remodeling of IPC models by introducing a request and response tree structure to store communication data. Additionally, we employ pointers to navigate through the data during the backtracking process. Through experimental evaluations, the proposed implementation choices have demonstrated significantly improved performance across various metrics. By incorporating the request and response tree, we enhance the efficiency of storing communication data, while the use of pointers optimizes navigation during backtracking. This remodeling of IPC models shows promise in mitigating computational limitations and state space explosion, thereby enhancing the model-checking process in distributed systems. Our research contributes to advancing the field of model checking in distributed systems and offers potential solutions to the challenges associated with resource-intensive read and write operations during the model-checking process*

Keywords: *Software Model Checking, Distributed System, Java PathFinder (JPF), Interprocess Communication (IPC), Backtracking, State Space Explosion.*

HEPATITIS C INFECTION IN HEMODIALYSIS PATIENTS, MAKKAH, SAUDI ARABIA

Ghanim Hamid Al-Khattabi[1]

[1]Preventive Medicine and Public Health Executive Administration, Ministry of Health, Makkah, Saudi Arabia.
Correspondence: Ghanim Hamid Al-Khattabi
Consultant of Preventive Medicine and Public Health, Epidemiologist; Preventive Medicine and Public Health Executive Administration, Ministry of Health, Makkah, Saudi Arabia.
Tel: +966570570057
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Abstract: *Hepatitis C virus (HCV) infection is the most common cause of chronic liver disease in the world and evaluation of the epidemiology of HCV infection was made possible by the development of a serological assay to detect antibodies to epitopes of HCV. Hemodialysis (HD) is considered to be one of the main risk factors of HCV transmission. The prevalence of antibodies to HCV (anti-HCV) in patients undergoing maintenance dialysis therapy (MDT) was found to be one of the highest among different risk groups and there is wide variation in the prevalence of HCV infection among different dialysis units and countries. Therefore, the prevalence of anti-HCV was studied in patients undergoing MDT. The current study is a cross section one, where a sample of 361 HD patients were selected randomly from HD centers in three governmental hospitals in Makkah city and they were subjected to assessment for the prevalence of anti-HCV by using questionnaires in addition to clinical measurements. The overall prevalence of anti-HCV among HD patients was 49.9% according to clinical measurements and questionnaires. The overall prevalence of anti-HCV among HD patients in Makkah city (49.9%) was comparable to that reported from other parts of the Kingdom of Saudi Arabia (KSA) and it is almost similar to the already reported positivity rate of (43.2%) from the eastern region of KSA and southern regions of KSA (45.5%). However, Strict adherence to universal precautions as recommended by the Center for Diseases Control (CDC), meticulous regular disinfection of HD machines, Strict isolation of HCV-positive patients, dedicated dialysis machines and nursing staff at new dialysis set-up could possibly be the reasons of relatively low anti-HCV positivity at the current study than that reported by Shaheen, et al , from four centers in the western region of KSA, (72.3%) and that by Huraib, et al in their multi-center study in KSA, (68%) as well as the mean national rate. On the other hand, the use of more sensitive third generation enzyme - linked immunosorbent assay (ELISA) technique, long duration on HD, multiple blood transfusions, patients with dialysis treatment in multi-centers, factors related to infrastructure, environment and operational system might be responsible for the high prevalence of anti-HCV found in this study than that reported by Saeed, et al from Riyadh and those observed in the central region of KSA. Although routes of transmission are still unclear, early detection of all infected patients is mandatory for HCV prophylaxis in HD patients. Furthermore, an intensive educational program for staff members, HD patients and proper evaluation of the HD situation are needed. Thus, observation of appropriate preventive measures by all HD-centers is paramount.*

Keywords: *Hepatitis C virus, Hemodialysis, Makkah, Saudi Arabia, Antibodies Against Hepatitis c Virus (Anti-HCV)*

DEVOPS ADOPTION GUIDELINES, CHALLENGES, AND BENEFITS: A SYSTEMATIC LITERATURE REVIEW

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Abstract: *The DevOps methodology in software engineering is currently trending and many software development organisations are adopting it to stay competitive. However, these organisations face difficulties in adopting DevOps due to a lack of common standard guidelines and methodology. We argued that guidelines across multiple platforms are needed to succeed in DevOps implementation. This paper aims to identify the benefits, challenges, and guidelines associated with DevOps adoption using a systematic literature review. The search spanned over ten digital libraries such as ACM Digital Library, ScienceDirect, EBSCOhost, SAGE Journals, Wiley Online Library, and so on. The review also included keyword searches in relevant studies i.e DevOps guidelines, DevOps and guidelines, DevOps benefits, DevOps and benefits, DevOps challenges, DevOps and challenges. Papers written in English and published from 2011 through July 2020 were considered. 33 studies passed the two-step quality assessment. Finally, the data were extracted and analysed based on the themes and research questions, revealing the benefits and challenges of DevOps adoption guidelines. The findings show that improved software delivery speed increases code quality and application quality with frequent releases. It also shows that there was no transparent scientific approach to determining the DevOps capabilities regarding the process, practice, tools, and implementations, cost implications, and insufficient knowledge of the automation process. Finally, the reviewed studies indicated that software quality increases whenever DevOps best practices are adopted. DevOps is about continuous software delivery. Previous studies have not considered the guidelines for scientifically adopting DevOps for organisations that want to migrate. The present review identified the DevOps adoption guideline model represented in a cyclic format that indicates an infinite process representing continuous integration, continuous delivery, and continuous deployment, with an understanding of benefits and challenges.*

Keywords: *DevOps Guidelines, Challenges, Benefits, Systematic Literature Review*

A REVIEW: CHARACTERIZATION OF ALUMINIUM-METAL MATRIX COMPOSITE REINFORCED WITH ZIRCONIUM DIBORIDE

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Abstract: Composite materials with aluminium matrices are used in thermal management, defence, aerospace, automotive and aviation. As the prices of useful items decreased, their usefulness increased. Aluminium is reinforced with other metals, non-metals and ceramics to give it the required physical and mechanical properties such as high tensile strength, great hardness and corrosion resistance. Aluminium-metal matrix composites are known for their exceptional physical and mechanical properties and performance. This work also focuses on the fabrication and characterization of zirconium diboride reinforced aluminium-metal matrix composite. Zirconium diboride particles were used as reinforcement material to fabricate aluminium metal matrix composites by the stir casting method. The microstructure, hardness and tensile strength of aluminum-metal matrix composites and its corrosion behaviour were investigated. The results showed that the inclusion of zirconium diboride particles increased the hardness and tensile strength of aluminum-metal matrix composites. Field emission scanning electron microscopy and x-ray diffraction analysis are used to investigate the microstructural properties of aluminum-metal matrix composites reinforced with zirconium diboride particles. Field emission scanning electron microscopy images showed a uniform distribution of zirconium diboride particles in the aluminum-metal matrix composites matrix. X-ray diffraction analysis showed the formation of an intermetallic compound of aluminium and zirconium diboride. From the review that have been made, we can conclude that the inclusion of zirconium diboride particles increased the mechanical properties and corrosion of aluminium-metal matrix composites.

Keywords: Aluminium-Metal Matrix Composite, Zirconium Diboride, Mechanical Properties, Corrosion Behaviour

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THE RELATIONSHIP BETWEEN BUILDING CONDITION SPECIFICALLY TO INDOOR AIR QUALITY (IAQ) AND SICK BUILDING SYNDROME (SBS) SYMPTOMS AMONG WARD STAFF AT HOSPITAL PAKAR SULTANAH FATIMAH

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Abstract: *This study aims to investigate the relationship between building condition, particularly indoor air quality, and Sick Building Syndrome (SBS) symptoms among ward staff at Hospital Pakar Sultanah Fatimah. The study will employ a cross-sectional design and a sample of ward staff will be recruited to participate in the study. SBS symptoms will be assessed using a standardized questionnaire. Statistical analysis will be conducted to examine the relationship between building condition, indoor air quality, and SBS symptoms. The findings of this study will contribute to the understanding of the impact of building condition on indoor air quality and the health of healthcare workers. The calculated U (63) is greater than the critical U (53), indicating that H_0 cannot be rejected. Therefore, we accept H_0 which states that the present symptoms and building conditions are equal, and we can conclude that there is a relationship between building conditions and present symptoms among the ward staff.*

Keywords: *Sick Building Syndrome (SBS), Indoor Air Quality (IAQ), Contaminants, Health*

REAL TIME PATIENT VITAL MONITORING AND ALARM SYSTEM WITH PREDICTION OF ANOMALIESAND FUTURE CLINICAL EPISODES USING MACHINE LEARNING MODELS

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Abstract: *Heart disease is a leading cause of death in India. Many times, heart diseases do not show symptoms until they become a matter of concern.This silent nature calls for real time monitoring of vitals. In this paper, we propose a healthcare monitoring system which makes use of existing wearable devices to measure vitals of the user's body. The data gathered is used to perform real time analysis to detect any irregularities and simultaneously to predict if there are any underlying problems that might be of future concern.*

Keywords: *Real Time Vital Monitoring, Wearable Devices, Machine Learning, Disease Prediction*

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INFLUENCE OF TiO₂ AND Al₂O₃ NANOPARTICLES ADDITION ON THE IMC GROWTH OF SN-3.0AG-0.5CU LEAD-FREE SOLDER AT DIFFERENT REFLOW TEMPERATURE

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Abstract: *This study investigated the influence of adding 0.50 wt% and 1.0 wt% titanium oxide (TiO₂) and aluminium oxide (Al₂O₃) nanoparticles on the properties of Sn3.0Ag0.5Cu (SAC305) lead-free solder alloy. In terms of thermal properties, SAC305 lead-free solder with or without addition of TiO₂ and Al₂O₃ nanoparticles, the melting temperature is very similar and comparable. The wetting performance of the SAC305 nanocomposite solder was determined by the contact angle. The best contact angle recorded is 31.65° at reflow temperature of 250°C for 0.50 wt% addition of TiO₂ and Al₂O₃ nanoparticles. The thickness of the IMC layer was observed using an Optical Microscope and measured. Results show that the thickness of the IMC layer decreased when TiO₂ and Al₂O₃ nanoparticles were reinforced into the SAC305 solder system, which shows significant decrease when 0.50wt% of TiO₂ and Al₂O₃ nanoparticles were added. However, beyond 0.50 wt% the thickness of IMC layer increases along with increasing reflow temperature by 25%. The results reveal that the adsorption effect of TiO₂ and Al₂O₃ nanoparticles will restrict the growth of the IMC layer under controlled concentration of the nanoparticles and reflow temperature. The optimal parameters to enhance the performance of SAC305 solder by reinforcing TiO₂ and Al2O3 nanoparticles are reflowed at 250°C at 0.50 wt% concentration of TiO₂ and Al₂O₃ nanoparticles.*

Keywords: *Lead-Free Solder, Nanoparticles, Intermetallic Compound, Nanocomposite*
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COMPARATIVE INVESTIGATION OF RESISTANCE PREDICTION FOR SURFACE COMBATANT SHIP MODEL USING CFD MODELING

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Abstract: *The Multi-Mission Surface Combatant (MMSC) is a highly maneuverable combatant ship capable of littoral and open ocean operations. It was designed to confront modern maritime and economic security threats. The MMSC takes the proven capabilities of the littoral combat ship and the inherent flexibility of the Freedom-variant hull to meet the unique maritime requirements of international navies. Computational fluid dynamics (CFD) is applied to present a method to predict the resistance for new surface combatant ship. First, calculations for a typical benchmark DTMB 5415 model are carried out using three different mesh sizes for Froude numbers from 0.10 to 0.45 for the purpose of model validation by StarCCM+. The numerical results are compared with the experimental data and the published CFD solutions in terms of wave field and resistance coefficients for accuracy of the solution parameters. Finally, the method is used to study the influence of Froude number variation on the total resistance and wave pattern for the new combatant ship model under the same conditions. Quantitative agreement between the numerical simulations has been observed. This demonstrates that our CFD model is capable of simulating the steady flow around a ship hull with an acceptable accuracy and thus can be used as a complementary tool to laboratory model tests for ship design and ship hydrodynamic research.*

Keywords: *Combatant ship; MMSC; DTMB; Resistance; CFD*

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EXPERIMENTAL AND CFD RESISTANCE VALIDATION OF NAVAL COMBATANT DTMB 5415-51 MODEL

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Abstract: The hull model of the surface combatant DTMB 5415 has been selected as a recommended benchmark naval ship for computational fluid dynamics (CFD) validation for resistance analysis. CFD is used to present a method for predicting surface combatant ship resistance. The resistance calculations of a 3 m DTMB 5415 hull model was compared using experimental and CFD techniques. The bare hull shape experiments were set up and carried out at the towing tank facilities at the Military Technical College's Hydrodynamic Laboratory in Egypt. A benchmark test will ensure that the equipment, procedures, and estimates of uncertainty are adequate. For the purpose of model validation, CFD calculations for a DTMB 5415-51 model are performed using three different mesh sizes for Froude numbers ranging from 0.10 to 0.40. For the same Froude numbers and free model conditions, results from towing tank experiments on the model's resistance, sinkage, and trim are presented. The numerical simulations are quantitatively consistent. The numerical results are compared in terms of wave field and resistance coefficients to determine the accuracy of the solution parameters. As evidenced by the resistance curves, the experimental investigation appears to provide very good agreement, indicating that the CFD model is capable of simulating the steady flow around a ship hull with acceptable accuracy and can thus be used as a supplement to laboratory model tests for ship design and ship hydrodynamic research.

Keywords: DTMB; towing tank; resistance; CFD

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GEOTECHNICAL PROPERTIES OF OMANI SABKHA USING CEMENT-MARBLE STABILIZATION TECHNIQUE

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Abstract: *Sabkha is used to define salt-encrusted flats which underlie of sand, silt or clay soil. It is founded all over the world specially in arid and hot areas that characterized by substantial paucity of precipitation compared to the evaporation rate. Nearly 10% of total land surface area covered by various type of sabkha. However, sabkha soil has a low shear strength and low compressibility. Hence World has witnessed an enormous amount of new development in various sectors. Soil improvement techniques are extremally required to enhance physical and mechanical properties of sabkha. Cement stabilization is producing soil-cement with highly compacted mixture. Annual estimations revealed that approximately 1.35 billion tons of CO2 in 2010 (nearly 7%) is emitted from OPC production. Consequently, there are major changes in the environment and ecological stability. These challenges required scientific attention to safe it. Marble waste is a challenge that need sufficient and argent attention. Roughly, there are about 500 million tons of marble products worldwide. During process of marble cutting, grinding, and polishing, approximately 20-30 % of the marble blocks becomes a waste. This research is aimed to get rid of this waste material by utilizing it for beneficial purpose. Sabkha sample is collected from Al-Azaiba- Muscat, Sultanate of Oman is used to be stabilized using marble slurry powder from Omani deposits. Soil sample well be treated by two processes: cement and cement-marble waste with various proportion. Sabkha-cement (SB-C) and Sabkha-cement-marble (SB-CM) are tested at 0, 2.5, 5, 7.5 and 10% of sabkha dry weight. Cement-Marble doses of 0, 10, 20, 30 and 100% are examined. Physical and chemical properties are identified in addition to Unconfined compressive strength UCS test.*

Keywords*: Salt-Encrusted Flats, Marble Slurry, Soil Stabilization, Alternative Treatment, UCS*

DESIGN OF WATER QUALITY MONITORING SYSTEM BASED ON INTERNET OF THINGS TECHNOLOGY

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Abstract: *Water quality is an assessment of how appropriate water is for a certain use or purpose, taking into consideration various physical, chemical, and biological factors that can affect its suitability. These factors can include pH, turbidity, dissolved oxygen, temperature, and the presence of pollutants or pathogens. The outdated method has been used by scientists and researchers to monitor the quality of water from the sources. The objective of this project is to create an efficient Internet of Things (IoT) system that can various sensors to continuously monitor water quality. The system is implemented using Arduino as the microcontroller, and sensors. A real-time monitoring system that is IoT-based was done to improve the examination process of the water sample. The system device is containing a NodeMCU ESP8266 microcontroller, pH, temperature, and turbidity sensors and uses the Blynk application. The system experiment results show that the device can show different readings based on the variety of water samples from different water bodies.*

Keywords: *Water Quality Monitoring System, Iot, Ph, Temperature, Turbidity, Arduino, ESP8266, Blynk*

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A MULTI-CRITERIA ENODE-B PRE-SELECTION AND HANDOVER TRIGGERING SCHEME FOR LTE-A HETEROGENEOUS WIRELESS NETWORK

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Abstract: *To establish the best connection possible, different radio access technologies are combined to form a heterogeneous wireless network (HetNets). The HetNets consists of macro cells and small cells in the Long Term Evolution-Advanced (LTE-A) network. However, the fast pace of development of LTE-A technology has been very challenging due to the increase in the number of user equipment (UE). Managing the selection of the target cell and migration of active communication sessions of the UE between different base station (BS) points is vital for seamless mobility. To address this issue, a multi-criteria eNodeB pre-selection parameter is introduced to pre-select the most suitable cell for handover. The proposed approach aims to enable UE to autonomously assess a list of potential eNodeB located in their direction of movement and choose the most suitable candidate network. A framework for eNodeB selection is developed that considers the distance between the candidate network and the vehicle's trajectory, as well as the mobility information of the vehicle. The important parameters which are the proximity index and distance factor are chosen to identify the best candidate eNodeB. Moreover, we investigate an efficient scheme for the handover trigger to get an optimum distance for handover initiation using the particle swarm optimization (PSO) technique. The results show that the proposed parameters are reliable for eNodeB selection to self-select the network and improved the successful handover probability by using the proposed optimum distance to initiate the handover process.*

Keywords: *Handover trigger; multi-criteria pre-selection; proximity index; distance factor*
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PORE PRESSURE DIFFUSION WAVES TRANSMISSION IN OIL RESERVOIR

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Abstract: *Several studies have revealed that the principal wave-induced fluid flow (WIFF) mesoscopic attenuation is due to the compressional (P) wave propagation within oil reservoirs at seismic frequency ranges. The P-wave stimulates the flow of the fluid at mesoscopic-scale heterogeneity that are generally tens of centimeters greater than the dimension of the pore space but shorter than the wavelength. Seismic wave energy is converted to slow Biot's waves, that diffuse outward from the interfaces to maintain pore pressure continuity. Biot's diffusion waves fail to comply with a square-law approach, because of their slow propagation speed and higher attenuation. To characterize the slow Biot's (diffusion) waves in the oil reservoir, a 1D microscopic formulation was used in this study. The result shows that penetration depth and wavelength have identical behavior in different formation permeabilities, and their maximum values move towards low-frequency ranges. However, wave velocity and attenuation have similar trends and their maximum values move towards higher frequency ranges. The pore pressure diffusion process estimated the Biot's diffusion wave's frequency-dependent attenuation. Diffusion waves at a formation layer interface follow the accumulation-depletion relationship instead of the reflection-refraction model. Biot's diffusion waves at the interface of layers are highly attenuated and unable to propagate far away from the source of excitation. Therefore, slow waves can be used to monitor the CO_2 front in oil reservoirs. It can also be used to detect shale gas transport in different layers, and identify propagation of fractures during gas/oil recovery, as well as the safe monitoring of the CO_2 storage geo-sequestration process.*

Keywords: *Biot's Slow Waves; Oil Reservoir; Pore Pressure; Seismic Waves; Velocity; Wavelength*

AN EFFECTIVE AIR POLLUTION PREDICTION MODEL USING MACHINE LEARNING ALGORITHMS

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Abstract: *Air pollution is a major environmental concern globally, with both developed and developing countries facing its impacts. In recent years, citizens and governments have become increasingly concerned about the effects of air pollution on human health and have proposed sustainable development initiatives to address this issue. In a recent study, air pollution data from the years 2020-2022 was collected from a secondary data source. The data set included six key input features, including SO2, PM2.5, CO, PM10, NO2, and O3 values. To analyse this data, various machine learning models were employed, including linear regression, multiple linear regression, KNN, random forest regression, decision tree regression, support vector regression, and artificial neural networks. To ensure the accuracy of the predictions, mean square error and R square were used to measure the absolute error and forecast precision. Additionally, the importance of each input feature in air pollution was investigated, providing valuable insights into the factors that contribute to air pollution levels. Overall, the use of machine learning algorithms in air pollution estimation and prediction has significant potential to improve our understanding of this critical environmental issue and inform effective strategies for addressing it.*

Keywords: *Machine Learning, Air Pollution, Prediction, Linear Regression, Artificial Neural Network and KNN*

GREEN COMPUTING INNOVATION FOR YOUNG INVENTORS FRAMEWORK DEVELOPMENT: A CONTENT VALIDITY ANALYSIS

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Abstract: The use of Information Technology (IT) innovation products is growing and has been a compulsory norm in our daily usage. Innovative products developed based on green computing perspectives are also equally important to prevent environmental deterioration. However, there is a lack of guidelines and tools among young inventors in developing green IT innovations. Therefore, this study validated Green Computing Innovation (GCI) criteria that were identified with our previous findings for the further GCI framework development for young inventors. In this research, the method of Content Validity Index (CVI) is used to quantitatively determine content validity. This study employs two types of CVI, which are Item-CVI (I-CVI) and Scale CVI (S-CVI). To achieve this, three experts were asked to rate the relevancy of items in order to obtain evidence of content validity. As a result, all the criteria were passed with an acceptable cut-off score of CVI equal to 1 and none of the criteria were eliminated from this study. This research aims to bring more attention to the importance of GCI for Young Inventors Framework by validating all the criteria through CVI. Therefore, this paper describes a systematic approach to quantify content validity in the form of CVI based on evidence and best practice.

Keywords: Content Validity; Green Computing; Innovation; Young Inventors

SOCIAL MEDIA TUNING ATTENTION MODEL FOR INFORMATION SHARING BEHAVIOUR

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Abstract: As human beings, we have psychological blind spots as we access the massive abundance of information available to us online from social media and other sources. This onslaught of diverse information can become dissonant in relation to our attention in verifying, critiquing, and believing in the trustworthiness of the information we receive and that is available to us online. An in-depth study is needed in order to describe and model this dissonance regarding our understanding comprehensively. The study in this paper aims to construct and validate a tuning attention model (TAM) that could comprehensively describe users' behavior in sharing information. Our model aims to describe and clarify the integration of our technological solution, which can affect our attention to whether or not we share information. We conducted four studies with 150 participants, including a pilot study where we built ontologies related to theory and constructs. In the second study, we designed the Visual Selective Attention System (VSAS) tool for user experiments. The third study was on behavior change analysis using the Implicit Association Test (IAT). The fourth study involved modeling the overall and the structural model fit and relationship between constructs using Structural Equation Modeling (SEM). This study demonstrated the significance of the detailed processes and relationships of the tuning attention model (TAM) that describes a user's behavior in sharing information online. The result is that the Tuning Attention Model (TAM) shows that all data are significantly valid and reliable in each model relationship. We also prove a significant relationship in the overall and structural model measurement of fit between the constructs, including attention-based design, user attention, social influence, epistemic belief, and user decision-making in sharing information online. These findings can be the basis for designing a range of technological solutions, including the VSAS tool outlined here, which are used to understand and mitigate against the adverse effects of misinformation sharing on social media, particularly prioritizing a humanist approach.

Keywords: Tuning Attention Model (TAM), Information Sharing, User Attention, Misinformation, Social Media

EFFECT OF MATRIX PERMEABILITY ON A HORIZONTAL SHALE GAS WELL PERFORMANCE USING A FULLY COUPLED FLUID FLOW WITH GEOMECHANICS MODEL

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Abstract: *Recently, hydrocarbon production from unconventional oil and gas resources has emerged. The most common unconventional oil and gas resources are found in shale formations. These shale formations are well-known for being stress-sensitive. Usually, traditional tools are used to model and study production from such formations. However, conventional modeling techniques denote rock deformation using constant rock compressibility. Such an approach is useful for studying conventional hydrocarbon resources where formation stress sensitivity is insignificant. However, when it comes to modeling stress-sensitive formations such as shale formations, it is important to include the rock deformation and its effects on the overall fluid flow in porous media. To consider the rock deformation in the fluid flow model, the coupling of fluid flow with the geomechanics model has to be used. This study utilizes a fully coupled fluid flow with geomechanics model. In addition, shale formations are also known to have an ultra-low matrix permeability, and production usually results from hydraulic fractures that act as flow conduits. Consequently, the effect of matrix permeability on hydrocarbon production is rarely studied. This study focuses on the effect of matrix permeability on the production performance of a single horizontal well in Barnett Shale. It also focuses on the effect of matrix permeability on production performance when the geomechanics effects are coupled with the fluid flow model and decoupled. The results show that the higher the matrix permeability, the better the production performance of the well. The results also show that the higher the matrix permeability, the higher the cumulative production difference between the two models (when the geomechanics effects are coupled and decoupled).*

Keywords: *Geomechanics Coupling, Shale Gas, Matrix Permeability, Porous Media*

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ORGANISATIONAL LEADERSHIP CHALLENGES IN ADOPTING DEVOPS IN NORTHERN NIGERIA SMES

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Abstract: *The issue of development and operation is growing rapidly as some organisations in northern Nigeria seek to capitalise on the benefits it can provide to software development organisations and information technology projects. Adopting DevOps, on the other hand, necessitates significant organisational change, particularly where tradition and established processes exist. The results of a five-month qualitative diary study following the adoption of DevOps in a Nigerian SME with over 100 employees are presented in this study as part of a large-scale doctoral research project that investigates software development processes and leadership challenges. Based on the study's findings, the case study organisation uses the DevOps approach to develop new software that will be used internally and by customers. DevOps appears to be highly recognised in theory, but it is extremely difficult to implement in practise. The need to maintain old systems, a lack of technical leadership, management systems, and resilience all contribute to this difficulty. This study also discovered evidence of job creation, particularly among software developers. Taken together, we contend that DevOps is an interdisciplinary topic that necessitates the participation of all stakeholders in order to communicate and collaborate, and that it would benefit greatly from more leadership and possibly deeper psychological research..*
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Keywords: *DevOps, Leadership Challenges, Adoption Benefits, Nigeria SME, Case Study*

SYSTEM DYNAMICS MODELLING: THE IMPACT OF FARE ADJUSTMENT AND SERVICE IMPROVEMENT TO PUBLIC SERVICE OBLIGATION (PSO) SUBSIDIES ON JABODETABEK COMMUTERLINE

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Abstract: *Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek) Commuterline is one of the modes of transportation in Indonesia that receives subsidies in the form of Public Service Obligation (PSO) from the Government. The PSO subsidy is based on the difference between published fare which set by the Government and the fare calculated by the operator, so that fare can be reached by all communities. The PSO subsidy is given to all passengers. More passengers, greater subsidy must be given. Every year the PSO subsidy continues to increase and burdens the state budget. In 2016 it was IDR1.079 trillion while in 2021 it was IDR1.628 trillion. Therefore, it is necessary to study the PSO subsidies scheme for the Jabodetabek Commuterline currently used, in order to obtain a more effective scheme or policy from the perspective from all parties. This study will focus on knowing the effect of implementing fare adjustment and service improvement policies on Jabodetabek Commuterline PSO subsidies. This study creates a system dynamic model for providing the PSO subsidies. After model testing was carried out, the model created and its input parameters were stated to be able to describe the actual condition of the PSO subsidy system. Based on the results of running 5 scenarios, it can be concluded that the most optimal scenario for reducing PSO subsidies in Jabodetabek Commuterline with fare adjustment and service improvement policies is Scenario 5. This is because in 2029 to 2044, the PSO subsidy is IDR0. This means that the revenue earned by operator is greater than the IOM Cost that needs to be spent. Thus, the fare adjustment and service improvement policies can reduce PSO subsidies with a fixed rate below the ATP value and an ever-increasing demand.*

Keywords: *Public Service Obligation, Commuterline, System Dynamics Modelling, Fare Adjustment, Transport Policy.*

MAQASID SHARI'AH FOR ELDERLY COHOUSING DEVELOPMENT IN MALAYSIA

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Abstract: *This paper presents the integrating elements of the principle of Maqasid Shari'ah in the context of elderly cohousing development in Malaysia. The concept of Maqasid Shari'ah, which refers to the objectives and goals of Islamic law, serves as a guiding framework for creating sustainable and inclusive living environments for the elderly population. The aging population in Malaysia is rapidly growing, necessitating the exploration of innovative solutions that address the needs for elderly to have an active living lifestyle. The findings proved that most elderly supported and agreed that the suggested cohousing development is beneficial towards the community, particularly the Muslim community. The study's objective is to find out Muslim's elderly views and support towards cohousing development for an active aging living. Primary data is collected from questionnaire distribution towards Muslim elderly in Selangor and Johor states in Malaysia. Qualitative data was collected from 641 respondents, and frequency distribution analysis is applied towards the data. The majority of respondents agreed on the suitability of cohousing development for the Muslim elderly with the governance of Maqasid Shari'ah. This research contributes to the emerging field of Islamic gerontology and presents a practical approach to designing and implementing elderly cohousing developments rooted in Maqasid Shari'ah principles.*

Keywords: *Maqasid Shari'ah, Elderly Cohousing, Islamic Gerontology, Active Aging, Well-Being*

INTEGRATION OF MODE TRANSFER FACILITIES AT TRANSIT NODE BASED ON COMMUNITY PREFERENCES

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Abstract: *The development of facilities and infrastructure in Jakarta city makes people many choices of public transportation modes to meet their daily movements. Although it does not take into account the transfer between modes. Especially at transit nodes, sometimes people have to deal with less humane transfer facilities. To change lanes or modes, you have to walk up a long flight of stairs and often do not take into account safety factors for all groups of people. The lack of integration of transfer facilities sometimes makes travel time longer when compared to using private vehicles. Dukuh Atas Transit Node is a meeting point for MRT, LRT (Jabodebek), TransJakarta and Airport Train transportation modes. In addition, this node area is also a node of transportation and economic activities, so intermodal integration is very important to reduce the volume of private vehicles on the road.*

The purpose of this study is to evaluate the integration of transfer mode facilities and analyze the willingness of people to use public transportation. The research method uses regression analysis processed with the SPSS software program. The results show that there is a positive correlation between the proximal aspect of the modal transfer facility and the level of public satisfaction in carrying out modal transfer activities at the Dukuh Atas transit node. As well as the positive influence of walking time on people's willingness to switch to using public transportation.

Keywords: *Integration, Transit Nodes, Modal Transfer Facilities*

ISU PERUNDANGAN BERKAITAN PERKHIDMATAN E-HAILING DI MALAYSIA

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Abstrak: *Perkhidmatan e-hailing seperti inDriver dan Grab merupakan sebahagian daripada pengangkutan awam yang popular di Malaysia. Melalui perkhidmatan e-hailing, penumpang boleh menempah perjalanan menggunakan peranti maya seperti telefon bimbit. Perkhimatan ini dijangkakan akan terus berkembang dengan pesat. Jangkaan ini bertitik tolak daripada permintaan tinggi oleh pengguna lantaran kelebihan-kelebihan perkhidmatan e-hailing termasuk kelajuan, keselesaan dan penjimatan kos kepada pengguna. Mulai Oktober 2019, pengendali e-hailing Malaysia adalah tertakluk kepada undang-undang berorientasikan kawalan yang sama seperti dikenakan atas pemandu teksi. Artikel ini akan memaparkan kerangka perundangan yang mentadbir perkhidmatan e-hailing di Malaysia, serta isu-isu perundangan dan risiko utama yang masih wujud dalam perkhidmatan e-hailing. Penulisan artikel ini adalah berlandaskan penyelidikan kualitatif, berorientasikan secara utama kepada pendekatan kajian sosio-perundangan. Data primer dan data sekunder telah distrukturkan oleh penulis-penulis dengan mengaplikasikan analisis tema untuk menjana naratif perbincangan tentang perkhidmatan e-hailing di Malaysia, termasuk aspek kerangka perundangan dan isu perundangan serta risiko yang terdapat dalam industri ini. Antara dapatan penting yang diketengahkan adalah legitimasi am bagi perkhidmatan e-hailing di Malaysia berdasarkan kewujudan undang-undang penting yang mengawal selia perkhidmatan e-hailing. Selain itu, dapatan menunjukkan bahawa isu-isu perundangan dan risiko melibatkan perkhidmatan e-hailing adalah berlaku di Malaysia. Isu-isu perundangan dan risiko tersebut adalah berkait secara signifikan dengan status keesahan operasi daripada segi undang-undang, keselamatan pemandu serta pengguna, liabiliti syarikat pengendali (penyedia) dan privasi pemandu serta pengguna. Segenap isu perundangan dan risiko melibatkan perkhidmatan ini perlu diberikan perhatian dan langkah penyelesaian yang praktikal dan ampuh bagi melestarikan dan memajukan perkhidmatan e-hailing di Malaysia.*
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Kata Kunci: *E-Hailing, Undang-Undang, Logistik, Keselamatan, Jenayah*

THE IMPACT OF INTEREST RATE, EXCHANGE RATE TOWARDS ECONOMIC GROWTH AT MALAYSIA

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Abstract: *This paper investigated the impact of exchange rate and Interest Rate towards the Gross Domestic Product (GDP growth) at Malaysia. Data is gathered from IMF and world bank. The study employed multivariate regression for impact analysis. Therefore, the reported findings found that there is negative impact of interest rate on GDP. The exchange rate has a positive impact towards GDP. Notably that, policymakers as well as government across countries are recommended to look into details the growth of interest rate and exchange rate in ensuring the performance of economic growth for country development.*

Keywords: *Exchange rate; Gross Domestic Product; interest Rates*

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ANALYZING THE FACTORS AFFECTING THE FIRM PERFORMANCE OF TECHNOLOGY COMPANIES IN MALAYSIA

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Abstract: *The purpose of this research is to analyse the impact of current ratio, short term debt, long term debt, company size and total debt ratio on the firm performance. The sample of this study was technology sector companies listed on the Bursa Malaysia from 2012-2021. The number of samples used was 17 companies with the observation of 170. This study used secondary data taken from the annual financial statement. The method of data analysis was descriptive analysis and multiple regression analysis. The data analysis used was Stata 10 software. The result of the study showed that current ratio, company size, long term debt had positive and significant on ROE. Meanwhile, total debt ratio and long-term debt was negative and significant on ROE. For Return on Assets, current ratio, long term debt and company size was positive and significant on ROA. Other than that, total debt ratio and short-term debt was negative and significant on ROA.*

Keywords: *Technology sector, firm performance, return on asset (ROA), return on equity (ROE)*

POLYETHERSULFONE – POLYITACONIC ACID NANOFILTRATION MEMBRANE FOR HIGH SELECTIVITY DYES REMOVAL

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Abstract: *The hazardous and mutagenic properties of synthetic dyes effluent discharge into water bodies have led to the development of membrane separation for water treatment. pH-sensitive membranes have been widely employed as they exhibited remarkable improvements in the permeability and separation performance of PES membranes. In this study, the polyethersulfone (PES) membrane incorporated with polyvinylpyrrolidone (PVP), pluronic F108, and polymerized itaconic acid by phase inversion were fabricated and characterized. Polymerized itaconic acid (PIA) has been employed in the PES dope solution via blending technique. Fabricated membrane with different weight percentages of PIA were studied. The dye removal capacity, chemical composition, and thermal stability were characterized using UV-Vis spectrometers, fourier transform infrared (FTIR), and thermogravimetric analyzer (TGA) respectively. The study also evaluated the membrane performance of pure water permeation (PWP) along with methyl blue and reactive red 120 dye rejection. M20-PPI1 with a weight percentage of PVP/Pluronic F108/PIA; 3%/1.5%/0.25%, exhibited the highest water flux of 12 L/m2h and dye rejection of 92% at a pH value of 8 for methyl blue dye removal whereas 82% at pH value of 2 for reactive red 120 dye removal. The findings proposed that M20-PPI1 is an effective pH-sensitive membrane for dye rejection.*

Keywords: *Ph-Sensitive Membranes, Polymerized Itaconic Acid (PIA), Dye Removal, Pure Water Permeation (PWP)*

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THE CONTRACTUAL CHALLENGES AND STRATEGIES IN BUILDING INFORMATION MODELLING

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Abstract: *The Malaysian CIDB launched the Construction 4.0 Strategic Plan for the implementation of BIM to boost construction capabilities towards the 4th Industrial Revolution. The advanced integration process in BIM creates numbers of contractual challenges that lead to legal uncertainty and contractual disputes that hamper the efficiency of the BIM contract administration. The contractual requirements remain open to address the interoperability of BIM. This paper presents a preliminary investigation on the challenges and strategies to overcome BIM contractual issues. The study adopts qualitative approach and draws data from nine semi-structured interviews with the selected BIM personnel that possess knowledge and experience in handling contractual matters in BIM-based projects. Content analysis reveals four BIM contractual challenges namely: lack of contractual framework to regulate the use of BIM; lack of clarity on the intellectual property ownership of BIM model; unclear BIM roles and responsibilities of the project personnel; and incompatibility of procurement methods with BIM. The study further proposed four strategies to overcome the BIM contractual challenges identified namely: development of a BIM-based standard form of contract; establish clear license authorising to maintain copyright ownership; introduce professional liability insurance; and call for early contractor involvement for a collaborative procurement. This preliminary study hopes to provide a start to the development of an improved certainties in the BIM contractual administration practice in Malaysia.*

Keywords: *Building Information Modeling, BIM, Contract, Legal BIM*

ELEMENTAL ANALYSIS OF PRINTING INK WITH THE APPLICATION OF LASER-INDUCED BREAKDOWN SPECTROSCOPY (LIBS)- A REVIEW

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Abstract: *Forgery cases involving printed documents have recently increased due to advanced printing technologies. As a result, various analytical instruments are currently applied in forensic document examination to analyse printing ink. Analyses of printing ink are primarily focused on the ink's chemical components, namely colourants, vehicles, and additives. Previous studies on ink analysis show an increasing trend in the use of spectroscopy methods including the application of Laser-Induced Breakdown Spectroscopy (LIBS). This instrument is favoured by document examiners in analysing printing ink due to its versatility, simple preparation, multi-elemental detection, minimal destruction, and precise readings. The examination of printing ink using LIBS is reviewed in this publication in addition to findings from previous research. The strengths and drawbacks of this technique, as well as contemporary approaches, are also explored in this article.*

Keywords: Document examination, Ink analysis, Printing ink, Spectroscopy technique, Laser-Induced Breakdown Spectroscopy.

NUMERICAL SIMULATION OF REINFORCED CONCRETE COLUMNS INTERNALLY CONFINED WITH CFRP UNDER CYCLIC LOADING

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Abstract: *Fiber-reinforced polymer (FRP) has been widely used as external confinement for retrofitting and strengthening structural elements as they increase axial, shear, and bending capacity. CFRP in form of sheets/strips are flexible compared with FRP bars; therefore, they can easily be shaped as spirals to confine the core concrete of column. In this study, a three-dimensional (3D) nonlinear finite element (FE) model is developed using ABAQUS software to study the cyclic behaviour of carbon fibre-reinforced polymer (CFRP) strips internally confined reinforced concrete (RC) columns. A comprehensive parametric study is conducted to study the FE model under different intensities of axial load (i.e. 70kN, 100kN, 200kN, 300kN and 400kN) and distances between the CFRP spirals (100mm, 150mm, 200mm and 250mm). Mechanical properties of concrete, steel reinforcements, and CFRP strips from laboratory tests were included and adopted in FE models. Results indicated that an increase in the axial force has significantly increased the stress on the surface of concrete and can lead to the rupture of CFRP strips in the column. An increase in axial load also reduced the ultimate lateral load and ductility ratio of columns. Meanwhile, increase the distance between CFRP strips has increased the stress at the plastic hinge area and experience buckling of longitudinal reinforcements at 250 mm distance of CFRP strips. The ultimate lateral load and ductility ratio also decreased when the distance between the strips was increased.*

Keywords: *CFRP, Reinforced Concrete, Quasi-Static Cyclic Load, Finite Element Modelling*

FABRICATION AND CHARACTERIZATION OF NANOCOILS CNT/PLA FILAMENT AT DIFFERENT FILLER'S PERCENTAGES AS ELECTROMAGNETIC WAVE ABSORBERS

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Abstract: The rapid development of electronic technology and communication networks has resulted in high levels of electromagnetic interference (EMI) pollution, indirectly making electromagnetic wave (EMW) absorbers as of great interest among researchers. The characteristics of an ideal EMW absorber should be lightweight, thin, strong and capable of absorbing the EMW in a broad frequency range. Recently, carbon-based materials such as carbon nanotubes (CNTs) have gained good popularity for their unique properties including lightweight, high mechanical strength, good electrical and thermal conductivity and wide frequency bandwidth. However, carbon nanotubes are very conductive and tend to agglomerate due to the van der Waals forces. Therefore, the incorporation of CNTs into polymer helps to improve the EMW absorption mechanism. This research focuses on fabricating electromagnetic wave absorbers with nanocomposite based on CNT/PLA filament for additive manufacturing (3D printing). Polylactic acid (PLA) with different percentages of CNT fillers (1, 3, 5 wt%) was extruded to fabricate a composite filament of a diameter of 1.75 mm. The results show that different percentages of CNTs fillers have a significant effect on the morphological and crystallographic phase structure, Raman scattering and EMW absorption properties.

Keywords: EMI pollution, Carbon nanocomposites, fillers, reflection loss, 3D printing

EXAMINING STUDENTS' ONLINE LEARNING READINESS DURING COVID-19 PANDEMIC AT THE MALDIVES NATIONAL UNIVERSITY

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Abstract: The Online Learning Readiness of higher education students has been a distressing matter during COVID-19 Pandemic. As far as the instructors' concern, lack of technological knowledge and skills along with student motivation are remaining at top of the contributing factors. This study examines the role of computer/Internet self-efficacy, self-directed learning, learner control and motivation for learning (in an online context), and online communication self-efficacy on online learning readiness. The ex-post-facto design is adopted for the study comprising 54 students as participants. Data is collected from a questionnaire prepared with Google Form. SEM-PLS tool is used to analyse the data with a confidence interval of 95%. The findings reveal that computer/internet self-efficacy, learner control, and motivation contribute to online learning readiness. Also, the motivation finds intervening in the study. This study could assist academics, university policymakers, instructional designers, and researchers to understand the factors that may influence the students' readiness when reconsider the opportunities and challenges with regard to students online learning readiness during COVID-19 pandemic.

Keywords: Online Learning; Motivation; Student Readiness; Technological Knowledge; COVID-19 Pandemic

FORENSIC INVESTIGATION TO RETRIEVE 3D SHOE IMPRESSION: A REVIEW

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Abstract: *In crime scenes such as burglary and murder, the search for physical trace evidence left behind by the suspect is a priority for forensic investigators. A shoe impression is a piece of trace evidence that can link the crime scene and the suspect. However, 3D shoe impressions are often neglected at crime scenes due to the complexities of retrieving and preserving the evidence. Casting is a standard method to retrieve shoe impressions. This paper reviews the various techniques to retrieve 3D shoe impressions and recently introduced techniques, focusing on casting with different materials, Structured from Motion (SfM), and 3D light scanning. Additionally, this review discusses alternative techniques to uncover shoe impressions, including each technique's benefits, drawbacks, and gaps.*

Keywords: *3D shoe impression; casting; Structured from Motion (SfM); 3D light scanning*

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OPTIMIZATION OF SYNTHESIZING CONDITIONS FOR MXENE (Ti3C2) PHOTOCATALYST: EFFECT OF LiF:Ti3AlC2 MASS RATIO

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Abstract: *The analysis of the proposed work, specifically the development of the MXene photocatalyst, will be described in this chapter. The results of the analysis are useful for comparing the pristine precursor and etched structures of MXene photocatalyst. A minimally intensive layer delamination (MILD) method will be used to create the MXene photocatalyst which use lower fluorine content solution (HCl-LiF) creates a safer and easier method. The synthesis parameters for the development of highly efficient MXene photocatalysts, such as LiF:Ti3AlC2 mass ratio will be optimized. FTIR, XRD, SAP, FESEM and DR-UV-Vis analysis will be used to characterize the as-developed MXene photocatalyst and its precursor, Ti3AlC2. The hypothesis of this study is etching treatment will increases the hydrophilicity and active functional group such as oxygen (-O), fluorine (F) and hydroxyl (-OH) on MXene surfaces. The performance of photocatalytic degradation will be tested with initial dye concentration of 30 ppm, solution pH at pH7 in room temperature ($\pm 27°C$). Each photocatalytic degradation study was performed in 50 ml of methylene blue solution with 0.1 g photocatalyst. All developed MXenes will undergo photocatalytic degradation performance to identify the optimized synthesizing conditions. Highest MXene photodegradation performance was found reached 90% removal within 180 min.*

Keywords: *MXene, photocatalytic degradation, methylene blue*

A FRAMEWORK STUDY ON A REAL-TIME OPERATED SYSTEM FOR EMERGENCY MEDICAL SERVICES (EMS) USING NODEMCU PROCESSOR

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Abstract: Emergency Medical Services (EMS) has always been a great help in treating patients before they arrive at the hospital. On the route to the hospital, where they will receive proper and additional treatment, pre-hospital care is an emergency aid to help stabilise the patient's condition. However, there is a lack of effective maintenance in the data interchange between the emergency department doctors and the paramedics in the ambulance. To give the patient the highest level of treatment, the patient's handoffs from paramedics or pre-hospital to in-hospital staff are not of sufficient quality. Hence came the idea of incorporating the Internet of Things into the emergency healthcare system. This paper discusses a proposed idea to design a reliable healthcare monitoring system that enables data exchange between doctors and paramedics efficiently. This system utilises the IoT platform, Blynk App, to display the data in both places (ambulance and emergency department) by using NodeMCU as the core processor and wearable sensors to measure the main parameters and vital sign data (as is current practise in ambulances). This system may also confirm that data from the sensors is transmitted in real-time to the host computer. The findings indicate that the vital sign readings are roughly accurate when compared to actual devices or marketable measurement tools. At the same time, the system will help the paramedics and doctors communicate efficiently in two ways and enable them to exchange patient details in real-time, so appropriate action can be discussed and the patient can be treated swiftly. The provided information allows hospital professionals in the emergency department to suggest what tools or medications should be ready to treat the patient further.

Keywords: Emergency Medical Services, Healthcare Monitoring, Mobility Solutions, Internet of Things, NodeMCU

ANALYSIS OF THE EFFECTIVENESS OF ONLINE ADVERTISING METHODS USING INSTAGRAM AS A MARKETING STRATEGY FOR MAINTAINING THE HIJAB BRAND, dUCk.

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Abstract: *The use of social media has become one of the important marketing methods in promoting a business nowadays. The existence of social media has brought drastic changes to the advertising industry. With the fierce competition now, entrepreneurs need to focus on product quality and the role of marketing such as advertising and sales promotion is also increasingly important to maintain and increase sales revenue in the future. In Malaysia, there are more than 60% of the population is Muslim and has led to an increase in demand for the hijab for Muslim women. Due to that, hijab entrepreneurs have to faced more competitors. The purpose of this study is to define and produce a theoretical framework of the dUCK hijab brand which is listed among the top in Malaysia (Joan Kong, buro247.my, 2020) in introducing and maintaining their brand in the Malaysian and international markets by using social media such as instagram. In addition, this study aims to identify the factors that cause other hijab brands in Malaysia to not be able to penetrate the international market. As a result, researchers will propose appropriate methods and theories to maintain the brand.*

Keywords: *Advertising, Branding, Marketing, Social Media, Instagram*

RISK ASSESSMENT TO IMPROVE TOLL ROAD BUSINESS RESILIENCE

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Abstract: *Toll roads are one of the transport sectors affected by government policies in tackling COVID-19 such as large-scale social restrictions and homecoming bans. During the COVID-19 pandemic, the toll road business has its own challenges, which includes a decrease in demand and toll revenues that are already in operation. PT Jasa Marga (Persero) Tbk, as one of the toll road operators in Indonesia, also felt the impact of the decline in toll road traffic, which led to a decrease in revenue. According to Jasamarga's annual report, in 2020 when the pandemic began, PT. Jasamarga Semarang Batang experienced a decrease in vehicle volume of 8.6% or a decrease of 700 thousand vehicles when compared to 2019. Meanwhile, PT Jasamarga Bali Tol experienced a 64% decrease in vehicle volume or a decrease of 10.4 million vehicles compared to 2019. Revenues associated with toll roads are highly risky due to high initial investment costs, operating and maintenance costs and long concession periods. A decline in revenue as a result of the COVID-19 pandemic could disrupt the resilience of the toll road business. This research aims to analyse the risk of declining toll road revenue and its mitigation measures to maintain the resilience of the toll road business itself. This research is carried out by identifying, analysing, evaluating and determining risk mitigation steps for a decline in toll road revenue. Data collection is performed by literature review and questionnaire survey. Questionnaires were distributed to stakeholders related to the toll road which is the study location. The data collected from the questionnaire results were analysed using descriptive and inferential statistics. This study used 40 risk variables categorised into 8 groups. This study is expected to provide benefits for BUJT and related stakeholders in maintaining the resilience of its toll road business.*

Keywords: *Risk, Mitigation, Traffic Revenue*