PROGRAMME & ABSTRACT BOOK

ICOETI 2023

THE INTERNATIONAL CONFERENCE ON

OCEAN ENGINEERING TECHNOLOGY & INFORMATICS

INTERSECTIONS OF TRANS-DISCIPLINARY KNOWLEDGE, BRIDGING THE GAP FROM IDEAS TO INNOVATIVE APPLICATIONS

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WELCOMING REMARKS

Assalamualaikumwarahmatullahiwabarakatuh

Bismillahirrahmanirrahim,

I am honoured to welcome the speakers, paper presenters, participants, and honoured guests to the **International Conference on Ocean Engineering Technology and Informatics 2023** organised by Faculty of Ocean Engineering Technology and Informatics (FTKKI), Universiti Malaysia Terengganu.

I was informed by the organiser that ICOETI 2023 has attracted international participants across the globe, including from Uzbekistan,United Arab Emirates, Indonesia, Iraq,, Japan, Nepal and not to forget the local participants. Overall, a total of 70 articles were presented during this three-days conference. The aims are to promote research in these fields and to facilitate the exchange of new ideas in these fields among academicians, postgraduate students, engineers, scientists and practitioners. It includes keynote speeches and oral presentations on different topics. In view of that, I would like to congratulate the organisers in making this conference a success.

The theme of the conference is "Intersections of trans-disciplinary knowledge, bridging the gap from ideas to innovative applications", encompassed 17 designated scopes, which successfully brought together under the main theme. I believe that many topics on the field of Maritime Technology and Engineering, Engineering Physic and Instrumentation, Computer Science and Engineering, Environmental Technology and Engineering and Engineering Mathematics and applications will be presented. This is undoubtedly a great opportunity for researchers, academic experts, and students, to foster close relationships and strong research partnerships ahead.

On behalf of the Universiti Malaysia Terengganu, I extend our warm welcome to all participants of the ICOETI 2023. I sincerely wish this conference success in breaking new grounds in its respective field of research. I am sure the presentations and discussions will enrich and further strengthen the commitment to improve the quality of life of humankind. I also thank the organising committee for all their efforts in conceptualising and successfully organising ICOETI 2023.

Thank you.

Prof. Ir. Dr. Mohammad Fadhli Ahmad
Dean
Faculty of Ocean Engineering Technology and Informatics
Universiti Malaysia Terengganu

WELCOMING NOTES

Assalamu'alaikum warahmatullahi wabarakatuh and Good Day

On behalf of the conference organizing committees, we are pleased to welcome all the speakers, presenters and participants to the International Conference on Ocean Engineering Technology And Informatics 2023 (ICOETI 2023). ICOETI 2023 covers a trans-disciplinary topics, ranging from Maritime Technology and Engineering, Engineering Physics and Instrumentations, Computer Science and Engineering, Environmental Technology and Engineering as well as Engineering Mathematics and Applications. It is our great honour to receive such an encouraging response from ICOETI 2023 participants. In total we have received 57 participants from various countries across the globe and not forgetting our local participants from Malaysia. On top of that, we are delighted to welcome 3 prominent keynote speakers and 10 invited speakers who are going to deliver series of interesting talks in their respective field of expertise. The abstracts for all the talks and presentations are available in this program book. In addition, the participant may also find all the important information pertaining to ICOETI 2023 in this program book including the tentative programs, details of keynote and invited speakers and parallel session schedules. Last but not least, we would like to take this opportunity to thank all the distinguished speakers, presenters, participants, management of UMT and all parties in making this conference a success. We wish you a fruitful conference and our advance apology for any shortcomings during this conference. To the physical participants, enjoy your time to explore the beauty of Terengganu!

Dr. Nur Farizan Munajat
Chairman
International Conference On Ocean Engineering Technology And Informatics 2023 (ICOETI 2023)

ICOETI 2023 INFOGRAPHIC

United Arab Emirates — 1

Iraq — 1

Japan — 1

Nepal — 2

Uzbekistan — 8
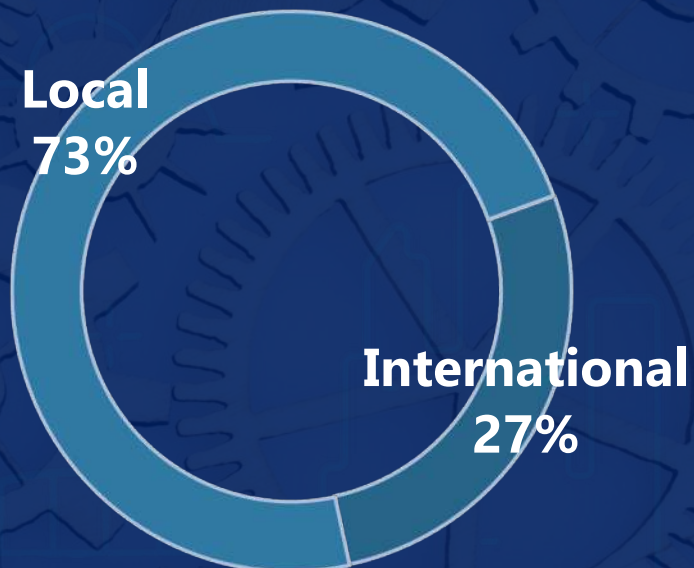
Indonesia — 6

Malaysia — 52

Local 73%

International 27%

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Cik Nurhayati Binti Ishak
Pn. Nordiana Binti Embong

ICOETI 2023
PROGRAM TENTATIVE

4 December 2023 Monday

Time	Agenda	Venue
9.00 – 12.30 pm	Registration (up to 11.00 am for participants joining Cultural Visit)	UMTCC
11.30 -1.00 pm	Cultural Visit	LamboSari , Sbrg Takir, Negeri Terengganu Kuala Terengganu
1.00 – 2.00 pm	Lunch and Solat Break	
2.00 - 4.00 pm	Cultural Visit	
4.00 – 5.00 pm	Free and easy at Terengganu Drawbridge	Jambatan Angkat Kuala Terengganu
5.00 pm	Depart to UMT\nEnd of Day 1	

ICOETI 2023
PROGRAM TENTATIVE

5 December 2023 Tuesday

Malaysia Time (MYT / UTC+8)	Agenda	Venue
9.00 - 10.30 am	Invited and Oral Presentation Sessions (5 parallel sessions)	DP2, DP3, DS1, BS1, Makmal PED
10.30 – 11.00 am	Coffee Break	Foyer UMTCC
11.00 am – 12.30 pm	**Opening Ceremony of ICOETI 2023** •Arrival of Guests and VIP •Arrival of VVIP •National Anthem 'Negaraku' and UMT Cita Warisan •Doa Recitation •UMT Corporate Video •Welcoming Speech by 　　Dean, Faculty of Ocean Engineering Technology and Informatics YBhg. Prof.Ir. Dr. Mohammad Fadhli Ahmad •Opening Speech by Vice Chancellor of Universiti Malaysia Terengganu 　　YBhg. Prof. Dato' Dr. Mazlan bin Abd. Ghaffar. •Gimmick and Montage Presentation •**Keynote Speech 1** •Token of Appreciation •Group Photo Session	DP2
12.30 pm -2.30 pm	Lunch Break	Foyer UMTCC
2.30 pm – 3.00 pm	**Keynote Speech 2**	DP2
3.00 – 4..45 pm	Invited and Oral Presentation Sessions (5 parallel sessions)	DP2, DP3, DS1, BS1, Makmal PED
4.45 - 5 pm	Light Refreshment End of Day 2	Foyer UMTCC

ICOETI 2023
PROGRAM TENTATIVE

6 December 2023 Wednesday

Malaysia Time (MYT / UTC+8)	Agenda	Venue
9.00-9.30 am	**Keynote Speech 3**	DP2
9.30 - 9.45 am	Coffee Break	Foyer UMTCC
9.45 – 11.05 am	Invited and Oral Presentation Sessions (2 parallel sessions)	DP2, DP3
11.15 am - 12.00 pm	Closing Ceremony of ICOETI 2023 •Arrival of VVIP •Doa Recitation •Closing Speech by Dean, Faculty of Ocean Engineering Technology and Informatics, Prof.Ir. Dr. Mohammad Fadhli Ahmad •Award Announcement Best Presenters •ICOETI Closing Montages •Group Photo Session	DP2
12.00 pm	Lunch End of ICOETI Conference	Foyer UMTCC

ICOETI 2023 PARALLEL SESSION TIMETABLE

INTERNATIONAL CONFERENCE ON OCEAN ENGINEERING TECHNOLOGY AND INFORMATICS 2023 (ICOETI 2023)				
UNIVERSITI MALAYSIA TERENGGANU CONVENTION CENTRE (UMTCC) **PARALLEL SESSION TENTATIVE**				
5 DECEMBER 2023 (TUESDAY) **Morning Session**				
08.15 AM	REGISTRATION			
***VENUE**	DP2	DP3	DS1	BS1	**Makmal Kompetensi PED**
Chairperson	Session 1: Dr. Nurul Ashraf Razali	Session 2: Dr. Hidayatul Aini Zakaria	Session 3: Ts. Dr. Noor Zaitun Yahaya	Session 4: Associate Professor Ts. Dr. Suriani Mat Jusoh	Session 5: Ts. Dr. Ily Amalina Ahmad Sabri
Webex Link (Online Speaker)					
9.00 AM	INVITED 1 (ONLINE)	INVITED 2	INVITED 3	INVITED 4 (ONLINE)	8
09.20 AM	12	14	26	17	9
09.35 AM	13	23	29	51	10
09.50 AM	25	27	30	60	11
10.05 AM	28	45	31	104	22
10.20 AM	102	49	32	114	35
10.35 AM	COFFEE BREAK				
11.00 AM	OPENING CEREMONY				
12.00 PM	KEYNOTE 1 **Prof. Ts. Dr. Zalizah Awang Long** Chairperson: Dr. Ummu `Atiqah Mohd Roslan				
12.30 PM	GRAND LUNCH				

ICOETI 2023 PARALLEL SESSION TIMETABLE

5 DECEMBER 2023 (TUESDAY) **Afternoon Session**				
02.30 PM	**KEYNOTE 2** **Prof. Dr. Tetsuya Kawanishi** **Chairperson: Dr. Wan Hafiza Wan Hassan**			
*VENUE	**DP2**	**DP3**	**DS1**	**Makmal Kompetensi PED**
Chairperson	**Session 6:** **Dr. Wan Nurdiyana Wan Mansor**	**Session 7:** **Ts. Dr. Rohani Mustapha**	**Session 8:** **Dr. Zulkifli Mohd Yusop**	**Session 9:** **Dr. Chong Nyuk Sian**
Webex Link (Online Speaker)				
03.00 PM	*INVITED 5*	*INVITED 6 (ONLINE)*	*INVITED 7 (ONLINE)*	*INVITED 8 (ONLINE)*
03.20 PM	106	67	34	68
03.35 PM	107	84	37	80
03.50 PM	15	92	40	83
04.05 PM	39	108	44	90
04.20 PM	48	115	47	101
04.35 PM	98	54	50	103
04.50 PM	**LIGHT REFRESHMENT**			

ICOETI 2023 PARALLEL SESSION TIMETABLE

6 DECEMBER 2023 (WEDNESDAY)		
08.15 AM	REGISTRATION	
09.00 AM	**KEYNOTE 3** **Professor Adjunct Dato Dr. Rozano Saad** Chairperson: Associate Professor Dr. Nazaitulshila Rasit	
09.30 AM	COFFEE BREAK	
*VENUE	DP2	DP3
Chairperson	Session 10: Dr. Loy Kak Chun	Session 11: Dr. Muhammad Syarifuddin Yahya
Webex Link (Online Speaker)		
09.45 AM	*INVITED 9 (ONLINE)*	*INVITED 10*
10.05 AM	59	95
10.20 AM	63	100
10.35 AM	65	112
10.50 AM	66	87
11.15 PM	CLOSING CEREMONY (DP2)	
12.15 PM	LUNCH	

ICOETI 2023 WEBEX LINK FOR ONLINE SPEAKER AND PARTICIPANT

Venue	Full Link with Password	QR Code	Hosted by
DEWAN PERSIDANGAN 2 (DP2)	https://umt.webex.com/umt/j.php?MTID=ma8799ad1b2780fed23cee9f5ac380fc4 Meeting number: 2514 120 6985 Password: XrEFBmTD473		Shahrizan Jamaludin
DEWAN PERSIDANGAN 3 (DP3)	https://umt.webex.com/umt/j.php?MTID=ma0a27f35c6a725d416b90bfe705b85f6 Meeting number: 2518 603 4540 Password: mnZQsW6jM25		Sahrim Ngah
DEWAN SEMINAR 1 (DS1)	https://umt.webex.com/umt/j.php?MTID=ma9d54b3d8fa3376bd7c834c51d9a557a Meeting number: 2515 341 5676 Password: JAq5RGF6rP2		Mohd Faizal Ali Akhbar
BILIK SEMINAR 1 (BS1)	https://umt.webex.com/umt/j.php?MTID=m85471aa922689fe8f2e581baa10baedb Meeting number: 2518 399 7334 Password: EmWFvsid787		Sayyid Zainal Abidin Bin Syed Ahmad
MAKMAL KOMPETENSI PED	https://umt.webex.com/umt/j.php?MTID=m6914f60bf0547e5981ef71495219c4d5 Meeting number: 2512 739 0418 Password: msUqnsjt559		Syed Mohd Saiful Azwan Syed Hamzah

ICOETI 2023 LIST OF PRESENTER

No.	Paper ID	Author Name	Title	Country
1	8	Saidatul Hasyimah Said Ali	PHILOSOPHY OF ALARM MANAGEMENT IN THE PROCESS PLANT LIFECYCLE	Malaysia
2	9	Mamatov Narzullo Solidzhonovich	APPLICATION OF GENETIC ALGORITHM IN TRAINING AUTOMATIC SPEECH RECOGNITION	Uzbekistan
3	10	Mamatov Narzullo Solidzhonovich	MFCC-GMM METHOD FOR SPEAKER IDENTIFICATION BY VOICE	Uzbekistan
4	11	Mamatov Narzullo Solidzhonovich	X-RAY IMAGE CONTRAST ENHANCEMENT ALGORITHMS	Uzbekistan
5	12	Shahrizan Jamaludin	ACCURATE CORROSION DETECTION ON SHIP HULL WITH PIXELS PROPERTY METHOD	Malaysia
6	13	Fathy Kameel Bin Mohd Fadzil	EVALUATION OF OCEAN WAVE MODELING IN SOUTHERN SOUTH CHINA SEA	Malaysia
7	14	Nurul Adilah Abdul Latiff	EXPLORING THE PERFORMANCE OF LORA IN KENYIR	Malaysia
8	15	Teuku Muhammad Ridwan	DEVELOPING AN OPTIMAL RISK MANAGEMENT MODEL FOR COASTAL FLEXIBLE ROAD PAVEMENT CONSTRUCTION: A CASE STUDY OF LHOKSEUMAWE CITY, INDONESIA	Malaysia
9	17	Bhabani Lamsal	DEPTH-AVERAGED EQUATIONS FOR MIXTURE MASS FLOW MODELING	Nepal
10	22	Fitriadi	OPTIMIZING THE PRODUCTIVITY OF THE TRADITIONAL SHIPYARD INDUSTRY THROUGH LEAN MANUFACTURING WITH AN OBJECTIVE MATRIX	Malaysia
11	23	A. R. Salisa	IPOH CITY DRIVING CYCLE DEVELOPMENT VIA TARGET PARAMETER APPROACH	Malaysia
12	25	Mohd Fakhruddin Zainal Ashirin	DESIGN CONSIDERATIONS AND FACTORS INFLUENCING FLOATING OFFSHORE WIND TURBINES	Malaysia
13	26	Sharifah Mashita Syed Mohamad	MEASURING SOFTWARE MAINTAINABILITY: AN EXPLORATION OF METRICS AND CONTINUOUS PRACTICES	Malaysia
14	27	Hasiah Salleh	STUDY THE EFFECT OF PLASMA PARAMETERS ON TITANIUM DIOXIDE THIN FILM FOR HYBRID SOLAR CELL APPLICATION	Malaysia
15	28	Shahrizan Jamaludin	EFFECTIVE PERIODIC NOISE REDUCTION FOR SHIP CORROSION IMAGE	Malaysia

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No.	Paper ID	Author Name	Title	Country
16	29	Nazratul Naziah Mohd Muhait	COMPARISON OF MALAY STEMMING ALGORITHM	Malaysia
17	30	Siti Nurfarahim Shaharudin	COMPARING CNN ARCHITECTURES WITH SWISH ACTIVATION FUNCTION FOR SEA TURTLE INDIVIDUAL RECOGNITION	Malaysia
18	31	Nur Fadila Akma Mamat	SYSTEMATIC REVIEW OF THE LEARNING OUTCOME FRAMEWORK	Malaysia
19	32	Mohd Erman Safawie Bin Che Ibrahim	WAVELET-ENHANCED DEEP NEURAL NETWORK FOR INDIVIDUAL SEA TURTLE RECOGNITION	Malaysia
20	34	Islambek Saymanov	ALGEBRAIC APPROACH TO SOLVING PROBLEMS OF IDENTIFICATION IN THE IOT ECOLOGICAL SYSTEM	Uzbekistan
21	35	Bakhodir B Rakhimov	REGIONAL COMPARATIVE ANALYSIS OF COVID-19: LEVERAGING MACHINE LEARNING FOR INSIGHTS AND PREDICTIONS	Uzbekistan
22	37	Islambek Saymanov	ALGORITHMIC MODEL OF THE ECOLOGICAL MONITORING INFORMATION SYSTEM	Uzbekistan
23	39	Chee-Loon Siow	INFLUENCE OF OFFSHORE FLOATING WIND TURBINES ARRANGEMENT IN POWER GENERATION	Malaysia
24	40	Md Aman Ullah	A NOBLE APPROACH OF POLLEN CLASSIFICATION: COMBINING THE STRENGTHS OF LOCAL BINARY PATTERN AND CONVOLUTIONAL NEURAL NETWORK	Malaysia
25	44	Al-Fahim Mubarak-Ali	GAP CALCULATION FOR STRING-VALUED PARAMETERS ON PROFILE MATCHING ALGORITHM FOR CROWDSOURCING MAINTENANCE SYNCRONIZED-DATA (CMS)	Malaysia
26	45	Nur Salihah Alias	SURFACE TREATMENT OF ITO SUBSTRATE BY USING ATMOSPHERIC PRESSURE PLASMA JET (APPJ) FOR SOLAR CELL APPLICATION	Malaysia
27	47	Ahmad Iffat Alias	THE DETERMINATION OF FACTORS FOR ICT QUALITY ASSESSMENT MODEL	Malaysia
28	48	A. R. Salisa	A COMPARATIVE STUDY OF FUEL ECONOMY AND EMISSIONS FOR PLUG IN HYBRID ELECTRIC PAYANG WATER TAXI ON DIFFERENT DRIVING CYCLES USING ADVISOR	Malaysia
29	49	Siti Rokhmanila	ANALYSIS OF PHOTODEGRADATION AND REACTION KINETICS OF TEXTILE ORGANIC DYES ON CAESALPINIA SAPPAN, LAWSONIA INERMIS AND ARECA CATHEU USING SPECTROSCOPIC METHODS FOR SOLAR CELL APLICATION	Malaysia
30	50	Noor Azliza Binti Che Mat	INTELLIGENT TISSUE DISPENSER SYSTEM: IoT APPLICATION	Malaysia

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No.	Paper ID	Author Name	Title	Country
31	51	Nur Syarafina Mohamed	SPECTRAL CONJUGATE GRADIENT METHODS IN FITTING PRECIPITATION OF RAINFALL DATA IN MALAYSIA	Malaysia
32	54	Ily Amalina Binti Ahmad Sabri	A METHOD FOR COUNTING AND CLASSIFYING FLIES USING M-FlyCounter	Malaysia
33	59	Wan Aezwani Bt Wan Abu Bakar	IMPLEMENTING MULTIPLE DYNAMIC FLIP ALGORITHM: BASED ON MOBILE CASE STUDY	Malaysia
34	60	Mohamad Nazri Husin	A COMPARISON BETWEEN THE ECCENTRIC CONNECTIVITY INDEX AND THE FIRST ZAGREB INDEX OF GRAPH	Malaysia
35	63	Rafidah Abd Razak	FOOD'IARY DAILY FOOD TRACKING SYSTEM	Malaysia
36	65	Masha Menhat	FACTORS INFLUENCING MARITIME STUDENTS INTENTION TO USE SOCIAL MEDIA FOR LEARNING	Malaysia
37	66	Roslina Sidek	AN EFFECTIVENESS OF A HAND WAVE MECHANISM TO WOMEN SAFETY APPLICATION	Malaysia
38	67	Nur Ain Munirah Binti Ya Omar	ENHANCED HYDROGEN STORAGE PROPERTIES OF NAAIH4 WITH THE ADDITION OF MGCL2 FOR SOLID STATE HYDROGEN STORAGE	Malaysia
39	68	Noraini M Noor	ENHANCING MAGNETIC BIOCHAR FOR IMPROVED REMOVAL OF HEAVY METALS FROM WASTEWATER	Malaysia
40	80	Vasila B. Alimova	EXPONENTIAL STABILITY OF A NUMERICAL SOLUTION OF A HYPERBOLIC SYSTEM WITH NEGATIVE NONLOCALS CHARACTERISTIC VELOCITY AND MEASUREMENT ERROR	Uzbekistan
41	83	Novi Andhi Setyo Purwono	INVESTIGATION AND FIELD EXPERIMENT UP ROOTING OF CASUARINA EQUISETIFOLIA VEGETATION FROM TSUNAMI FORCE ON THE SOUTH JAVA COAST	Indonesia
42	84	Nur Ain Munirah Binti Ya Omar	OPTIMIZATION OF THE DEHYDROGENATION PROPERTIES OF LIALH4 BY THE ADDITION OF ZRF4	Malaysia
43	87	Nurul Idayu Yusoff	HYBRID RENEWABLE ENERGY WITH HYDROGEN-BASED SYSTEM IN KUALA TERENGGANU MALAYSIA: PRE-FEASIBILITY STUDY	Malaysia
44	90	Arief Nugraha Pontoh	UTILIZATION OF GALAM WOOD FOR ECO-FRIENDLY SELF-SUPPORTED EARTH-RETAINING WALL COMPONENTS	Indonesia
45	92	Zarina Omar	ENHANCEMENT OF DEHYDROGENATION PROPERTIES OF NaAlH4 WITH THE ADDITION OF FeF3	Malaysia
46	95	Ammber Nosheen	INVESTIGATING THE DETERMINANTS OF CLOUD COMPUTING-SOFTWARE AS A SERVICE ADOPTION IN PAKISTANI SMES FROM THE PERSPECTIVE OF SME MANAGERS	Malaysia

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No.	Paper ID	Author Name	Title	Country
47	98	Evi Susanti	ISOLATION AND IDENTIFICATION OF POLYPROPYLENE DEGRADING BACTERIA FROM PASIF ZONE OF SUPIT URANG LANDFILL	Indonesia
48	100	Rozlina Mohamed	A REVIEW ON DECISION MAKING METHOD IN ECOTOURISM SECTOR	Malaysia
49	101	Norazian Mohamed Noor	ASSESSMENT OF TIME SERIES MODEL FOR PREDICTING LONG-INTERVAL CONSECUTIVE MISSING VALUES IN AIR QUALITY DATASET	Malaysia
50	102	Mohammad Izzuddin	A STUDY INTO THE EFFECT OF HULL CONFIGURATION ON THE PERFORMANCE OF FLOATING SOLAR PV STRUCTURE	Indonesia
51	103	Khaleel Yahia Awajan	APPLICATION OF NUETROSOPHIC WITH Z-NUMBERS: A REVIEW PAPER OF THE DEVELOPMENT OF NEUTROSOPHIC WITH Z-NUMBER AND THEIR PROPERTIES	Malaysia
52	104	Davron Khayrullaev	IMPROVEMENT OF ADOMIAN DECOMPOSITION METHOD FOR NONLINEAR VOLTERRA-FREDHOLM INTEGRO-DIFFERENTIAL EQUATIONS OF ORDER m	Malaysia
53	106	Shahrizan Jamaludin	CRITICAL ANALYSIS AND CALCULATION OF HYBRID ENERGY CANCER SCREENING SHIP	Malaysia
54	107	Mohd Hafizi Said	THE IMPACT OF TRAWLING ACTIVITY TOWARDS SUBSEA PIPELINES IN SOUTH CHINA SEA	Malaysia
55	108	Nurafnida Afrizal	MOTOR CURRENT SIGNATURE ANALYSIS OF INDUCTION MOTOR OPERATING UNDER ROTOR FAILURE	Malaysia
56	112	Mohammad Amyruddin Shamsuddin	PERFORMANCE COMPARISON OF YOLO ARCHITECTURES FOR CORAL REEF FISH DETECTION	Malaysia
57	114	Vithyasangaran Kumarasamy	NUMERICAL SOLUTION OF FERROFLUID OVER A FLAT PLATE WITH PASSIVE CONTROL BOUNDARY CONDITION	Malaysia
58	115	Siti Norbakyah Jabar	DEVELOPING A WATER DRIVING CYCLE (WDC) TRACKING DEVICE BASED ON GPS AND GSM FOR ADVANCING WATER VEHICLE PERFORMANCE	Malaysia

ICOETI 2023
KEYNOTE SPEAKER

PROFESSOR TS. DR. ZALIZAH AWANG LONG
MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY
UNIVERSITI KUALA LUMPUR

BIOGRAPHY Prof. Ts. Dr. Zalizah Awang Long is a dedicated educator with over 20 years of experience in teaching and research. Her passion for student character building led her to develop frameworks, models, and activities for Universiti Kuala Lumpur (UniKL) as the Director of the Center for Student Development. She introduced the GHOCS Student Transcripts model and established Ulul Albab and Wakaf at UniKL. Dr. Zalizah has contributed to several publications related to student character building and data mining, and has received the Excellence Thesis Award for her PhD thesis. She is an active researcher and participates in local and international conferences. Dr. Zalizah served as the Dean of UniKL MIIT and was responsible for aligning UniKL MIIT to international standards and increasing profitability and partnerships with Korean universities. She has now been appointed as the Deputy President of Student Development and Campus Lifestyle.

ABSTRACT

CYBERBULLYING: AN EMERGING PSYCHOLOGICAL CYBERSECURITY ISSUE?

Cyberbullying is becoming a prevalent issue in the digital world today. The pressure on adolescents to endure online harassment which often occurs from masked bullies is stringently oppressing. There is also a lack of research regarding this topic and a gruesome debate as to considering it among relevant cybersecurity issues. This paper, via a qualitative approach based on critical literature review and secondary data, assessed whether cyberbullying is an emerging psychological cybersecurity issue. The end goal is the proposal of innovative cybersecurity solutions that can help in mediating cyberbullying. Findings revealed that digital device prevalence is a major propeller of a pressing health challenge among youngsters globally regardless of their educational level. Moreover, it was deduced that cyberbullying is strongly linked with the psychological aspect of cybersecurity, an evolving area of the human aspects of cybersecurity. Cyberbullying includes threatening, embarrassing, harassing, or demeaning an individual via an online platform. At extreme situations, statistics has revealed that majority of cyberbullied victims are at high risk of committing suicide. Thus, it is essential for cybersecurity strategists to include policies that combat cyberbullying as well as add it to the list of major cyberthreats. One of the best solutions to mediate cyberbullying is to develop a system that blocks cyberbully perpetrators and ensures a safe system especially for younger online users to report such issues to higher authorities. Also, training on cyberbullying is essential to create awareness of this menace among online users. Conclusively, if the issue of cyberbullying is handled in a judiciously technological manner, the internet could be a bit safer for all category of users.

KEYNOTE SPEAKER

PROFESSOR DR. TETSUYA KAWANISHI
FACULTY OF SCIENCE AND ENGINEERING
WASEDA UNIVERSITY, TOKYO

BIOGRAPHY Tetsuya Kawanishi is a professor at Waseda University in Tokyo, Japan. He received his B.E., M.E., and Ph.D. degrees in electronics from Kyoto University, after which he worked with Panasonic and the Communications Research Laboratory, Ministry of Posts and Telecommunications (now the National Institute of Information and Communications Technology, NICT). He was a Visiting Scholar at the University of California at San Diego in 2004. His current research interests focus on high-speed optical modulators and RF photonics.

ABSTRACT

SEAMLESS NETWORKS FOR RURAL AND REMOTE AREAS

Seamless networks consisting of optical fiber and radio wave transmissions offer resilient and flexible broadband services. Various transmission media are utilized to cover rural and remote areas, as well as densely populated urban areas. Due to limitations in available radio spectrum, we need to rely on a small cell architecture. Consequently, numerous base stations must be effectively connected by networks, with optical fiber transmission commonly employed in dense urban areas and fixed wireless transmission remaining useful in rural areas. The sixth generation mobile system, 6G, is anticipated to provide dependable and broadband data transmission everywhere on Earth, including uninhabited areas. A combination of radio and optical technologies is expected to play a crucial role in 6G, enabling broadband services in diverse circumstances. Effective conversion between optical and radio signals is essential in such seamless networks. This presentation focuses on optical and radio technologies for seamless networks, as well as potential use cases, including maritime and fishery applications. Additionally, we will share recent research activities on millimeter-wave and THz-wave technologies, capable of providing over 100Gb/s wireless transmission. These technologies can also be applied to sensing systems. To design reliable networks, it is necessary to investigate the impact of weather on the performance of wireless transmission. The presentation will also concentrate on millimeter-wave and THz-wave transmission under severe weather conditions, where performance may be degraded by attenuation due to rain and vibration due to wind. However, dependable systems can be designed by utilizing proper models to account for the impact of weather conditions.

BIOGRAPHY Dato' Rozano Saad is a Site Director at Venator Asia Sdn. Bhd. He graduated from the University of Swansea in 1980 with a Bachelor of Science in Mechanical Engineering. He is a member of the Institute of Engineers of Malaysia since 1980. Additionally, he has been featured in books such as Primal Leadership Management and "Make Common Sense, Common Practice" by Ron Moore (US). He has led his organizations to win various Safety and Management Leadership Awards, including the Prime Minister's Quality Award, and achieved Best Plant Online time and Efficiency Improvement through Six Sigma Programme.

ABSTRACT

SUSTAINABILTY INDUSTRIAL PERSPECTIVE AND CHALLENGES

Venator Asia Sdn Bhd located in Telok Kalong, Kemaman, Malaysia. The largest TiO_2 Plant in Malaysia and Asean. Venator perspectives sustainability shown that business and industry will have to adjust production structures and its product. Environmental protection, economic development and social development are thus the three pillars of sustainable development. Business culture of innovation: transform your products, facilities, services, production processes and internal management with sustainability criteria. All the resources optimize maximum and create the zero-harm waste.

ICOETI 2023

INVITED SPEAKER

ABSTRACT

Sugar palm based biocomposites: Properties, Treatments, and Potential Applications

The key factors influencing the widespread acceptance of natural fibers as green materials are due to the quick depletion of petroleum resources and the growing awareness of environmental issues associated with the usage of conventional plastics. Due to their eco-friendly and sustainability, natural fibers have garnered the interest of scientists. Sugar palm (*Arenga pinnata*) tree is cultivated in tropical regions and is thought to hold promise as a source of natural fibers. The potential use of fibers derived from the sugar palm in a number of applications has been studied especially as composite materials. Investigations into these fibers on their potential uses have been conducted. Treatments of fibers are one of the important elements to increase the usability of this fiber. However, there is a problem regarding the inconsistent data reported by previous authors on experimental methods and the values of mechanical and physical properties. Therefore, it is now vital to organize data that would be helpful in the design of this fiber so that researchers may make wise choices regarding future studies and applications. The present review focuses on recent works related to the properties of sugar palm fibers, fiber modification, and their fabrication as green composites. The review also unveils the potential of sugar palm fibers and polymers for advanced industrial applications such as automotive, defense, packaging, and others. Many manufacturing sectors are focusing on using natural resources, particularly fiber-rich plants, for the production of polymer composites as a result of environmental protection, the use of renewable resources, and product biodegradability. This tendency has led to the substitution of plant fibers for synthetic fibers as reinforcement in polymer mixtures. Natural fibers are now prioritized in the composite industry due to economics and their superior properties, which have persuaded many industrial sectors to use synthetic fibers to reinforce plastics.

INVITED SPEAKER

Dr. Eng. Yuda Apri Hermawan
Institut Teknologi Sepuluh Nopember

ABSTRACT

The Architecture Design of Machine Learning-based Automatic Ship Detection System

The available technology still relies on human capabilities, even though human errors contribute to ship collision incidents. Despite the skills of ship's officers on watch, they often lack adequate situational awareness of their surroundings. Studies related to collision avoidance, object detection systems, situational awareness, machine learning, and deep learning have been conducted to develop an automated ship detection system to enhance the situational awareness of the officers on watch and reduce the risk of ship collisions. This paper provides an architecture design of machine learning utilization for developing an automated ship detection system. YOLOv8 algorithm is employed to be a basic of the machine learning-based algorithm for the automatic ship detection system. The associated ship images data representing ship's on-board cameras, and relevant data is prepared to examine the proposed architecture design of the automatic ship detection system. A test data consisting of sailing ships belonging to the predetermined classes is used for the machine learning model. The test results show that precision, recall, and F1-score (the average precision and recall) for each ship class exceed the evaluation metrics obtained from the data training process. Thus, the proposed automated ship detection system model successfully detects and classifies the ships based on the predetermined classes given in the system.

INVITED SPEAKER

Prof. Ir. Dr. Sevia Mahdaliza Idrus Sutan Nameh
Universiti Teknologi Malaysia

ABSTRACT

Analysis of Radar Cross Section Using TTCR For High Precision Foreign Object Debris Detection System

Foreign Object Debris (FOD) represents a wide spectrum of foreign materials found on an airfield of which carry the potential to jeopardize aircraft and airport operations, thus posing a risk of accidents and substantial damage. Detecting these objects which can vary greatly in type and size on airport pavements is a challenging task primarily due to the intricate background clutter and the often faint radar echoes produced by objects situated at considerable distances. An effective approach to addressing this challenge is to employ FOD simulators which create controlled testing environments that are not only cost-effective but also convenient and adaptable. Within the context of this paper, we delve into an in-depth analysis of how millimeter-wave radar detection interacts with a target simulator positioned on the airport runway while taking into account the intricate design of the runway's surface. Our primary focus in this analysis is on the Radar Cross Section (RCS) characteristics and how they evolve in response to various influencing factors including but not limited to distances between radar and target, radar frequencies, incident angles, and the size of the triangular trihedral corner reflector (TTCR). This comprehensive analysis and the development of a standardized methodology are crucial in ensuring the uniformity of RCS values across the entire area of the runway. A through approach is necessary to understand how well the radar system performance works within its design limits. The results that present are support by actual measurements obtained from Kuala Lumpur International Airport's (KLIA) runway and the surveillance radar towers of Radar Antenna Units (RAU). These findings highlight the significant potential of millimeter-wave radar technology in increasing airport safety through its capacity to reliably detect FOD. By studying the RCS characteristics of FOD under various conditions, we gain valuable insights into the radar's ability to differentiate and categorize objects within its detection range. This knowledge not only contributes to the refinement of FOD detection systems but also informs the design and implementation of radar systems at airports around the world. The use of standardized testing procedures and carefully controlled analysis ensures that the data presented can derive to a broader context and offering a comprehensive understanding of the radar system's capabilities and limitations.

INVITED SPEAKER

Dr. Fouad Abdulameer Salman
Al-Bayan University

ABSTRACT

Usability of the software and its importance

Usability is an important factor in ensuring the development of quality and usable software products. Negligence or failure to address this during the software development process will lead to problems in the final software product. In this conference, the speaker will present a historical overview of the trends in usability and how it has been graded from simplicity to complexity over the previous decades. Other than that, the major issues surrounding the aspect of software usability will be highlighted. Specifically, the issues that are perhaps the most commonly cited problems in software design and applications for mobile devices. By addressing the major issues surrounding software usability, developers can strive to create user-friendly and intuitive interfaces that enhance user experience.

INVITED SPEAKER

Associate Professor Ts. Dr. Mustafa Man
Universiti Malaysia Terengganu

ABSTRACT

J-SELARAS: New Algorithm For Data Conversion Tools From Single To Multiple Excel Data Format With Automatically Formulation Constructed

Data conversion is a popular technique today for data sharing within new application in different database format and location. The interaction of data from one application system to another application system requires middleware that allows the data to be transferred systematically. The development of dynamic algorithms allows data in various formats, whether structured or unstructured, to be transferred to various types of databases smoothly. A case study was conducted for the data in the known Excel format generated through CostX software in a single sheet Excel file was transferred to a single workbook with multiple sheets with formulation generated automatically. Thus, an algorithm was developed and tested through the development of the J-Selaras web-based System. This algorithm can remove the noisy data or data symbols that are not related in the excel single sheet (CostX) file and automatically transferred to multiple excel sheets with macros formulation quickly thru online. The implementation results indicate a significant contribution where it reduces in execution time of BQ processes and manpower resources used.

INVITED SPEAKER

Prof. Dr. Hadi Suyono
Universitas Brawijaya

ABSTRACT

Islanding Operation Strategy to Improve the Stability of Hybrid-Distributed Generation based Power System

This study examines the steady-state and dynamic stabilities of a power distribution system when a hybrid of solar and micro-hydro power plants is injected into the system with a defense scheme during an islanding operation. The islanding operation separates the distributed generators from the system under the occurrence of short circuit disturbance while still providing the power supply to load adapting to the plant capacity to maintain the stability of power distribution system. A case study at the Pujon feeder of Malang regency in Indonesia has been taken by composing 4 different condition scenarios. The steady-state analysis results show that the injection of distributed generators into the existing system can improve the voltage profile and reduce the losses of the system. The results of dynamic simulation study also indicate that the system stability, including the frequency, voltage and rotor angle stabilities, can still be achieved a balance 3-phase fault is imposed during 150 milliseconds to the system under consideration no matter the applied scenario. However, the addition of three sectionalizers are required to maintain the system stability when a permanent 3-phase fault occurs and forces the distributed generators to work under islanding operation.

ABSTRACT

Forecasting Particulate Matter (PM_{10}) Level in Peninsular Malaysia during High Particulate Event using Novel Hybrid Model

The presence of high levels of particulate matter (PM_{10}), poses a significant threat to human health and the environment. Episodes of excessive PM_{10} concentrations have become more prevalent in Malaysia, emphasising the necessity for the development of robust prediction models. This study proposes a novel hybrid method for predicting PM_{10} concentrations during high particulate events (HPE) in peninsular Malaysia specifically in Shah Alam, Nilai, Bukit Rambai and Larkin. Hourly air pollutant concentration (PM_{10}, NO_x, NO_2, SO_2, CO, O_3) and meteorological parameters (relative humidity, temperature and wind speed) during the HPE events in 1997, 2005, 2013 and 2015 were used. The hybrid approach applied the combination of Quantile Regression (QR) model and three filter-feature selection was implemented which is Support Vector Machine (SVM), Correlation (C) and Deviation (D). The optimal percentile of QR model and selected input parameter based on feature selection methods were used to develop the hybrid model. Performance indicators such as Mean Absolute Error (MAE), Root Mean Squared Error (RMSE) and Index of Agreement (d2) were used to evaluate the performance of the predictive models. The best hybrid model selected for each location was verified using an unseen dataset from the year of 2019. SVM-QR and C-QR model both were proven as the best method at all locations with the range of MAE value (5.66-11.89) for the next-day PM_{10} prediction. The best prediction model also show a close alignment between the observed and predicted values which indicating that the hybrid model exhibits good performance and accurate tool for predicting PM_{10} concentrations in the study area.

ABSTRACT

Desalination of Seawater: Recent Advances and Challenges for the Reverse Osmosis Technology

One of the biggest contributions of ocean is the fact that it contains 97% of the earth water resources. Thus in arid countries such as in the Middle east, desalination of seawater is becoming the most reliable solution for water scarcity. One of the important technologies for desalination of seawater is using the Seawater Reverse Osmosis (SWRO) process. This technology utilizes reverse osmosis membranes based on thin-film composites (TFC) type of membranes. Examples of large-scale SWRO plants include those recently constructed in Taweelah (909,200 m^3/day) in UAE and Rabigh 3 (600,000 m^3/day) in Saudi Arabia. This talk will discuss the recent advances that have been made regarding the SWRO membranes including membrane materials, fabrication methods, and efforts to lower the energy usages. Among the major challenges are still in in terms of membrane fouling, boron rejection and chlorine resistance. The way forwards for research in this area will also be discussed.

INVITED SPEAKER

Assoc. Prof. Dr. Mullajonov Rustamjon Vahobjonovich
Andijan State University

ABSTRACT

Analysis stability of large-scale systems use Lyapunov matrix functions

This paper discusses the theory of Lyapunov methods and their application to study the stability of large-scale systems. Stability of large-scale system is difficult when it is taken in one piece. However, this system may be transformed into lower order interconnected subsystems. The stability of large-scale system is studied via the stability of the individual subsystems and the properties of the interconnected functions. In this chapter, we will discuss the stability of large-scale systems using the new approach proposed in chapter two. These examples have been solved using two approaches, the first one is by transforming the large-scale system into lower subsystems. While the second approach uses the whole large-scale system without subdividing the system into lower subsystems.

INVITED SPEAKER

Associate Professor Dr. Puskar R. Pokhrel
Tribhuvan University

ABSTRACT

Dynamic Analysis of Coupled Model of Mixture Mass Flow

Employing the mixture mass flow model equations, I have generated a coupled model for bulk mixture flow down a channel. The coupled model is numercal methods that combine the full dimensional mixture model equations and depth-averaged model equatons for mixture mass flow. The emerging model is written as a well-structured system of three highly non-linear partial differential equations in conservative form representing the mass and the momentum balances. The system is made closed by a pressure poisson equation with new inertial and dynamical coefficients, and drift factors. These coefficients and factors are uniquely constructed, and contain the underlying physics of the system, and reveal the complex coupling between the solid and fluid phases, physical parameters, mechanics and the flow dynamics. The new mechanical and dynamical concepts of bulk and shear viscosities, pressures, and velocities for the mixture characterize the model.
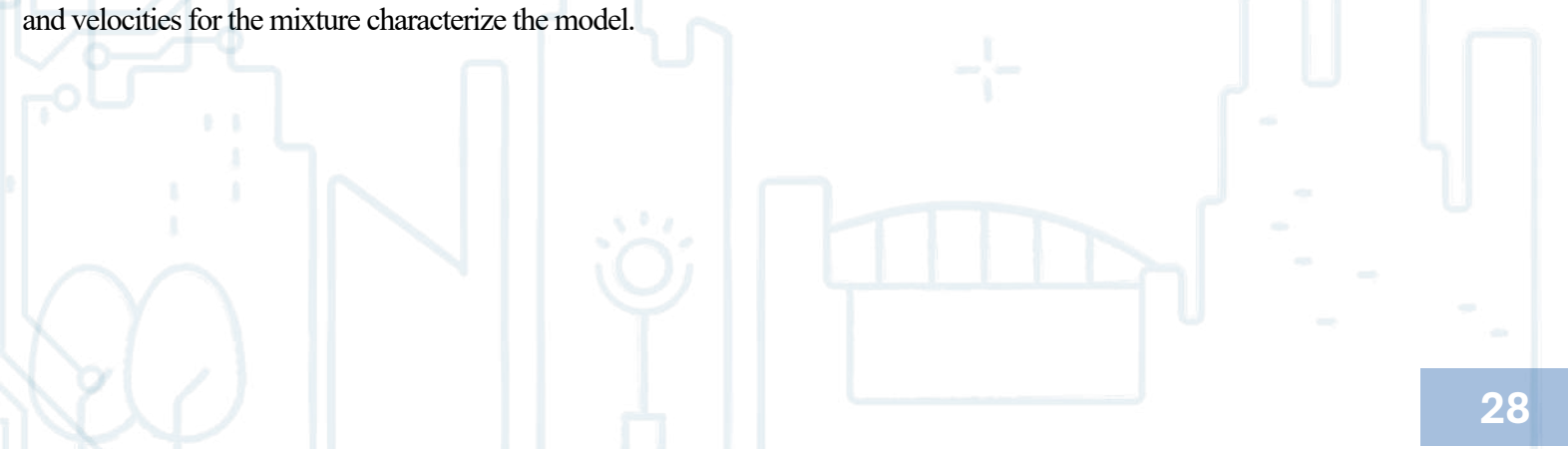
Book of
Abstracts
ICOETI 2023

ICOETI 2023
TRACK 1
Maritime Technology and Engineering

12: ACCURATE CORROSION DETECTION ON SHIP HULL WITH PIXELS PROPERTY METHOD

Ahmad Ali Imran Mohd Ali, Shahrizan Jamaludin, Md Mahadi Hasan Imran, Ahmad Faisal Mohamad Ayob, Sayyid Zainal Abidin Syed Ahmad, Mohd Faizal Ali Akhbar, Mohamad Riduan Ramli, Saiful Bahri Hasan Basri

Ship hull is primarily exposed to salt-laden sea spray and high moisture, makes the ship susceptible to corrosion. This has become a major issue in the shipping industry as corrosion weaken the strength of the ship's construction, thus requiring expensive maintenance and raising safety issues. Despite the latest technology in corrosion maintenance, it is better to detect corrosion as earliest as possible with computer vision or image processing technique. However, both techniques have limitations in terms of detection of weak corrosion boundary and blurry prominent corrosion features. Hence, the main objective of this research is to detect an accurate corrosion boundary on ship hull with pixels property method. Firstly, data acquisition is performed to obtain the suspected corrosion regions on ship hull. Next, a threshold is calculated by averaging 100 corrosion images on ship hull. After that, every pixel in the image is analyzed to obtain the connected components of corrosion areas. The pixel list and area coordinates are collected after analyzing all connected components. The large connected components are combined into one big region with morphological closing and flood-fill operation. Finally, the pixels property method is employed from the pixel list and area coordinates to detect an accurate corrosion boundary on ship hull. According to results, the proposed method managed to detect corrosion regions on ship hull with high accuracy. Moreover, the robustness of this method was proven by managing to segment the weak corrosion boundary and blurry prominent corrosion features on ship hull. This shows that the proposed method is accurate for corrosion detection on ship hull. On the other hand, this work is significant since the proposed algorithm can be used for predictive maintenance and asset health monitoring of ship.

13: EVALUATION OF OCEAN WAVE MODELING IN SOUTHERN SOUTH CHINA SEA

Fathy K.M.F, Poh Heng Kok, Mohd. F. Akhir, Fangli Qiao, Xunqiang Yin, Jingsong Guo, Changshui Xia, Fatimah N. Harun, A. Johari, Hanafi A.Rahim

Malaysia Forecasting System (MFAST) was developed by the Institute of Oceanography and Environment (INOS) based on the MASNUM-WAM wave model. This large-scale numerical model is developed to obtain ocean wave information and upgrade the existing modelling system, which can provide more accurate forecasting information in the Southern South China Sea area. The wind forcing data produced from the Global Forecasting System (GFS) model is utilized as input data to run the MFAST model. These data have a resolution of 3.6 km, allowing for a clear image of ocean wave information in the Southern South China Sea. To improve the MFAST model's reliability, the resulting output data is validated against in-situ observation data from the Acoustic Doppler Current Profiler (ADCP). In addition, statistical analyses are also performed as part of the verification process. It is shown that both observation and statistical analyses are in very good agreement with the MFAST. The correlation coefficient of MFAST is in the range of 0.01 when compared to the in-situ data, and the root mean square error is only in the range of 0.870 m to 0.925 m.

22: OPTIMIZING THE PRODUCTIVITY OF THE TRADITIONAL SHIPYARD INDUSTRY THROUGH LEAN MANUFACTURING WITH AN OBJECTIVE MATRIX

Fitriadi Fitriadi, Ahmad Faisal Mohamad Ayob

In today's highly competitive industrial landscape, the pursuit of increased productivity remains a top priority for sustainable growth. This study focuses on the traditional shipbuilding industry, aiming to unlock its latent productivity potential through a strategic combination of Lean Manufacturing principles and the Objective Matrix methodology. Traditional shipyards, steeped in a heritage of craftsmanship and expertise, often grapple with the challenge of maintaining optimal productivity levels. Within this context, integrating Lean Manufacturing practices emerges as a transformative strategy. By identifying and minimizing wasteful practices, streamlining workflows, and fostering a culture of continuous improvement, Lean Manufacturing seeks to optimize both resource utilization and operational efficiency within shipyards. Moreover, the implementation of the Objective Matrix enhances the effectiveness of Lean Manufacturing by introducing a robust analytical dimension to the optimization process. This methodology involves a comprehensive analysis of key performance indicators and factors influencing productivity. Through systematic quantification and evaluation of these factors, the Objective Matrix establishes a holistic framework for informed decision-making and resource allocation, aligning efforts with productivity goals. By synergistically blending the Lean Manufacturing paradigm with the Objective Matrix approach, this research not only explores the untapped potential for enhancing productivity within the traditional shipbuilding industry but also provides practical insights into the implementation of these strategies. By pinpointing specific areas for process refinement, waste reduction, and resource allocation, this study actively contributes to the optimization of productivity practices in traditional shipbuilding. Ultimately, these findings emphasize the importance of integrating modern methodologies while preserving the industry's cherished traditions, charting a progressive path toward a revitalized and more efficient future.

25: DESIGN CONSIDERATIONS AND FACTORS INFLUENCING FLOATING OFFSHORE WIND TURBINES

Mohd Fakhruddin Bin Zainal Ashirin, Ahmad Faisal Mohamad Ayob

The increasing demand for renewable energy sources has prompted significant interest in exploring offshore wind power. However, most of the studies in the literature are limited to onshore power generation with lack of long-term data from a wide range of operational wind turbine. This paper proposes the design of floating offshore wind turbines (FOWTs). It can be hypothesized that these innovative structures may offer more robust and consistent wind resources in deeper waters, thus widening the offshore wind energy generation scope. Via literature reviews, it can be realized that the design and deployment of FOWTs present challenges and complexities that require careful attention. This research explores the design considerations and factors influencing the performance of FOWT by providing valuable insights into the key areas that demand attention, thereby facilitating the realization of the full potential of FOWTs. The problem statement shall be scoped to identify and comprehend the unique challenges associated with FOWTs, distinct from their conventional onshore counterparts. This research aims to comprehensively understand the critical factors influencing the design, structural integrity, and overall performance of FOWTs. By analyzing and addressing these factors, the existing barriers can be overcome therefore optimizing the design process for future installations. In this work, numerical simulations and modeling techniques are employed to analyze the dynamic response of FOWTs under various environmental conditions. This work underscores the significance of addressing design considerations and the various factors influencing the efficient operation of FOWTs. By recognizing and overcoming these challenges, FOWTs can become a crucial contributor to the global renewable energy mix, fostering sustainable and eco-friendly energy generation for the future. The findings of this study can serve as a valuable reference for engineers, researchers, and policymakers involved in advancing the technology and deployment of FOWTs on a commercial scale.

28: EFFECTIVE PERIODIC NOISE REDUCTION FOR SHIP CORROSION IMAGE

Md Mahadi Hasan Imran, Shahrizan Jamaludin, Ahmad Ali Imran Mohd Ali, Ahmad Faisal Mohamad Ayob, Mohamad Riduan Ramli

Marine corrosion has recently applied advanced image processing techniques. However, the investigation might have been interrupted because the corrosion images are frequently disrupted by certain noises, which can significantly reduce the analysis accuracy. Effective investigation of corrosion images required progressive noise reduction techniques specially for the periodic noise. Hence the objective of this research is to investigate the reduction of periodic noise in ship corrosion image by applying modern image processing technique. The modified Wiener filter and adaptive Gaussian Notch-Reject filter (AGNRF) have been applied and the quantitative assessment through metrics such as Mean Squared Error (MSE), Mean Absolute Error (MAE), Peak Signal to Noise Ratio (PSNR), and Mean Structural Similarity Index Measure (MSSIM) provides evidence of substantial enhancements of the noisy images. The results demonstrated a significant addition to the experiment of ship corrosion detection by conducting analysis to enhance the periodic noise reduction. Therefore, the effectiveness and accuracy of corrosion detection techniques have been boosted.

83: INVESTIGATION AND FIELD EXPERIMENT UP ROOTING OF CASUARINA EQUISETIFOLIA VEGETATION FROM TSUNAMI FORCE ON THE SOUTH JAVA COAST

Novi Andhi Setyo Purwono, Nizam

A tsunami is a wave generated by impulsive forces and is transient in nature, that is the wave fault in nature. In contrast to waves caused by wind which only move water particles on the sea surface, tsunamis move all the water from the surface to the sea base. When a tsunami spread to the coast, its energy is large will have destructive power which results in not only damage to coastal infrastructure but also loss of life. The coast of Indonesia, especially the southern island of Java, is an located where two plates meet and in the located ring of fire, so it is very dangerous to the risk of earthquakes and tsunamis. Coastal forests are considered an effective disaster management effort. One of the coastal vegetation that can be used for coastal protection is the casuarina equisetifolia sea pine. Physical modeling of casuarina and tsunami generation has been carried out to assess effectiveness. This research conducted a pull test on the ability of sea pine trees to determine the strength of the tree against the pulling force that occurs. The relationship between the forces acting on the tree and the position of the force relative to the tree high is observed and measured. The results of the research show a non-dimensional relationship between tsunami force and tree uprooting force on tsunami height and tree high. Tsunami force (FD) can be determined using FD = ½. CD. x. r. Ap. U2, where the surge tsunami is measured based on the tsunami height is $U = \sqrt{(g.H\_T)}$. The non-dimensional number relationship between FD/Fcab and HT/Hp results in that if the FD/FCab > 1 the tree has been uprooted by the tsunami, and conversely if FD/FCab < 1 then the tree has not been uprooted and Fcab is the result of the casuarina tree uprooting test in field. The comparison between tree high (Hp) and tsunami height HT can be stated that if the value is 0,8 Hp ≤ HT the tree has been uprooted by the tsunami, and if 0,8 Hp [3] HT then the tree has not been uprooted.

102: A STUDY INTO THE EFFECT OF HULL CONFIGURATION ON THE PERFORMANCE OF FLOATING SOLAR PV STRUCTURE

M I Jifaturrohman, I K A P Utama, T Putranto, D Setyawan, L Huang

At present, energy transition is a reality in the journey towards achieving net zero emission. Among others, the development of floating solar photovoltaic (FPV) power plants is one of many possible renewable energy technologies that received considerable attention. One of the reasons for that is attributed to land acquisition which can lead to conflicts, whilst the use of sea is more flexible. Therefore, the development of floating solar PV situated at the near shore (later can be moved offshore) is promising particularly in order to withstand the harsh environment. The study aims to demonstrate such an innovative design of a floating structure and two types of hulls (monohull and twin-hull) are considered and focused on the seakeeping performance of the two bodies. Computational Fluid Dynamics (CFD) simulation based on the 3-D diffraction panel method together with the use of the Joint North Sea Wave Project (JONSWAP) wave spectrum is carried out to accomplish the seakeeping characteristic. The final computational simulation results show that the twin-hull model has more advantages than the monohull design. The trend of the RAO pattern, response spectra, and significant response for heave and pitch motion represent only slight differences between the two proposed designs. However, substantial disparity emerges in roll motion, with the difference in response values in prevailing 0o -roll heading standing at 53%, 39%, 27%, and 18% for sea states 1 through 4, respectively. Moreover, in 45o wave heading (quartering sea) it demonstrates a slightly lower disparity compared to the 0o wave heading (following sea) through sea-state 1-4 standing for 50%, 37%, 24% and 16% respectively.

106: CRITICAL ANALYSIS AND CALCULATION OF HYBRID ENERGY CANCER SCREENING SHIP

Tawheed Hasan, Ahmad Ali Imran Mohd Ali, Shahrizan Jamaludin, W.B. Wan Nik, Md Mahadi Hasan Imran

Cancer is a persistent global threat claiming countless lives annually. However in Bangladesh, the patients have difficulty to reach the nearest hospital because of remote location. Hence, ambulance ship is the right transportation for these patients. Despite that, the power of the ambulance ship is too depended on the fossil fuel which is costly. Thus, this research conducts a comprehensive analysis of an innovative strategy to combat cancer mortality and power supply of ambulance ship. The study places a strong emphasis on early detection as a pivotal factor in reducing mortality rates. It introduces a cutting-edge mobile cancer screening ship, powered by hybrid energy sources, and augmented by AI for enhanced critical analysis and incorporating corrosion considerations. At the same time, the harvested energy from the hybrid energy is used to self-power the anti-corrosion detection system on the ship. This research showcases the feasibility of implementing this ground-breaking solution within a reasonable budget while ensuring sustainability and environmental friendliness. The results are truly remarkable, offering promising avenues for transforming cancer screening. The mobile screening ship, designed to navigate remote areas using river routes, seeks to extend the reach of cancer screening services. Anticipated outcomes from this research encompass a significant reduction in cancer-related deaths, marking a crucial step toward a more effective and accessible approach to cancer screening and early intervention.

107: THE IMPACT OF TRAWLING ACTIVITY TOWARDS SUBSEA PIPELINES IN SOUTH CHINA SEA

Nur Hafiza Mr Muhamaruesa, Amal Amirah Ahmad Sonhajee, Khalid Samo, Ahmad Faizal Ahmad Fuad, Mohd Hairil Mohd, Mohammad Khairuddin Othman, Mohd Hafizi Said

South China Sea is imperative for both fishing and petroleum exploration activities. The potential impacts caused by otter boards and ground gears used by trawlers on the pipelines require mitigation plan to avoid damage. This study aims to determine the impacts of trawling activities and in order to classify the risks based on data gathered through Automatic Identification System, and further verified through field survey. Our analysis indicates only four (4) of 82 pipelines fall into high impact level based on frequency of crossings. Further analyses on the impact energy and pipe shell indentation indicate the impacts are within the acceptable criteria range as per guideline by DVNVGL-RP-F111. The trawling activities therefore have low or no significant risk towards the pipelines lying within high fishing operation area. Nevertheless, for safe operation and to ensure safety on the pipelines some control options should be considered.

ICOETI 2023
TRACK 2
Engineering Physics and Instrumentations

23: IPOH CITY DRIVING CYCLE DEVELOPMENT VIA TARGET PARAMETER APPROACH

S.K. Arun, I.N. Anida, J.S. Norbakyah, A.R. Salisa

The driving cycle is essential in the manufacture and evaluation of the vehicle's performance. A driving cycle is a collection of speed-time data used as a key input in automotive emission models. This article proposes and creates a driving cycle for Ipoh, Perak, Malaysia. The route for collecting driving cycle data was chosen based on the most typical route travelled by drivers to get to work according to Road Traffic Volume Malaysia 2019. In each run, the parameters for the driving data are collected using driving cycle tracking device, calculated, and then the goal value parameter is generated. The IDC (Ipoh Driving Cycle) with the lowest percentage error is accepted with Route 1 is 11.63%. Whereas Route 2 with percentage error of 2.29%. And lastly, for Route 3, with 7.74% of percentage error. The IDC is then compared to existing standard driving cycles such as New European Driving Cycle and Urban Dynamometer Driving Schedule.

27: STUDY THE EFFECT OF PLASMA PARAMETERS ON TITANIUM DIOXIDE THIN FILM FOR HYBRID SOLAR CELL APPLICATION

Hasiah Salleh, Nur Salihah Alias, Ahmad Nazri Dagang, Nik Aziz Nik Ali, Nurul Alfatihah Mohd Arifin, Nurul Huda Kamarulzaman and Noor Hazdiebah Adawiah Hazrin

Hybrid solar cell (HSC) one of the third-generation solar cells, was developed as one of the alternative energy generations to other types of Renewable Energy (RE) which was extensively studied previously. The use of synthetic dye combined with TiO_2 as HSC achieved a power conversion efficiency (PCE) of 18%, but synthetic dye residues might harm aquatic life. In other studies, a photosensitizer (natural dye from the plant) was used to replace synthetic dye. Unfortunately, the HSC PCE is low due to the morphology of the TiO_2 surface, which has a high roughness, making natural dye difficult to absorb. As a result, an atmospheric pressure plasma jet (APPJ) was used to alter the surface structure of TiO_2 to increase surface area and increase natural dye absorption. The distance of plasma exposure was taken at 2 mm, 4 mm, 8 mm, and 12 mm toward surface TiO_2. Natural dye photosensitizer (NDP) was extracted from the tropical plant's mangosteen pericarp. The combination of TiO_2 with NDP was made in bulk heterojunction thin film, that was deposited on indium tin oxide (ITO) subtract. The morphology of TiO_2 before and after treatment was observed by scanning electron microscope (SEM). The optical properties were determined by UV-Vis spectrophotometry (UV-Vis). The power conversion efficiency of HSC is determined by IV measurement. The results of SEM analysis showed that the particle sizes after exposure to plasma were smaller compared to those without Plasma, and the sizes of TiO_2 decreased with increasing the plasma distance. The PCE result of the ITO/TiO2+NDP (without plasma) was a 0.13 % increase by 50% compared to the PCE of ITO/TiO2+NDP (with plasma) was 0.25 % at an optimal distance of plasma exposure is 2 mm.

45: SURFACE TREATMENT OF ITO SUBSTRATE BY USING ATMOSPHERIC PRESSURE PLASMA JET (APPJ) FOR SOLAR CELL APPLICATION

Nur Salihah Alias, Faris Zakry Mohamad Fawzee, Nurul alfatihah Mohd Arifin, Ahmad Nazri Dagang, Hasiah Salleh, Nik Aziz Nik Ali, Siti Khadijah Zaaba

Indium Tin Oxide (ITO) is one of the most commonly used transparent conductive oxides (TCO) in solar cell technology due to its high conductivity and good transparency in the visible range. The effects of plasma treatment on ITO substrate are studied to improve the efficiency of solar cell application. In this study, the ITO substrates were treated with an atmospheric pressure plasma jet (APPJ) with helium gas for different exposure times. The electrical and optical properties of the ITO substrate were then examined for different treatment times from 0 to 300 seconds. The X-ray diffraction (XRD) result showed that the plasma treatment did not significantly affect the crystal structure and crystallinity of the ITO substrates before and after the plasma treatment. With increasing treatment time, the ITO substrates have no influence on the transmission spectra, which means that the thickness of the ITO substrate was not etched by the plasma treatment. With the longer exposure time to the plasma treatment, the contact angle decreased from 52.75° to 10.78°, indicating a more hydrophilic surface. The sheet resistance of the ITO substrate decreased in the treatment time from 0 to 60 seconds from 7.53 Ω/cm2 to 7.38 Ω/cm2, but with increasing treatment time to 300 seconds the sheet resistance of the ITO substrate increased to 7.6 Ω/cm2. The change in electrical resistance was related to the concentration of oxygen vacancies. The APPJ treatment not only effectively removed carbon contaminants from the surface, but also introduced oxygen. Therefore, it is believed that the APPJ treatment changes the physicochemical properties of the ITO substrate, which in turn can improve the performance of the solar cell application.

49: ANALYSIS OF PHOTODEGRADATION AND REACTION KINETICS OF TEXTILE ORGANIC DYES ON CAESALPINIA SAPPAN, LAWSONIA INERMIS AND ARECA CATHEU USING SPECTROSCOPIC METHODS FOR SOLAR CELL APLICATION

Siti Rokhmanila Sukardi, Ahmad Nazri Dagang, Hasiah Salleh, Wan Hafiza Wan Hassan, Nik Aziz Nik Ali

Organic dyes are part of the textile industry, but have a negative impact on the environment. Photodegradation using sunlight can reduce the environmental impact as it has the potential to convert complex organic dyes into simpler and less harmful compounds. Natural dye-based hybrid solar cells have the lowest cost among solar cell technologies, but the lowest photochemical conversion efficiency. The problematic factor in DSSC is the use of electrolyte type, either gel or solution, because there will be leakage, natural dye instability and evaporation. After plasma treatment using APPJ, a positive effect on the stability and colour of anthocyanins was observed. The aim was to analyse the photodegradation reaction kinetics of organic dyes in Caessalpinia Sappan , Medina Lawsonia Inermis, Yemeni Lawsonia Inermis and Areca Catheu using spectroscopic methods. This research focuses on the potential of natural dyes extracted from these sources as sensitizers in dye-sensitised solar cells (DSSC). The stability of natural dye was analysed using the photodegradation reaction kinetics of organic dyes before and after treatment using advanced spectroscopic methods. The extracted natural dyes were determined their optical absorption and functional group through UV-Vis spectrophotometer, UV-Vis and Fourier transform infrared spectroscopy, FTIR, respectively. The photo degradation proses of natural dyes were done under radiation of sunlight for four weeks with measured their photodegradation efficiency at every weeks. The results showed an increase in the percentage of photodegradation after APPJ treatment on Medina Lawsonia Inermis and Yemeni Lawsonia Inermis. While Caessalpinia Sappan, and Areca Catheu showed a slight change compared to before plasma treatment. The FTIR spectra of the natural dyes showed the presence of functionalised hydroxyl compounds and C-O groups. After plasma treatment, stronger functional group peaks were observed and new chemical bonds were formed

67: ENHANCED HYDROGEN STORAGE PROPERTIES OF NAAIH4 WITH THE ADDITION OF MGCL2 FOR SOLID STATE HYDROGEN STORAGE

Ahmad Muhaimin Mohd Sayuti, Nurul Shafikah Mohd Mustafa

Solid-state storage is the ideal approach to store hydrogen for a variety of reasons, including a large volumetric storage capacity and greater safety for public consumers. The most promising solid-state material for hydrogen storage is sodium aluminium hydride ($NaAlH_4$). Its advantages are high hydrogen storage capacity which is 7.5 wt.%, low material cost, and abundance in the environment. However, commercialisation of $NaAlH_4$ as a solid-state hydrogen storage material has been hampered by slow sorption kinetics and a high breakdown temperature. In this study, magnesium chloride was used as a catalyst to enhance the dehydrogenation properties. The desorption temperature was studied using temperature-programmed desorption and exhibited a lower onset hydrogen release after doped with 10 wt. % of $MgCl_2$. It was found that the $NaAlH_4$ doped with 10 wt. % $MgCl_2$ showed the optimal value that can reduce the onset desorption temperature. At 300 °C, the $MgCl_2$-doped $NaAlH_4$ sample desorbs roughly 1.0 wt.% hydrogen in 30 minutes meanwhile the undoped $NaAlH_4$ only desorbs 0.25 wt.% hydrogen. With the addition of 10 wt.% of $MgCl_2$, Scanning Electron Microscopy shown that the particle size of $MgCl_2$ - doped $NaAlH_4$ dispersed homogenously and there is less agglomeration than the undoped and as-milled $NaAlH_4$. These two elements were thought to be crucial in lowering the breakdown temperature and improving the kinetics of the $NaAlH_4$. It has been demonstrated that $MgCl_2$ works well as a catalyst to enhance $NaAlH_4$ hydrogen storage capacity.

84: OPTIMIZATION OF THE DEHYDROGENATION PROPERTIES OF LIALH4 BY THE ADDITION OF ZRF4

Nur Ain Munirah Ya Omar, Zarina Omar, Nurul Shafikah Mohd Mustafa

Lithium aluminum hydride ($LiAlH_4$) is considered a promising material for solid-state hydrogen storage owing to its high hydrogen content, amounting to 10.5 wt.%. However, $LiAlH_4$ also presents significant challenges, including its high decomposition temperature, slow dehydrogenation kinetics, and irreversibility under moderate conditions, limiting its wider applications. To overcome these issues, various approaches such as mechanical milling treatment and the introduction of catalysts or additives have been explored to enhance the hydrogen storage properties of $LiAlH_4$.One notable technique involves the development of microstructure or nanostructured materials using ball milling and the doping of various types of catalysts or additives, which has substantially improved the efficiency of $LiAlH_4$. In this study, zirconium tetrafluoride was employed as a catalyst to optimize the dehydrogenation properties of $LiAlH_4$. After the addition of 10 wt. % ZrF_4, a lower onset of hydrogen was released. The desorption temperature was analyzed using temperature-programmed desorption (TPD) and revealed a lower onset of hydrogen release after the addition of 10 wt. % ZrF_4. It was observed that $LiAlH_4$ doped with 10 wt. % ZrF_4 exhibited the most favorable results in terms of reducing the onset desorption temperature. In dehydrogenation kinetic analysis, at 90 °C, the ZrF_4-doped $LiAlH_4$ able to liberate significantly to 5.5 wt.% of hydrogen in 80 minutes, whereas the undoped $LiAlH_4$ only released 0.2 wt.% of hydrogen. Furthermore, based on the Kissinger equation, the activation energy for hydrogen liberation for the two-step dehydrogenation of as milled $LiAlH_4$ were 103 and 119 KJ/mol respectively. After milling $LiAlH_4$ with 10 wt.% ZrF_4 the activation energies were reduced to 71 and 90 kJ/mol respectively. These factors were deemed crucial in lowering the breakdown temperature and enhancing the kinetics of $LiAlH_4$. In summary, this study provides evidence that ZrF_4 serves as an effective catalyst for enhancing the hydrogen storage capacity of $LiAlH_4$ and optimize the dehydrogenation performance of $LiAlH_4$.

92: ENHANCEMENT OF DEHYDROGENATION PROPERTIES OF NAALH4 WITH THE ADDITION OF FEF3

Zarina Omar, Nurul Shafikah Mohd Mustafa, Nur Ain Munirah Ya Omar, Muhammad Syarifuddin Yahya, Mohammad Ismail

Enhancing the practical utility of NaAlH4 as a hydrogen storage material is crucial to overcoming the persistent challenges of sluggish sorption kinetics and elevated decomposition temperatures. In this study, the impact of adding FeF3 as a catalyst on the hydrogen storage properties of NaAlH4 was explored. The experiment was carried out by mechanical milling and characterized using temperature-programmed desorption. Doping NaAlH4 with various weight percentages of FeF3 (5, 10, 15, and 20 wt.%) reduces onset dehydrogenation temperatures and enhances the dehydrogenation kinetics. It was discovered that adding 10 wt.% of FeF3 to a NaAlH4 composite resulted in a dehydrogenation temperature of 105 °C, much lower than the 219 °C as shown in undoped NaAlH4. The milled NaAlH4 only generated around 0.3 wt.% of hydrogen after 60 minutes of dehydrogenation at 150 °C. At the same duration and temperature, the NaAlH4 with 10 wt.% FeF3 additives released around 1.7 wt.% hydrogen, indicating rapid dehydrogenation kinetics. It is believed that the in-situ formation of the new phases of AlF3 and Al3Fe during dehydrogenation enhances the thermodynamic parameters of the NaAlH4-FeF3 composite by modifying the chemical pathway of the composite system.

108: MOTOR CURRENT SIGNATURE ANALYSIS OF INDUCTION MOTOR OPERATING UNDER ROTOR FAILURE

Nik Zakiah Mahirah Nik Hassan, Nurafnida Afrizal

Asynchronous motors, also called Induction Motors (IM), are most widely used in industries because of their ruggedness, robust construction, low cost, and high efficiency. A broken rotor bar is one of the highest-rated lists of essential faults and causes severe damage to the motor. This research focuses on identifying the IM's broken rotor bar early condition. This research aim is to identify signal patterns in the current spectrum of the motor that may be utilized to forecast vibrations that could lead to broken rotor bars using mathematical modelling. An advance research method proposed to applies a signal analysis technique on detecting earlier broken rotor bar faults during the induction motor operation. Mathematical modelling has been used to describe the relationship between the rotor unbalance, vibration and current analysis. An induction motor model with severe vibration was applied using MATLAB and Simulink software. Vibration monitoring is one of the most efficient techniques in the industry for monitoring machinery. The Simulink model was used to simulate the side-band frequency of the current spectrum that will corresponds towards excessive vibration due to rotor unbalance. As a result, diagnosing a broken rotor bar is one of the actions needed, as this kind of failure potentially leads to other types of faults. On the other hand, various disruption variables are considered, and the monitoring condition improves while the induction motor performs.

14: EXPLORING THE PERFORMANCE OF LORA IN KENYIR

Nurul Adilah Abdul Latiff, Idrus Salimi Ismail, Shamry Mubdi Subra Mullisi

In recent years, the Internet of Things has revolutionized numerous industries by connecting devices and enabling efficient data communication. Among the various wireless communication technologies available, Long Range (LoRa) stands out as a low-power, wide-area network solution that offers long-range coverage and extended battery life. As the IoT continues to expand, there is a growing need to assess the performance of LoRa in different environments, including those characterized by large bodies of water. This paper aims to investigate and evaluate the performance of LoRa technology in lake environments, shedding light on its capabilities, limitations, and potential solutions for enhancing communication reliability. To investigate the performance of LoRa technology on the coverage at the lake, the LoRa solution from Semtech was used for both LoRa gateway and end-device. The Semtech SX1262 was operated in 923 MHz frequency band. The LoRa gateway was located at rooftop of the building at Stesen Penyelidikan Alami Kenyir UMT and a LoRa end-device transmit the data to gateway at several location around the gateway. To study the coverage of the LoRa technology, the distance between LoRa gateway and LoRa end-device, received signal strength indicator and signal-to-noise ratio were recorded. Based on the results, the maximum distance for the data signal from LoRa end-device received by the gateway is 5.02 km with received signal strength indicator of -113 dBm and signal-to-noise ratio of -15.3 dB. Increasing the distance between LoRa gateway and end-device will increased the received signal strength indicator and signal-to-noise ratio values. However, the results from the field tests shows that the condition for line of sight between the LoRa gateway and end-device is the main factor on the reliability of the LoRa communication. This paper is crucial for pivotal for the applications such as environmental monitoring, water quality management, and aquatic ecosystem research which based on long range communication. The optimal deployment strategies such as hops and mesh network for LoRa gateways and end-devices to achieve reliable connectivity and maximize network coverage in lake environments.

115: DEVELOPING A WATER DRIVING CYCLE (WDC) TRACKING DEVICE BASED ON GPS AND GSM FOR ADVANCING WATER VEHICLE PERFORMANCE

Nur Farazatul Azna Mohd Fadzil, Siti Norbakyah Jabar Zulkifli Mohd Yusop, Nurru Anida Ibrahim, Arunkumar Subramaniam, Salisa Abdul Rahman

Driving cycles represented by speed versus time data points are essential for assessing vehicle efficiency, including fuel consumption and emissions. Usually, the driving cycle is constructed for land vehicles but this research focused on water vehicles. The research aimed to develop a water driving cycle (WDC) Tracking Device to collect data that can be used to construct a water driving cycle and study the performance of vehicles based on fuel consumption and emission. In this research, WDC Tracking Device were designed using Proteus 8 and developed using Arduino UNO, a global positioning system, and a global system for mobile communication. The validation of the prototype was done to see the performance of the device before collecting data. The prototype was tested at the Payang Water Taxi (PWT) route in Kuala Terengganu. The data collected was performed as a PWT driving cycle and analyzed using ADVISOR. From the PWT driving cycle analysis, fuel consumption is recorded as 24.1 L/km and emissions are 4.154 g/km for hydrocarbons, 2.851 g/km for carbon dioxide, and 0.08 g/km for nitrogen oxides. This research demonstrates that a WDC tracking device can be used to collect data to construct a driving cycle and it can be used to evaluate water vehicle performance and compliance with emissions standards, contributing to improved water vehicle design.

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8: PHILOSOPHY OF ALARM MANAGEMENT IN THE PROCESS PLANT LIFECYCLE

Saidatul Hasyimah Said Ali, Ahmad Faisal Mohamad Ayob, Eimad Abusham

The management of alarms is vital to the safety, effectiveness, and efficiency of high-risk operations, such as those in the chemical and petroleum industries. Health, safety, and environmental mishaps may both be prevented and their effects can be lessened with an efficient alarm system. Alarm management is frequently cited as a contributing factor in industrial incidents and is regarded as an essential issue in industrial facilities. Despite significant advancements in control and safety systems, the industry continues to experience close call incidents and adverse accidents. Human involvement plays a critical role in process control, since a person's response to an abnormal situation or alarm can determine success or failure. An analysis of the performance of alarm systems indicates that enhancing their effectiveness and improving decision-making capabilities can be achieved by streamlining and prioritizing alarms accurately. Alarm data generated by industrial automation systems has become increasingly large, posing management challenges. Consequently, personnel are inundated with alarms that exceed their capacity of handling them effectively, leading to an overwhelming environment. To improve current alarm handling procedures, alarm management aims to identify unnecessary alarms with incorrect setting values. IEC 62682 and EEMUA191 are used to monitor alarm systems in process industries, allowing for a more comprehensive lifecycle approach. An important component of this approach is the implementation of Management of Change (MoC), which requires automated systems, engineering processes, and engineering systems. As a result of the IEC 62682, suppliers and administrators in complex projects involving several organizations will better understand their roles while the EEMUA 191 narrates how alarms should be managed in an effective manner. It is essential that the alarm management system, which includes software, hardware, personnel, and procedures, is adaptable to the changing characteristics of equipment and processes as they evolve with technological advances. A system must be sufficiently equipped to support continuous improvement, and it must also ensure continuous improvement. Introducing a comprehensive approach to change management throughout the entire lifecycle will allow significant improvements to be successfully incorporated.

9: APPLICATION OF GENETIC ALGORITHM IN TRAINING AUTOMATIC SPEECH RECOGNITION

D.T. Muxamediyeva, N.A. Niyozmatova

The application of a genetic algorithm in training automatic speech recognition is considered. In the learning process, hidden Markov models are used to evaluate the statistical properties of each word, including the sequence of cepstral coefficients, as well as the transition probabilities between model states. As the model trains, it seeks to improve the fit between the input cepstral coefficients and the target words in order to improve the accuracy of speech recognition. Once trained, the system is used to recognize new speech inputs and identify the corresponding words. This is done by applying trained Hidden Markov Models to new sequences of cepstral coefficients. Genetic algorithms can be useful for optimizing some aspects of speech recognition systems, such as selecting optimal parameters for processing speech signals and choosing the most appropriate models for specific tasks.

10: MFCC-GMM METHOD FOR SPEAKER IDENTIFICATION BY VOICE

N.A.Niyozmatova, N.S. Mamatov, X.T. Dusonov, B.N. Samijonov, A.N.Samijonov

Voice is one of the unique characteristics of a speaker, and it is widely used in communication. The sound is user-friendly and does not require hard work from him. Voice is one of the signs of human behavior, and voice recognition is widely used in many areas of human activity. Nowadays, creating a perfect voice recognition system is still a big challenge for researchers. For example, when the duration of a speech sample is small, identification becomes more difficult. This article is focused on recognizing a speaker based on voice by Mel-Frequency Cepstral Coefficients (MFCC) feature set separation algorithm and Gaussian mixture model (GMM) modeling.

11: X-RAY IMAGE CONTRAST ENHANCEMENT ALGORITHMS

N.S. Mamatov, M.M. Jalelova, B.N. Samijonov, A.N.Samijonov, K.K. Erejepov

X-ray imaging has played a significant role in advancing medical diagnostics. The quality of X-ray images is often contingent on several factors, such as contrast. Increasing contrast can marginally enhance image quality, and the assessment of contrast is a crucial step in the interpretation of digital X-ray images. X-ray imaging is critical for precise diagnosis and treatment. This study examines algorithms for contrast enhancement to improve the quality of X-ray images and suggests the optimal pair of criteria and algorithms.

26: MEASURING SOFTWARE MAINTAINABILITY: AN EXPLORATION OF METRICS AND CONTINUOUS DEVELOPMENT PRACTICES

Sharifah Mashita Syed-Mohamad, Amir Ngah, Al-Fahim Mubarak Ali

Maintainability is a critical aspect of modern software projects, referring to the ease with which a system can be modified, repaired, or adapted to changing requirements. In today's agile environment, maintainability is becoming increasingly important, yet there is not much literature that reports whether the metrics established since several decades ago are still used in modern projects. Are there different measures of software maintainability in Agile and DevOps, in particular? This paper reviews the evolution of software maintainability metrics from traditional function-oriented to contemporary software development approaches. The objective is to understand the advantages and limitations of software metrics in each paradigm and understand the impact of continuous practices on maintainability in modern software development. It is observed that those metrics particularly the many object-oriented metrics were developed based on the assumptions and practices prevalent during the waterfall and traditional software development era. Agile, DevOps and other modern development practices have different approaches and techniques that may require different metrics to assess software maintainability effectively.

29: COMPARISON OF MALAY STEMMING ALGORITHM

Rosmayati Mohemad, Nazratul Naziah Mohd Muhait, Noor Maizura Mohamad Noor, Zulaiha Ali Othman

Stemming is the process of converting words into their root words. This method is significant in text analytics as the text data must be stemmed before it can proceed for further analysis. The purpose of this paper is to investigate the Malay stemming techniques of Othman algorithm and Fatimah algorithm, and new approach is proposed to increase the stemming performance. The performance of the previous Malay stemmer and the proposed stemmer was tested and evaluated. The result demonstrates a significant increase in the proposed algorithm's accuracy and time processing rate. The result shows that the proposed algorithm has the highest accuracy rate of correctly stemmed words of 85.28% with an 8 second processing time. In contrast, Othman algorithm achieved an accuracy rate of 70.08% with a 15 second of processing time and Fatimah algorithm obtain only 65.54% with a 14 second of processing time.

30: COMPARING CNN ARCHITECTURES WITH SWISH ACTIVATION FUNCTION FOR SEA TURTLE INDIVIDUAL RECOGNITION

Siti NurFarahim Shaharudin, Wan Nural Jawahir Hj Wan Yussof, Muhammad Suzuri Hitam, Ezmahamrul Afreen Awalludin, Mohd Erman Safawie Che Ibrahim

Recognizing individual sea turtles is a tough challenge for researchers due to their nearly indistinguishable appearances. However, this task is of profound significance for ecological studies to provide insights into migration patterns, reproductive behaviors, and the overall health of the sea turtle population. Convolutional neural networks (CNNs) have emerged as powerful tools in this field, as they can automate the less intrusive photo-ID technique. However, the effectiveness of CNNs depends heavily on the chosen architecture and activation function. This study conducted experiments using a self-collected dataset of over 1,000 images representing 20 individuals of sea turtles in order to explore the comparative analysis of four distinct CNN architectures—AlexNet, VGGNet, DenseNet, and ResNet—using the Swish activation function. The results highlight the critical role that the selection of both CNN architecture and activation function plays in determining performance outcomes of the study. These insights are invaluable for researchers and practitioners, as they can be used to improve accuracy and reliability in these fields.

31: SYSTEMATIC REVIEW OF THE LEARNING OUTCOME FRAMEWORK

Noor Maizura Mohamad Noor, Nur Fadila Akma Mamat, Rosmayati Mohemad

Every phase of life involves education. Acquiring knowledge and education is crucial. In the discipline of education, an assessment is necessary for evaluating a student's progress. Institutions of Higher Education (HEI) also use the assessment. It relates to Malaysia, where the education ministry established the MQF Framework. Certain Learning Outcomes (LO) are made up of Program Learning Outcomes (PLO) and Course Learning Outcomes (CLO).

32: WAVELET-ENHANCED DEEP NEURAL NETWORK FOR INDIVIDUAL SEA TURTLE RECOGNITION

Mohd Erman Safawie Che Ibrahim, Wan Nural Jawahir Hj Wan Yussof, Muhammad Suzuri Hitam, Ezmahamrul Afreen Awalludin, Mohamad Fathullah Ruslan and Siti NurFarahim Shaharudin

Sea turtle individual recognition plays a crucial role in conservation efforts and ecological research. In this paper, we propose a novel approach that integrates wavelet transformation with deep neural networks for accurate and robust individual sea turtle recognition. Our method leverages the unique advantages of both wavelet analysis and deep learning to enhance recognition performance, addressing challenges such as varying lighting conditions, pose variations, and image noise. In this paper, the dataset employed in this research comprises a total of 4,362 images, encompassing 2,936 wavelet-transformed sea turtle images and 1,426 images across 21 classes. The process initiates with dataset preprocessing, followed by wavelet transformation applied to images, resulting in wavelet-enhanced representations capturing fine details across scales. Then, the different layers of the Convolution Neural Network (CNN) were proposed to recognize sea turtles using data augmented. Through comprehensive validation and performance evaluation, our methodology showcases its effectiveness in identifying sea turtles with a high degree of accuracy. By synergizing wavelet analysis with deep neural networks, our method offers a promising avenue for accurate identification of sea turtles across varied environments.

34: ALGEBRAIC APPROACH TO SOLVING PROBLEMS OF IDENTIFICATION IN THE IOT ECOLOGICAL SYSTEM

Anvar Kabulov, Islambek Saymanov, Gayrat Isoqov

In the article, as the initial identification model (A), a model with simple recognition algorithms of the type is considered: the nearest neighbour algorithm, the average distance algorithm, etc.

The peculiarity of the algorithms of this class is that for calculating estimates that determine the belonging of a recognized object, there are simple analytical formulas that replace complex enumeration procedures that arise when calculating proximity estimates using a system of support sets.

We will consider only algorithms represented in the form A=B*C, where B is an arbitrary recognition operator. It turns out that an essential part of the algorithm is the operator - B; decision rule - C can be made standard for all algorithms and programs. Any recognizing vote operator maps task Z to a numeric matrix of votes or scores

$B(Z)=\|G_{ij}\|_{(q \cdot l)}, G_{ij}=G_j(S^i)$

moreover, the value G_{ij} has a clear, meaningful interpretation.

This value can be considered as the degree of belonging of the examined object S^i to the class K_j, expressed by a number. After the introduction of appropriate normalizations, the quantity G_{ij} can also be considered as the value of the membership function of the elements S^i of the set K_j.

Then the sum and product of the operators B_1 and B_2, as well as the multiplication of the operator by a real number is defined as follows:

$[\![(B)]\!]_1+B_2)(Z)=\|[\![G_{uv}^1+G]\!]_{uv}^2\|_{(q \cdot l)}$

$[\![(B)]\!]_1 \times B_2)(Z)=\|[\![G_{uv}^1 \times G]\!]_{uv}^2\|_{(q \cdot l)}$

$(c B)(Z)=\|c \cdot G\|_{(q \cdot l)} \qquad i=1,2.$

In this paper, we study linear operator polynomials:

$\sum_{(i=1)}^n [\![\alpha_i B_i=B \in L\ \tilde{}\{B\}]\!]$

35: REGIONAL COMPARATIVE ANALYSIS OF COVID-19: LEVERAGING MACHINE LEARNING FOR INSIGHTS AND PREDICTIONS

Rakhimov Bakhodir, Alimov Akrom, Rakhimova Mekhrbonu, Makharov Kodirbek

Machine learning (ML) can help determine the presence or absence of COVID-19 in patients based on various features such as clinical symptoms, laboratory tests, computed tomography of the lungs, etc. For example, Zoabi et al developed an ML model that predicted COVID-19 test results with high accuracy using only eight binary variables: gender, age, known contact with an infected person and the onset of five initial clinical symptoms. By leveraging the power of machine learning, healthcare institutions and policymakers can make data-driven decisions, identify high-risk areas, allocate resources effectively, and implement targeted interventions. Traditional epidemiological approaches have yielded valuable insights into the spread and impact of COVID-19. However, the complex and multifaceted nature of the pandemic necessitates advanced analytical methods that can encompass a wide range of data sources and account for intricate interactions among variables. ML methods have demonstrated immense potential in analyzing such large and diverse datasets, uncovering patterns and generating forecasts. For research used methods: splitting the quantitative features of the sample into disjoint intervals; calculating membership functions of intervals (gradations for nominal features) to a class; nonlinear transforming feature's values' according to objects membership function to classes; construction of latent features by generalized estimations for a given set of features; determination and comparison of the accuracy of classification by reformed dataset; finding the most informative features by groups. The city of Tashkent was selected as the control group to identify informative features among regions regarding the stability of features. The comparison was conducted based on the results of the experiment, wherein the symptoms of 5 regions exhibited similarities among themselves, while two regions exhibited similarity, and distinct symptoms were observed in other regions. It was hypothesized that the lifestyle, domestic conditions, traditions of residents, and COVID-19 patients migration were causes of these results.Despite differences in performance across regions, the fight against COVID-19 must be united and coordinated by all levels of government and the public. It is important to follow health advice such as wearing masks, social distancing, and hygiene measures to reduce the risk of infection and help slow the spread of the virus.

37: ALGORITHMIC MODEL OF THE ECOLOGICAL MONITORING INFORMATION SYSTEM

Anvar Kabulov, Islambek Saymanov, Piratdin Allayarov, Inomjon Yarashov

In this paper, for the effective solution of complex agricultural problems, the use of digital technologies in monitoring environmental situations, methods for processing and protecting information for transmitted data in monitoring wells located in the Aral Sea areas are studied. Issues of algorithmic formalization of user access to the information system for environmental monitoring of mineralization and changes in the level of underground seepage waters have been implemented. Based on functioning tables, optimal compatibility of subjects and objects in the process of data entry and user access control is provided, and a useful method for an object is proposed that was not in previous systems. The efficiency E of splitting the set of complete wells into a reliable set of observation wells is defined as follows: $\alpha_j = L_j * n_j * \sum_{(i=1)}^{(n_j)} h_i^j$ $\overline{\alpha} = (\sum_{(j=1)}^{N} \sum_{(i=1)}^{(n_j)} [h_i^j * L_j * n_j])/N$ $E = (\sum_{(j=1)}^{N} |\overline{\alpha} - \alpha_j|)/N$, where α_j – j-th labor cost of a technician attached to a set of observation wells; $[h]_i^j$ – observation wells of the j-th subset belong to the set of the i-th water level in the observation well , L_j- part of j is the path traveled by the technician attached to the set of observation wells, n_j – j-th subset – the number of elements many observation wells. $\overline{\alpha}$ – average labor costs of the equipment of observation wells of the j-th subset from the total set of wells attached to the set. The paper solves the problem of minimizing the parameter E, water consumption while maximizing income from crop production. Moreover, the smaller the value of E, the more efficient it is to divide the total set of wells into a reliable subset of wells.

40: A NOBLE APPROACH OF POLLEN CLASSIFICATION: COMBINING THE STRENGTHS OF LOCAL BINARY PATTERN AND CONVOLUTIONAL NEURAL NETWORK

Md Aman Ullah, Abdul Aziz K Abdul Hamid, Muhamad Safiih Lola, R.U. Gobithaasan

Pollen identification is a crucial task in various scientific disciplines, including geology, ecology, evolutionary biology, and botany. However, existing identification methods are labor-intensive, time-consuming, and reliant on highly skilled experts. Consequently, the need for an automated and precise pollen identification system is necessary. This study introduces an innovative approach that combines Gabor Filters (GF) and Convolutional Neural Networks (CNN) to enhance the accuracy of pollen classification. Gabor filters are applied to high-resolution images of diverse pollen species, accentuating texture-specific details essential for differentiation. Subsequently, these images are analyzed using a sophisticated CNN architecture with multiple layers to discern hierarchical features critical for precise classification. The Proposed GF-CNN model demonstrates exceptional proficiency, particularly in achieving enhanced accuracy by accurately recognizing subtle textural differences among pollen types. Remarkably, the results showcase the superior performance of the Proposed GF-CNN, with an impressive accuracy of 99.85% for the Malaysia Pollen Dataset (MPD) and 99.43% for the New Zealand Pollen Dataset (NPD). This highlights the model's effective balance between precision and recall. Additionally, it achieves a higher sensitivity, signifying an increased true-positive rate, which is essential for detailed ecological studies. Furthermore, improved specificity scores indicate the model's success in minimizing false positives, emphasizing its relevance for precision-focused research.

44: GAP CALCULATION FOR STRING-VALUED PARAMETERS ON PROFILE MATCHING ALGORITHM FOR CROWDSOURCING MAINTENANCE SYNCRONIZED-DATA (CMS)

Ahmad Cucus, Al-Fahim Mubarak Ali, Zafril Rizal M. Azmi , Ku Saimah Ku Ibrahim

Crowdsourcing is frequently used to finish tasks that need many workers to complete them in a short amount of time, but this often leads to the results of crowdsourcing activities being of poor quality because it is necessary to have a worker selection model in place to find workers with the right skills for the task at hand. We employ a matching approach and matching algorithm to choose workers. The matching algorithm ranks gaps, where a gap is the difference between the values of two variables. In crowdsourcing, the standard value provided by the requester and the value owned by the worker are the variables used to determine the gap; however, some variable values are in the form of strings, such as skills, experience, work history, and others. As a result, we try to change the matching algorithm by adding up string variables that have similarities between the standard requester and workers. The results of the work are better when compared to the outcomes of work without employing the matching algorithm, therefore the results the requester wants are better. The application of this algorithm gives us workers who have a more specific match, as seen by an increase of 45%.

47: THE DETERMINATION OF FACTORS FOR ICT QUALITY ASSESSMENT MODEL

Ahmad Iffat Alias, Mohamad Nor Hassan, Aziz Deraman

Information and Communication Technology (ICT) is a crucial asset in business processes and high ICT quality allows for highly efficient business processes. Measuring ICT quality is identified as a crucial step towards ensuring high-quality ICT service. Over the years several ICT assessment models have been developed and each year the factors of measurement are constantly updated. This is due to constant change in technology trends and the user requirements. Thus, any existing factors within models developed previously require review and update if necessary. Therefore, the most relevant factors for ICT assessment model are investigated in this study. Through literature review a set of updated factors are developed and expert review were used to validate the factors. Factors determined in this study are: Software System and Application, Computing Hardware, Network and Communication, Lifelong Learning, Organizational Governance, Ecosystem Support, Security, and Official Recognition. The updated and validated factors shall help future researchers in developing a model to assess ICT compliancy for measuring readiness in providing quality ICT services.

50: INTELLIGENT TISSUE DISPENSER SYSTEM: IOT APPLICATION

Mustafa Man, Wan Aezwani Wan Abu Bakar, Mohd. Irfan Hakim Md. Noor, Noor Azliza Che Mat, Ily Amalina Ahmad Sabri, Nur Laila Najwa Josdi

Internet of Things (IoT) technology is the main contributor in numerous intelligent applications. The three main components for any IoT applications are the source of power (energy), the microcontroller and the sensor(s) involved. This paper presents IoT technology for application to address the utilization of toilet tissue named as Intelligent Tissues Dispenser Device. This device relies on the microcontroller and sensor in order to operate the intended task. We use the ultrasonic sensor that will transmits an ultrasonic wave that hit the object to be measured. Upon hitting the surface of the object to be measured, the wave is then reflected to the receiver of the sensor and the time difference between transmitted wave and received wave is calculated to get the actual distance of the object from the sensor. The main contribution of this is to monitor and track for the toilet tissue to be refilled. The implementation shows the system enable to update for the status of each tissue which reducing the cost of manually human checking for tissue refilled.

54: A METHOD FOR COUNTING AND CLASSIFYING FLIES USING M-FLYCOUNTER

Ily Amalina Ahmad Sabri, Mustafa Man, Noor Azliza Che Mat, Ashanira Mat Deris, Wan Aezwani Wan Abu Bakar, Kamir Yusof, Nurhakimah Ab. Rahman, Suraya Abu Bakar

House flies can spread and causes diseases such as food poisoning, dysentery, and tuberculosis. Flies, including stable flies and mosquitoes can inflict painful bites while feeding on the blood of humans and other animals. In their travels, they pick up bacteria, fungi and viruses and spread them around. An early identification and monitoring of insects become necessary for applying corrective action as precautions. Traditionally, the recording process is manual and depends on amplification and well-trained staff. The manual counting is also a time-consuming process and prone to errors. Considering the effectiveness and practicability, M-FlyCounter, an image processing approach and the corresponding application embedded in smartphones are proposed to identify and count the insects. Finally, the experiments are performed on the corresponding application based on Android, and it has shown that the proposed approach can be applicable for different random insect images from mobile phones with the counting accuracy of 95%, which is superior to the traditional approach.

59: IMPLEMENTING MULTIPLE DYNAMIC FLIP ALGORITHM: BREAD ON MOBILE (BOM) CASE STUDY

Mustafa Man, Wan Aezwani Wan Abu Bakar, Rosaida Rosly, Terry Yoew

Mobile app developers encounter a range of challenges and problems during the development. These issues can vary depending on the platform (iOS, Android, cross-platform) and the specific project, but here are some common problems faced by mobile app developers. The need for a structured mechanism in mobile apps development is urgently crucial to reduce the cost of manpower charges in conjunction with the simple and easy framework to assist mobile apps developer. In response to these scenarios, this paper introduces the Multiple Dynamic Flip Algorithm (MDFA), a new algorithm in developing mobile-based applications that serves as the mobile app's framework. The algorithm developed allows the data to be stored in the database and the administration of the system can only change the data according to the categories of data that have been systematically arranged in the database. This technique allows changes to information and data to be done automatically without requiring users to run back to mobile-based programming. Process of updating information needs to be generated back in mobile-based programming and needs to be uploaded back in the play store and users must download the application software back. By using this MDFA algorithm, the problem is no longer needed and can be solved more quickly. Implementation results of MDFA via university-industry real case study through Bread on Mobile (BOM) apps used for mobile apps bread ordering.

63: FOOD'IARY DAILY FOOD TRACKING SYSTEM

Rafidah Abd Razak, Nur Fatin Nasuha Shamas

Food'iary Daily Food Tracking System is a user friendly mobile application designed to allow users to input their food choices, specify carbohydrate, protein, and fiber content for each item, and further enhance their experience with a comprehensive visualization report. The report, presented through an interactive dashboard, offers real-time insights into daily nutrient intake with dynamic charts and graphs, empowering users to effortlessly track and analyze their carbohydrate, protein, and fiber consumption in a visually engaging manner. By capturing these nutritional details, users can monitor their macro nutrient intake and make informed decisions about their dietary choices. Many users rely on manual tracking methods, which can be cumbersome and time-consuming. The proposed system offers a digital platform that simplifies the process and provides a more efficient way to monitor food consumption. Another problem is users often struggle to visualize their nutritional intake without graphical representations. The system incorporates data visualization techniques to present users with clear and intuitive graphics, allowing for a better understanding of their macro nutrient consumption. The objective of this paper is to present a user-friendly web- based Daily Food Tracking System that solves the problems of manual tracking, lack of visualization, and limited knowledge about macro nutrients, enabling individuals to monitor and optimize their daily food intake for healthier eating habits. For the methodology, Rapid Application Development (RAD) model is used in this project which include four major phases: requirements planning, user design, construction, and cutover. This methodology utilized to create the system for this project is web-based information systems development since it is the greatest match for the project and how it would affect its target customers. The approach employed yielded findings from user input gathered through qualitative and quantitative methods such as surveys. For future work on the Food'iary, two key enhancements can be considered which are report can be save and download and generate a drink intake report.

65: FACTORS INFLUENCING MARITIME STUDENTS' INTENTION TO USE SOCIAL MEDIA FOR LEARNING

Nurul Amirah Fitrah Binti Sohaimi, Al Montaser Mohammad, Masha Nur Salsabiela Menhat, Azza Jauhar Ahmad Tajuddin, Effi Helmy Ariffin

Social media are innovative technology, which initially exist for fun to connect with other people, has developed to become a dominant tool for teaching and learning all over the place. Although Malaysia has a high internet perception rate, strains still happen for some reasons such as access to internet and also the tendency of users finding the social media tools not user friendly. The Movement Control Order (MCO) was enforced by Malaysian government on March 2020 arising from 2019 Covid-19 pandemic catastrophe that the world has confronting. During this period, all citizens must stay at home, and social distancing practices are implemented. Thus, social media has become an important tool to make sure learning can be conducted without any interferences. With the unprecedentedness of 2019 pandemic and the growth of social media technologies as a learning platform, investigating the intention to use social media for learning has become significant. Therefore, this study used Technology Acceptance Model (TAM) to investigate the factors that influencing intention to use social media for learning among maritime students in University Malaysia Terengganu. A questionnaire based on the Technology Acceptance Model was employed as the main data collection method, which was responded by 112 maritime students in University Malaysia Terengganu. The results show that the three top preferable social media for learning are WhatsApp, YouTube and Facebook. The findings indicated a good model fit, seven out of nine hypotheses are supported. Perceived enjoyment was not found to be significant influence on intention to use and attitude of use. This paper serves as a guidance in designing learning mode by integrating social media technology as educational tool.

66: AN EFFECTIVENESS OF A HAND WAVE MECHANISM TO WOMEN SAFETY APPLICATION

Roslina Mohd Sidek, Rozlina Mohamed

Violence against women is a technical term used to describe acts that are primarily or exclusively directed at women with intention of causing harm. This issue is pervasive in various forms of medias including news (television), radio, social media platforms like Facebook, Telegram and others. Failure to address this problem can lead to psychological, sexual, and physical consequences for women. It is crucial for society as a whole to take proactive measures to protect women and reduce the human toll of this issue. In the realm of safety and security, smartphone can serve as effective tools in preventing violence against women. The reason of smartphone is almost everyone use smartphone in their daily life after pandemic happened. Therefore, in this study, we propose a comprehensive approach to provide security systems for women through their mobile devices. The study introduces the concept of utilizing hand wave mechanisms to enhance the effectiveness of women's safety applications, focusing specifically for Android user named WSS. The study findings demonstrate that this method can be a valuable tool for ensuring women's security especially in times of needed. Future work needed to increase the wave-hand to be more accurate result to support this application support our society.

95: INVESTIGATING THE DETERMINANTS OF CLOUD COMPUTING-SOFTWARE AS A SERVICE ADOPTION IN PAKISTANI SMES FROM THE PERSPECTIVE OF SME MANAGERS

Ammber Nosheen, Mohd Adan Omar, Kamarul Faizal Bin Hashim

The small and medium enterprises (SMEs) sector in Pakistan confronts a multitude of challenges encompassing resource mismanagement, infrastructural deficiencies, a burgeoning volume of data, and impediments hindering organizational growth. These challenges include financial constraints stemming from corruption and insecurity, and limited access to IT resources and infrastructure. Consequently, the adoption of Cloud Computing Software as a Service (CC-SaaS) presents itself as a potentially advantageous solution. It offers SMEs an avenue to enhance operational efficiency through cost-effective technological integration, facilitating improved e-services for citizens and promoting knowledge sharing for increased benefits. However, the adoption of CC-SaaS remains relatively limited within the Pakistani SME landscape, beset by numerous obstacles like concerns regarding data privacy, legal compliance, and security. Despite the extensive literature on factors influencing cloud computing (CC) adoption, the majority of these studies emanate from developed nations. Scarce attention has been devoted to examining the adoption of CC-SaaS, particularly in unstable developing countries, thereby leaving decision-makers in a state of ambiguity regarding the substantial advantages of SaaS. Indeed, within countries marred by conflict and instability, the adoption landscape of CC-SaaS remains largely uncharted. This study aims to address this knowledge gap by investigating the factors influencing organizational intentions regarding the adoption of CC-SaaS among Pakistani SMEs, operating in an environment fraught with conflict. It necessitates an examination of how the prevailing conflict dynamics in Pakistan might impact CC-SaaS adoption within the country. Ultimately, this research aspires to benefit not only SME organizations in Pakistan but also contribute to the validation of measurement frameworks for future studies. The study's conceptual model draws upon the Technology-Organization-Environment theory and the Organization Support Theory. Expert opinions informed the identification of moderating effects. Data was collected from a sample of 368 SME managers operating in Pakistan. Subsequently, the collected data underwent analysis employing the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. The study findings indicate that the impacts of technology, organization, environment, and Organization Support Theory on CC-SaaS adoption are statistically significant.

100: A REVIEW ON DECISION MAKING METHOD IN ECOTOURISM SECTOR

Muhammad Azid Hussin, Rozlina Mohamed

The main purpose of this study is to explore the correlation between decision-making methods and their underlying objectives for implementation. The growth of ecotourism as a sustainable form of tourism has underscored the importance of effective decision-making processes that balance environmental conservation, community engagement, and economic viability. Effective decision-making plays a pivotal role in ensuring that ecotourism initiatives align with conservation goals, community well-being, and economic viability. A systematic literature review has been conducted on 100 research articles from various scholarly databases to access a wide range of academic publications. The Analytical Hierarchy Process (AHP) appears to be the most commonly used method for decision-making. Based on the review, three main criteria are commonly used to determine the prioritization of destination selection within ecotourism sector: social factors, ecological considerations, and economic aspects. Limitations encountered with existing methods include a lack of consideration for multiple hierarchical criteria in decision-making and scalability issues when dealing with a large number of criteria. The use of decision-making methods promotes better-informed, more objective, and structured choices that align with overarching goals and criteria. However, there are areas that require significant attention for improvement, such as addressing subjective judgments that can lead to bias and inconsistencies, handling inaccuracies in complex decision scenarios, and addressing the assumption of linear relationships between criteria and alternatives, which might not hold in all decision contexts.

112: PERFORMANCE COMPARISON OF YOLO ARCHITECTURES FOR CORAL REEF FISH DETECTION

Mohammad Amyruddin Shamsuddin, Wan Nural Jawahir Hj Wan Yussof, Muhammad Suzuri Hitam, Ezmahamrul Afreen Awalludin, Muhammad Afiq-Firdaus Aminudin, Zainudin Bachok

Automated underwater fish detection presents a compelling solution for enhancing efficiency and cost-effectiveness when compared to labor-intensive manual detection methods. This research undertook a comprehensive evaluation of three state-of-the-art single-stage detector architectures from the You Only Look Once (YOLO) series – YOLOv5, YOLOv7, and YOLOv8 – for the specific task of identifying four distinct coral reef fish species. The training of these models utilized a bespoke dataset composed of underwater images featuring these fish species, sourced from Pulau Bidong and nearby islands in Terengganu, Malaysia, with data collection conducted using the Stereo-Diver Operated Underwater Video System (Stereo-DOVs). The primary objective was to discern the best-performing model for accurate fish detection. Remarkably, all three YOLO architectures yielded exceptionally high mean Average Precision (mAP) scores, achieving 96.3%, 96.6%, and 97.9%, respectively, at an Intersection over Union (IoU) threshold of 0.5. Visual inspection further demonstrated the models' proficiency in correctly identifying the majority of fish instances within the test dataset, attesting to their robust performance.

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TRACK 4
Environmental Technology and Engineering

15: DEVELOPING AN OPTIMAL RISK MANAGEMENT MODEL FOR COASTAL FLEXIBLE ROAD PAVEMENT CONSTRUCTION: A CASE STUDY OF LHOKSEUMAWE CITY, INDONESIA

Teuku Muhammad Ridwan, Ahmad Faisal Mohamad Ayob

This paper examines the challenges of constructing and maintaining flexible road pavement systems in coastal regions of Indonesia, areas notoriously known for traffic congestion and deficient in robust public transportation and traffic systems. Indonesian cities are predominantly situated near the coast, and alternate routes often skirt these coastal areas to mitigate congestion. However, coastal environments are subject to many risks, including abrasion, sea waves, and tidal currents, all of which pose significant threats to the integrity of road pavement structures. The study focuses on a specific case: a 7.6 km stretch of flexible pavement along Ujong Blang Beach, within the Lhokseumawe City Ring Road construction zone. Our primary goals are to identify and assess the risk factors and their potential impact on coastal flexible road pavement construction and to develop an optimal risk management model to aid infrastructure managers and stakeholders in making informed risk control decisions. Data were collected on flexible pavement composition and associated coastal risks, which were then used to conduct a comprehensive risk analysis.

39: INFLUENCE OF OFFSHORE FLOATING WIND TURBINES ARRANGEMENT IN POWER GENERATION

Kew Siang Wen, Farah Ellyza Binti Hashim, Omar Bin Yaakob, Kang Hooi Siang, Nik Ahmad Ridhwan Bin Nik Mohd, Siow Chee Loon

Wind farm optimization is of paramount importance to mitigate the economic challenges of wind farm development and the prevailing low wind speeds in Malaysia. This study investigates the impact of varying inter-turbine distances on power generation in Malaysia's maritime conditions. An optimal Staggered layout is chosen, and a model suitable for low wind speeds is employed. Utilizing ANSYS Fluent simulations, torque generation by wind turbines is assessed at different distances – ranging from 3D to 7D perpendicularly, and 3D, 4D, and 5D parallelly. Findings indicate that a Staggered wind farm configuration in Malaysia's sea should have parallel, perpendicular, and group distances of 3D, 3D, and 9D respectively. At this arrangement, total 20450.83 kW of power output is expected to obtain by 6 units of turbines. This insight enhances understanding of the effective wind farm design in Malaysia's unique environment.

48: A COMPARATIVE STUDY OF FUEL ECONOMY AND EMISSIONS FOR PLUG IN HYBRID ELECTRIC PAYANG WATER TAXI ON DIFFERENT DRIVING CYCLES USING ADVISOR

A. T. A. L. Hakim, I.N. Anida, J.S. Norbakyah, A.R. Salisa

This paper proposes a new conceptual series-parallel plug-in hybrid vehicle for water transportation known as plug-in hybrid electric payang water taxi (PHEPWT), in order to improve the vehicle fuel economy and lower the boat emissions, significantly. The aim of this paper is to analyze the fuel economy and emissions of PHEPWT which are hydrocarbon (HC), carbon monoxide (CO) and nitrogen oxides (NOx) using six driving cycles including Pulau Warisan river route, Kuala Terengganu river route, Kampung Laut river route, Seberang Takir river route, Pulau Kapas river route and Tasik Kenyir river route. The analysis of PHEPWT model will be compared with the existing powertrain architectures advanced vehicle simulator (ADVISOR) software using water drive cycles. The results will be expected based on the fuel economy and emissions analysis, and shows an improvement of 30–50% for emissions of each driving cycle and the fuel economy of the PHEPWT will indicate improvement about 15-20% higher than ADVISOR model. For emissions and fuel economy comparison, PHEPWT and ADVISOR model is based on the result of three-type emission such as HC, CO, and NOx and will show that the PHEPWT model has lower emission and higher fuel economy compared to the ADVISOR model.

68: ENHANCING MAGNETIC BIOCHAR FOR IMPROVED REMOVAL OF HEAVY METALS FROM WASTEWATER

Noraini Mohamed Noor, Ezzat Chan Abdullah, Raihan Othman, Nabisab Mujawar Mubarak

Heavy metals can harm health when present in certain amounts. They are currently eliminated through physical and chemical methods like adsorption, flotation, electrochemical deposition, and biological approaches. Effective wastewater treatment plays a pivotal role in establishing and maintaining a sustainable and safe environment. While magnetic biochars have seen advancements and enhancements, there has been limited focus on creating high-quality, cost-effective magnetic biochars through a straightforward synthesis approach. Hence, this study aims to produce magnetic biochar and determine the optimal parameters for maximum magnetic biochar yield and heavy metals removal from water. The sugarcane bagasse (SCB) was a precursor in synthesising magnetic biochar using a modified single-stage electric muffle furnace to remove Cd^{2+} and Pb^{2+} ions in wastewater. Iron (III) oxide (Fe_2O_3) was added to boost the efficiency of yield and the removal of heavy metals. The magnetic biochar (MBF3) was optimally synthesised at 450°C for 30 minutes with an IR of 0.4 to evaluate its performance in adsorption capability. Magnetic biochar was generated through slow pyrolysis of sugarcane bagasse impregnated with iron (III) oxide (Fe_2O_3). Various factors including metal impregnation, pyrolysis temperature, and pyrolysis duration were adjusted to find the best conditions for producing high-performance magnetic biochar. Analyses of Field Emission Scanning Electronic Microscopy indicated that pores in the magnetic biochar enlarged after the impregnation and decomposition and surface area of 49.3 m^2g^{-1}. The highest removal for Cd^{2+} onto MBF3 was 92.05%, reaching pH 6.0 and an agitation speed of 125 rpm for 60 minutes. The maximum adsorption capacity (qm) for the adsorption of Cd^{2+} and Pb^{2+} onto MBF3 was 52.4 mgg^{-1} and 68.03 mgg^{-1} respectively. The adsorbent followed the pseudo-second-order kinetic model and the Langmuir- Freundlich isotherm model with $R^2 \approx 1$ suggesting that the surface of MBF3 might be heterogeneous with different classes of active sites, heavy metals were adsorbed on some classes of active sites only, rather than on all active sites.

90: UTILIZATION OF GALAM WOOD FOR ECO-FRIENDLY SELF-SUPPORTED EARTH-RETAINING WALL COMPONENTS

Arief Nugraha Pontoh, Sayid Muhammad Fikri Zidan, Andina Prima Putri

The issue of soil movement is a serious challenge in the construction industry that can lead to infrastructure damage and pose a potential threat to the surrounding environment. In order to address this problem, earth-retaining walls have been employed as an effective solution. However, the use of conventional materials such as concrete or metal in retaining wall construction often has negative impacts on the environment and the surrounding ecosystem. This research aims to present an environmentally friendly solution for earth-retaining wall construction by utilizing galam wood as the primary material in the creation of self-supported earth-retaining walls. The selection of galam wood is based on its natural properties, which include good resistance to pressure and sufficient flexibility to efficiently withstand soil loads. In terms of its physical characteristics, galam wood possesses a specific gravity of 0.73 gr/cm3, categorizing it as a strong class type II wood, and it maintains a moisture content of 16.16%. Regarding its mechanical properties, galam wood displays an average tensile strength when aligned with the grain measuring 136.42 MPa, a tensile strength in the direction perpendicular to the fiber of 5.18 MPa, a compressive strength along the fiber direction of 52.17 MPa, a compressive strength across the fiber direction of 32.31 MPa, a flexural strength of 89.23 MPa, and a shear strength value of 10.27 MPa. This data forms a crucial foundation for the design and construction of effective earth-retaining walls using galam wood as the main component. By combining sustainability, resilience, and construction efficiency, this research seeks to develop innovative solutions for addressing soil movement issues in construction while maintaining environmental sustainability. It is hoped that the results of this research will serve as a basis for the development of more environmentally friendly and sustainable construction practices in the future.

98: ISOLATION AND IDENTIFICATION OF POLYPROPYLENE DEGRADING BACTERIA FROM PASIF ZONE OF SUPIT URANG LANDFILL

Evi Susanti, Chandra Wijayanti, Eli Hendrik Sanjaya, Roswanira Abdul Wahab

Since 2018, the passive zone of the Supit Urang landfill in Malang Indonesia has become a pile of polluted polypropylene mixed with other types of waste. This condition is thought to cause the soil in the area to contain various nutrients that are favorable for the growth of soil bacteria, including polypropylene (PP) degrading bacteria. This research aims to carry out isolation, selection and identification to obtain bacterial isolates that have the potential to degrade PP. The research stages include sampling carried out in the passive zone of Supit Urang Landfill, at November 2021, determining the physico-chemical conditions of soil samples, isolating PP-degrading bacteria using a selective medium using the Enrichment method, selection based on the ability of bacterial isolates in a selective medium to degrade PP, and identification of potential isolates microscopically and genotypically. Soil samples have a temperature of 33°C±0,894, humidity 46%±0,707, pH 7±0,447, total organic carbon is quite high at 5.71%, but total organic nitrogen is quite low, namely 0.36%. Five candidate isolates of PP degrading bacteria (SCUM1-SCUM5) were obtained. The results of the degradation test showed that each isolate from SCUM1 to SCUM5 showed the ability to degrade PP after 15 consecutive incubations of 7.91%, 6.90%, 2.17%, 8.24% and 1.63%. Identification results based on the DNA sequence of the 16sRNA region of the three most potential isolates showed that the SCUM1 isolate was a Gram positive bacteria in the form of a basil and had 100% similarity to Bacillus megaterium, SCUM2 was a Gram positive bacteria in the form of a coccus which had a similarity of 99.86% to Straphylococcus warneri, and SCUM4 is a Gram positive bacterium in the form of a bacil and has a similarity of 99.79% to Bacillus cereus. These three isolates can be explored further to be applied in the bioremediation process of polypropylene and other plastic waste.

87: HYBRID RENEWABLE ENERGY WITH HYDROGEN-BASED SYSTEM IN KUALA TERENGGANU MALAYSIA: PRE-FEASIBILITY STUDY

Nurul Idayu Yusoff, Mohd Zamri Ibrahim

With the increasing demand for energy in rural areas and the urge to use renewable energy by the government of Malaysia, the power generation system should be improved with a new hybrid system. Despite the abundance of renewable energies in the east coast area of Malaysia (Kuala Terengganu), the existing power system cannot offer the lowest energy cost rates to consumers in order to meet the increasing power demand. Hence, this study proposed a hybrid renewable energy (standalone solar-wind-wave) with a hydrogen power system for applications in coastal residential areas whose power demand is 20kWh/day. A mathematical model for the proposed method is simulated through an optimization software, Hybrid Optimization Model for Electric Renewables (HOMER), with the main objective of minimizing the energy cost. The data used in the simulation are obtained from the Malaysia Meteorological Department which includes solar radiation, wind speed, and wave energy. From the result, the proposed system is then compared with the other hybrid systems based on their operational characteristics and cost values such as the return of investment (ROI) and payback period. The comparisons prove the effectiveness of this proposed system, as it has the lowest cost of energy and the highest percent of ROI, RM1.98/kWh, and 13.2%, respectively. Thus, the hybrid renewable energy system combining solar, wind, wave, and hydrogen energy is concluded as the most cost-effective system that may benefit the users with a sustainable yet profitable renewable energy power system.

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TRACK 5
Engineering Mathematics and Applications

17: DEPTH-AVERAGED EQUATIONS FOR MIXTURE MASS FLOW MODELING

Bhabani Lamsal, Prabhash Pokhrel, Puskar R. Pokhrel

In this study, we analyze the mixture mass flow model by transforming it into a dimensionless form. Additionally, we develop a depth-averaged approach to describe the motion of debris mixture mass in scenarios where there are no flow obstacles or abrupt changes in topography within the mass flow region. The numerical solution of the depth-averaged model equations allows for an analysis of the flow dynamics. The findings highlight the potential application of the newly proposed model

51: SPECTRAL CONJUGATE GRADIENT METHODS IN FITTING PRECIPITATION OF RAINFALL DATA IN MALAYSIA

Tang Hua Ru, Nur Syarafina Mohamed, Nurul Hajar, Norhaslinda Zullpakkal

Spectral Conjugate Gradient Methods (SCGM) are among the most efficient numerical methods for solving large-scale unconstrained optimization problems due to its simplicity and low memory requirement. In this study, spectral Hestenes-Stiefel (sHS) conjugate gradient method with the greatest number of iteration (NOI) and central processing time per unit (CPU time) is selected as the efficient method to be applied to the real-life problems in regression analysis. A data set of rainfall precipitation in Malaysia from year 2009 until 2019 is collected. The data set is transformed into a test function also defined as objective function. The spectral CG algorithm is used to solve the objective function. The result is compared with the Least Square and Trend Line methods. The approximate functions are generated from each of the method for the calculation of their relative error purpose. An estimation data for year 2020 can be forecast using the approximate functions. The calculation of relative error of the linear and quadratic model for each method is based on the estimation data for year 2020 and its actual data. Results showed that the sHS CG method is a suitable and good alternative to the Least Square method.

60: A COMPARISON BETWEEN THE ECCENTRIC CONNECTIVITY INDEX AND THE FIRST ZAGREB INDEX OF GRAPH

Mohamad Nazri Husin, Kinkar Chandra Das and Gowtham K. J.

For a connected graph G, the eccentric connectivity index and the first Zagreb index of G are defined as $\xi^c(G)=\sum_{v_i \in V(G)} [d_i \, \varepsilon_i]$ and $M_1(G)=\sum_{v_i \in V(G)} d_i^2$, respectively, where d_i is the degree of v_i in G and ε_i denotes the eccentricity of vertex v_i in G. In this paper, we compare the eccentric connectivity index and the first Zagreb index of graphs, where $\ominus(T)=\xi^c(T) - M_1(T)$ for any tree T. As a results, we proved that $\ominus(T)$ is minimum for T is caterpillar.

80: EXPONENTIAL STABILITY OF A NUMERICAL SOLUTION OF A HYPERBOLIC SYSTEM WITH NEGATIVE NONLOCALS CHARACTERISTIC VELOCITY AND MEASUREMENT ERROR

Alimova Vasila Bakhodirovna, Aloev Rakhmatillo Djurayevich

In this paper, we study the problem of stabilizing the equilibrium state for a hyperbolic system with negative nonlocal characteristic velocities and measurement error. The formulation of a mixed boundary control problem for the indicated hyperbolic system is given. The stability in the -norm with respect to a discrete perturbation of the equilibrium state of an initial-boundary difference problem is determined. A discrete Lyapunov function is constructed and a stability theorem for the equilibrium state of an initial-boundary difference problem in the -norm with respect to a discrete perturbation is proved.

101: ASSESSMENT OF TIME SERIES MODEL FOR PREDICTING LONG-INTERVAL CONSECUTIVE MISSING VALUES IN AIR QUALITY DATASET

Daniel Bong Kim Boon, Norazian Mohamed Noor, Ahmad Zia Ul-Saufie, Mohd Faizal Ab Jalil

Air pollutant concentration in Malaysia is continuously monitored using the Continuous Ambient Air Quality Machine (CAAQM). During the observation phase by CAAQM, some air pollutant dataset were detected missing due to machine failure, maintenance, position changes, and human error. Incomplete datasets especially with the longer gaps of consecutive missing observation may lead to several significant problems including loss of efficiency, difficulties in using some computational software and bias estimation due to differences of observed and predicted dataset. This study aim evaluate the performance of the time series method i.e. Auto Regression Integrated Moving Average (ARIMA) for filling long hours of missing data in an air pollution dataset. The dataset of PM10, SO2, NO2, O3, CO, wind speed, relative humidity, and ambient temperature for Pegoh and Kota Kinabalu in 2018 were used for analysis. Monte Carlo Markov Chain (MCMC) and Expectation-Maximization (EM) were employed to compare with ARIMA's effectiveness in filling the simulated missing gaps in air quality dataset. Existing missing data in the raw data were pre-treated and then simulated into 5%, 10%, and 15% of missing data ranging from 24-hour to 120-hour intervals. The performance of the imputation approach was assessed using Mean Absolute Error (MAE), Root Mean Square Error (RMSE), Prediction Accuracy (PA) and Index of Agreement (IA). Overall, the Expectation-Maximization technique was selected the most effective at filling in simulated long gaps of missing data of air pollutant dataset with the range of IA from 0.74 to 0.77. In contrast, the ARIMA approach performed poorly in this research with range of IA value of 0.44 to 0.48. This was because of it requires past time-series data to generalize a forecast or impute missing data, hence, the forecast becomes a straight line and performed poorly at predicting series with long hours of missing observation.

103: APPLICATION OF NUETROSOPHIC WITH Z-NUMBERS: A REVIEW PAPER OF THE DEVELOPMENT OF NEUTROSOPHIC WITH Z-NUMBER AND THEIR PROPERTIES

Khaleel Yahia Awajan, Ahmad Termimi Bin Abghani

In an ever-complex world, the quest to represent, quantify, and make decisions amidst uncertainty and has necessitated the evolution of mathematical logics and culminating in the revolutionary Neutrosophic Logic. The paper further delves into the synergy of Neutrosophic with Z-numbers (NZn), a fusion that promises to augment the representation of uncertainty by coupling it with reliability metric. Through this exploration, we highlight the mathematical underpinnings, real-world applications, and the transformative potential of this integration. The confluence of Neutrosophic and Z-numbers (NZn) offers not just a theoretical marvel but profound implications for myriad fields ranging from finance to healthcare.

104: IMPROVEMENT IN VOLTERRA-FREDHOLM INTEGRO-DIFFERENTIAL EQUATIONS BY ADOMIAN DECOMPOSITION METHOD

**Zainidin Eshkuvatov, Davron Khayrullaev, Sherzod Ergashev**

It is known that Adomian decomposition method (ADM) is a powerful semi-analytical tool used to solve linear and nonlinear differential equations, integral equations and operator equations. In this note, we propose an improved scheme based on ADM to obtain approximation solutions of nonlinear Volterra-Fredholm integro-differential equations of order m with initial conditions. Uniqueness solution of the nonlinear IDEs were proved and the proposed scheme is tested on a variety of linear and nonlinear Volterra-Fredholm integro-differential equations with initial conditions, and the results are compared with other existing ones. The numerical simulations show that the proposed scheme is highly accurate and efficient in obtaining approximation solutions to these equations.

114: NUMERICAL SOLUTION OF FERROFLUID OVER A FLAT PLATE WITH PASSIVE CONTROL BOUNDARY CONDITION

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Numerical solution of ferrofluid over a flat plate is analysed in this study. An external magnetic field is applied in the transverse direction to the flat plate. For this purpose, magnetite (Fe_3O_4) as a ferroparticle and water as a base fluid are considered. A boundary condition is applied with the assumption that there is no nanoparticle flux at the surface. The nanoparticle volume fraction on the boundary is passive control rather than active. The governing equations which are non-linear partial differential equation are converted into linear by using similarity transformation and then are solved numerically by using Runge-Kutta-Fehlberg method. The obtained results of this studied are compared to regular fluid without magnetic effect and normal boundary condition where the results show good agreement. With the numerical results, the effects of volume fraction of solid ferroparticles, magnetic parameter, Lewis number, thermophoresis parameter and Brownian motion on the velocity, temperature and volume concentration were discussed.

CAMPUS MAP
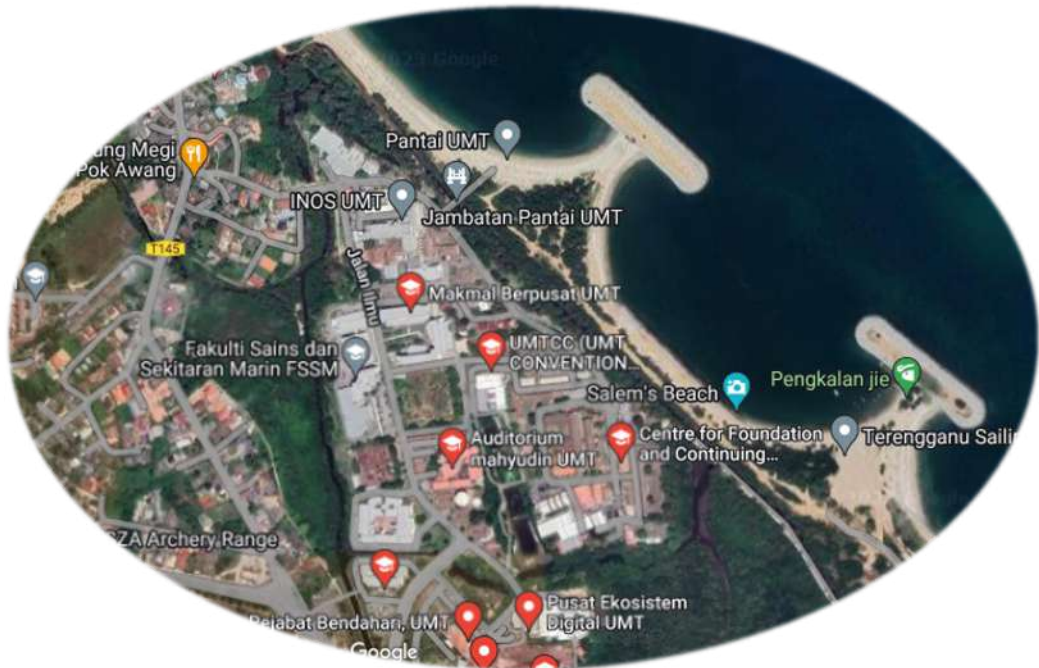
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