MINISTRY OF EDUCATION MALAYSIA

UTeM
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

IRID'18

INNOVATIVE RESEARCH AND INDUSTRIAL DIALOGUE 2018

Bridging University And Industries Through Research

PROGRAMME BOOK

18 JULY 2018 | MAIN CAMPUS, UTeM

Organized by :

AMC ADVANCED MANUFACTURING CENTRE

Co-Organized by :

FKP Faculty of Manufacturing Engineering

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IRID'18

INNOVATIVE RESEARCH AND INDUSTRIAL DIALOGUE 2018

Bridging University And Industries Through Research

IRID'18 is a one-day research event hosted by the Advanced Manufacturing Centre (AMC), UTeM. IRID aims to offer a unique platform for researchers, engineers and post-graduate students from industry, especially in the field of engineering and technology to present their research findings, establish a mutual knowledge transfer and networking. Through this platform, solutions to the problems and needs of the local industry can be shared, thus bridging the gap between university and industry in Malaysia.

Assalamu'alaikum wrt. wbt,

On behalf of the organizing committee, I would like to send my warmest welcome to all participants to the Innovative Research and Industrial Dialogue 2018 (IRID'18) held at the Faculty of Manufacturing Engineering, Universiti Teknikal Malaysia Melaka (UTeM) - Melaka, Malaysia. This is the second IRID which is organized by the Advanced Manufacturing Centre (AMC) and the Faculty of Manufacturing Engineering of UTeM.

With the same theme "Bridging University and Industries through Research", IRID'18 offers academicians, post-graduate students, as well as researchers and engineers from industry, especially in the field of engineering and technology, a platform to present their research findings, establish a mutual knowledge transfer and networking and sharing to the community. Through this event, ideas and solutions to the problems and needs of the local industry can be shared and thus, bridging the gap between university and industry in Malaysia. This is in line with the increasing demand for innovative research ideas for solving real engineering problems which advocate the provision of rigorous study among distinct communities.

IRID'18 brings together researchers from university and industries, thus pave the way for many more productive and interesting events in the future. Last but not least, I wish to formally thanks to the organizing committee for ensuring the success of IRID'18. Finally, I would like to express our deepest gratitude to the Faculty and sponsors for their continuous support rendered throughout this event.

Thank you.
Prof. Madya IR. Dr. Mohd Asyadi 'Azam Mohd Abid

PROGRAMME SCHEDULE

Tentative Program IRID'18	
08:00 am - 08.30 am	Registration for Participants and Panels. Breakfast.
08:00 am - 09.00 am	Research Poster & Booth Setup
09:00 am - 01.00 pm	Research Showcase
11:30 am - 12.30 pm	Industrial Research Sharing Session i. Dr. Se Sian Meng (Technical Manager, San Miguel Yamamura Plastic Films Sdn. Bhd.) ii. Mr. R. Parameshwaran Rasiah (Project Manager, Infineon Technology Asia Pacific) iii. Mr. Miaoan Wang (Manager Metrology Solutions/Product Manager, Wenzel Measuring Machines (Shanghai)) iv. Ir. Ajat Sudrajat (Lecturer, Universitas Nasional-Jakarta)
01:00 pm - 02.00 pm	Lunch & Zuhr Prayer
02:00 pm - 03:30 pm	Industrial Dialogue i. Mr. Shamshulizam bin Dahman (Staff Engineer and Group Leader for Exterior Group, PROTON) ii. Mrs. Azura binti Azahar (Principal Engineer, Malaysian Refining Company Sdn Bhd (MRCSB)) iii. Ms Loo Guan Ki (Director of Factory Integration, Infineon (Melaka) Sdn. Bhd.)
03:30 pm - 04.00 pm	Closing Ceremony and Awards Presentation.

Industrial Dialogue

Title : **Industrial 4.0: Building the Ecosystem for Manufacturing Sustainability**

Emcee : Mr. Mohd Shahrizan bin Othman

Moderator : Profesor Dr. Chong Kuan Eng

Forum Panel 1
MR SHAMSHULIZAM BIN DAHMAN
(Staff Engineer and Group Leader for Exterior Group, PROTON)

Mr Shamshulizam Bin Dahman is a staff engineer and group leader for Exterior Group at PROTON Holdings Bhd, a company which involves actively in automobile design, manufacturing, distribution and sales located in Shah Alam, Selangor. PROTON also has operational facilities at PROTON City, Perak. PROTON is an acronym for Perusahaan Otomobil Nasional Berhad. Mr Shamshulizam was graduated in B.Sc Mechanical Engineering majoring in Industrial Engineering from Universiti Teknologi Malaysia.

After graduation, Mr Shamshulizam worked at PROTON until present. He has well experience in cost down activity, DQCM report, design activities including dies manufacturing in-house and oversea. His first position at PROTON is a die design engineer at PROTON. He had well experienced in process planning and die design especially for localization program for Wira and Iswara models and Waja for in house die manufacturing program. He was also a coordinator for oversea die manufacturing until hand over to production. Besides, he was an expert in CATIA-V4 for die design and dies troubleshooting and also a coordinator for Total Cost Achievement activity for stamping parts.

After 10 years, he had been given a responsibility as production engineer and Unit Head for Super Large Press. He had to prepare yearly training program for workers on safety and machine handling and preventive maintenance. He then worked as commercial engineer for Engineering Commercial Body Section for 1 year. In this section, he was a coordinator for cost down activity for Waja model successfully managed to cost down. Besides, he was given responsibility to conduct strategies of tendering process for body parts of Savvy and Satria Neo and cost analysis and price negotiation to meet target price. He then attached to Vehicle Body Department as Head of ED/Body Section. He was responsible to manage 7 body design engineers for all design engineering activities. Afterwards, he worked at ED/Body Section as Lead Engineer for Closure and Exterior Group until 2010. He managed to handle design problems for Exora and Gen2 model. He also managed to lead project of Proton Preve on material selection and structural concepts. He had been appointed to be resident engineer at Vens, Korea for 2 months during design stage of Exora model. After that, he was appointed as Staff Engineer and Group Leader for Exterior Group in the same department until present. He involved project for most of the PROTON's new model until new Perdana and Ertega.

Forum Panel 2
MRS AZURA BINTI AZAHAR
(Principal Engineer, Malaysian Refining Company Sdn Bhd (MRCSB))

Mrs Azura Binti Azahar is a principal engineer in Advanced Process Control and Optimisation, Technology Department at Malaysian Refining Company Sdn Bhd (formerly known as Petronas Penapisan Melaka Sdn Bhd). Malaysian Refining Company Sdn Bhd (MRCSB) is a PETRONAS wholly owned company located at Sungai Udang, Melaka which is active in processing mainly sour middle east crude and a small volume of MCO to produce petroleum product.

Mrs Azura was graduated in Bachelor of Engineering in Chemical Engineering from University of Surrey, United Kingdom and started join at MRCSB from 1998 until present. In recent years, she is a leader for Malaysian Refining Company Digital Initiatives for two years. She also in a team of Refinery Wide Hydrogen Balance Optimization Implementation and Melaka Group 3 (MG3) Lube Oil Post Fractionator Upgrade. She managed to complete expert system for Lube HDT/MSDW and Profit Optimizer Steady State project. Besides, she was also in a team of upgrading Sweet Hydroskimming Crude Distillation Unit project, Hydrocracker Fractinator Upgrading project, Catalytic Reforming Unit (CRU-2) project and several other projects. She was one of technical engineer involved Phase 1 PSR-2 OTS project which has been completed in early 2010.

Mrs Azura participates actively in conferences and forum locally and international. Recently, she had presented a paper in PETRONAS Process Control Forum which was held at Universiti Teknologi PETRONAS entitled “Ushering Digital technology in Creating a Magical Lifestyle in Refinery”. She also presented a paper in Japan discussed in leveraging plant information towards improving process safety at center for chemical process.

Forum Panel 3
MS LOO GUAN KI
(Director of Factory Integration, Infineon (Melaka) Sdn. Bhd.)

Ms Loo Guan Ki is a Director of Factory Integration at Infineon (Melaka) Sdn Bhd, a company providing semiconductor and system solutions located in Malacca, Malaysia. Ms. Loo Guan Ki graduated from University Science of Malaysia (USM) with Bachelor Degrees (Hons) in Computer Science.

She joined Infineon Technologies (M) after her graduation in 1999 as CIM engineer supporting production execution & automation system and expanded her role and exposure in multiple domains of manufacturing integration systems and progressing herself into top management role.

She is currently the Director of Factory Integration, leading the department that is responsible for the entire global operation for Back End factories, as well as engineering, production reporting, and Quality systems services worldwide. She is also the main customer liaison for segment operation in Melaka. She is one of the core team members in Infineon BE Automation Roadmap program, and has been actively driving solution implementation into the BE factories. Her heavy involvement in various Infineon global core projects has put her as one of the pioneers for I4.0 in Melaka.

INDUSTRIAL RESEARCH SHARING SESSION

Industrial Speaker 1
DR. SE SIAN MENG
(Technical Manager, San Miguel Yamamura Plastic Films Sdn Bhd)

Dr Se Sian Meng is technical manager at San Miguel Yamamura Plastic films Sdn Bhd. The company is located at Ayer Keroh, Melaka which develop, produce and market Biaxially Oriented Polypropylene (BOPP) films, Cast Polypropylene (CPP) films and Metallized (BOPP, CPP and PET) films of various sizes. Dr Se Sian Meng is a graduate in BSc. in Chemical Technology from Universiti Kebangsaan Malaysia in 2006.

After graduation, Dr Se Sian Meng started her career as research and development executive at packaging Research Centre based in San Miguel Yamamura Woven Products, Melaka. After 4 years working, Dr Se Sian Meng continue in MSc Manufacturing Engineering at Faculty of Manufacturing Engineering, Universiti Teknikal Malaysia Melaka in 2011. Then, she worked as chemical engineer at Possehl Electronics (M) Sdn Bhd for few months before pursued PhD programme at Faculty of Manufacturing Engineering, Universiti Teknikal Malaysia Melaka. She is successfully graduated in PhD in 2015. Her research interests are related to biomass, biochar production via slow pyrolysis and production of activated carbon by chemical activation, characterization of powders, development of microwave absorbing materials, nitrogeneous based slow release fertilizer (SRF), fire retardant and breathable membrane for roofing and food packaging materials. In 2016, she worked as technical manager at Sam Miguel Yamamura Plastic Films Sdn Bhd until present.

During her postgraduate study, she was actively involved in presenting paper at international conference and participate in several technical exhibitions. Her research won gold awards at Bioinnovation Awards (2014) and Malaysia Research Conference and Innovation Exhibition (2015). She also is awarded with Best Paper Awards in OneBaja Colloquium (2015) and MUCET (2013). She is also an invited journal reviewer for Elsevier, America Chemistry Society and Material Research.

Industrial Speaker 2
MR. R. PARAMESHWARAN RASIAH
(Test Technology Project Manager, Infineon Technology Asia Pacific Singapore Pte. Ltd.)

Mr R. Parameshwaran Rasiah is a Test Technology Project Manager at Infineon Technology Asia Pacific Singapore Pte. Ltd. which is the regional headquarters for Asia excluding Japan; and is the competence hub for Sales and Marketing, R&D, Supply Chain, Production Testing and Shared Services.

Mr R. Parameshwaran Rasiah has tertiary education in Master Engineering in Advance Manufacturing Management. Currently, he is doing a research in development of lean principles focusing in risk management process integration models. He also actively participated in conference and has managed to present his research in International Conference in Design and Concurrent Engineering in 2014. His research is also published in ARPN Journal of Engineering and Applied Sciences.

His career started in around 2000 at Matsushita Technology P/L as SMT Service Engineer. After 5 years, he moved to Flextronic Shah Alam S/B as Senior SMT Engineer. Another 5 years, he joined in Infineon Technology (Advance Logic) in Melaka as Project Manager for Package Development before he is transferred to Infineon Technology Asia Pacific Singapore Pte. Ltd.

Industrial Speaker 3
MR. MIAOAN WANG (Simwork)
(Manager Metrology Solutions, Wenzel Measuring Machines (Shanghai))

Mr Miaoan Wang is a manager of metrology solutions in Wenzel Measuring Machines (Shanghai) Co. Ltd., which is a wholly owned subsidiary of WENZEL Präzision GmbH. This company assembles standard size coordinate measuring machines for Chinese and Asian markets and is responsible for sales and service of the complete product range of WENZEL group.

Mr Miaoan Wang was graduated from Tongji University in Bachelor Degree in Automobile Engineering at 2006. After then, Mr Wang pursued his education further at Technische Universitat Munchen, Maschinenbau in Diplom Ingenieur at 2006 until 2010. Then, Mr. Wang joined Wenzel Measuring Machines Co. Ltd from 2010 until present.

Industrial Speaker 4
IR AJAT SUDRAJAT (Edutech)
(Lecturer, Universitas Nasional Jakarta)

Ir Ajat Sudrajat is a lecturer at Universitas Nasional, Jakarta since 1994. He was graduated in Engineering Physics from Universitas Nasional in 1999. Then, he managed to further in engineering Physics which is a Program of Instrumentation and Control (PINK) in 1995 to 1997. Before his career as a lecturer, he was an Instrumentation and Control Engineer at Laboratory for Strength of Material Component and Structure in The Agency of Assessment and Application of Technology (BPPT). His responsibility is to carry out testing, measurement and calibration activities. While he is a lecturer, he has been assigned as Managing Director at PT. Westerindo Esa Tirta in 2002 until 2008. He had to coordinate several projects such as Conocophilips Indonesia preparation of the project, Gunausa Utama fabricators preparation, PT. Technip Indonesia HVAC construction, PT. McDermott Indonesia and PT. Istana Karang Laut.

Ir Ajat Sudrajat has wide experiences in instrumentation and control as well as mechanical testing and calibration. He has attended many training and trained others to become expert in Safety and Standard. He also has been awarded from government and university for his excellent works in projects since 1992. Starting from 2016 until present, he pursues further higher level of education in renewable energy at Universiti Teknikal Malaysia Melaka.

RESEARCH SHOWCASE

LIST OF PARTICIPANTS

Paper ID	Title	Authors	Institution	Field
2	Hierarchical Voltage Sensing to Perform Solar – Wind Energy Sources Complementary	Ranjit Singh Sarban Singh, Maysam Abbod and Baljit Singh Sarban Singh	FKEKK, UTeM	Electrical Engineering
3	Effect of Acetone Vapor on Tensile Strength of Fused Deposition Modeling Printed Part	Nurul Ain Maidin, Mohd Hidayat Ab Rahman, Mohd Rizal Alkahari, Mohd Hairizal Osman, Mohd Nazri Ahmad, Mohammad Khalid Wahid, Nurul Shahira Farhana Fadzli	FTK, UTeM	Materials Science and Engineering
4	Road power generation by applying conversion system	Nurul Ashikin Mohd Rais, Aziean Mohd Azize, Farriz Basar and Ashraf Bakhari	FTK, UTeM	Electrical Engineering
5	A review on system integration of industrial 4.0	Mohd Yazid Abu and Filzah Lina Mohd Safeiee	UMP	Technology Management
6	Optimization of PID Controller's parameters for Gantry Crane Application using Glowworm Swarm Optimization Algorithm	Muhammad Izzat Zakwan Mohd Zabidi, Hazriq Izzuan Jaafar, Amar Faiz Zainal Abidin, Mohamad Haniff Harun, Zakiah Mohd Yusoff, Nur Dalila Khirul Ashar, Nurhani Kasuan and Mohd Azri Abdul Aziz	FTK, UTeM	Computers
7	Study on Workstation of Composite Mold using RULA Analysis	Mohd Hidayat bin Ab Rahman, Nurul Ain binti Maidin, Ruzy Haryati binti Hambali, Mohd Nazri Bin Ahmad, Mohd Hairizal Osman, Mohammad Khalid Wahid, Syamimi binti Shamsuddin	FTK, UTeM	Manufacturing Engineering
8	Mathematical Modeling of Quarter Car Suspension Systems on Square road profile	Adam Samsudin, Shamsuddin Ahmad and Ezzatul Farhain Azmi	FTK, UTeM	Automotive
9	Application Of Fuzzy Logic Modelling In Fluid Friction Of Bore Pipe	Ezzatul Farhain Binti Azmi, Nurul Amira Binti Zainal, Adam Bin Samsudin, Pravend a/l Baskaran	FTK, UTeM	Modelling
11	Effect of Driving Signal Waveform to the Motion Characteristics of a Rotary Switched Reluctance Actuator	Mariam Md Ghazaly, Izzati Yusri, Siau Ping Tee, Zulkeflee Abdullah and Wahidah Abd Halim	FKE, UTeM	Robotics and Automation

Paper ID	Title	Authors	Institution	Field
13	Evaluation Of Decentralized Fans Effectiveness In Office Building Ventilation System	Noor Saffreena Hamdan, Safarudin Gazali Herawan, Sem Epoi Laeng	FTK, UTeM	Mechanical Engineering
14	Thermoplastic Mixture with Oil Palm Fiber Flow Properties in Rheological Behaviour	Mohammad Khalid Wahid, Mohd Nazri Ahmad, Nurul Ain Maidin, Mohd Hairizal Osman, Mohd Hidayat Ab Rahman and Mohamed Saiful Firdaus Hussin	FTK, UTeM	Materials Science and Engineering
15	The effect of surface roughness on ultrasonic assisted milling of Inconel 718	Mohammad Shah All-Hafiz Mohd Shahrim, Mohd Shahir Kasim, W. Noor Fatihah W. Mohamad, Raja Izamshah Raja Abdullah, Syahrul Azwan Sundi and Muhammad Akmal Mohd Zakaria	FKP, UTeM	Manufacturing Engineering
16	Step Counter for Ankle Rehabilitation	Khairuddin Osman, Sani Irwan Salim, Anuar Jaafar, Siti Fatimah Sulaiman, Muhammad Azizul Raziq Azizi, Muhammad Sabri Rosli	FKEKK, UTeM	Robotics and Automation
17	Simulation Study of DTTO Modular Robot with 2 DOF to Propagate Multiple Configurations	Muhammad Haziq Hasbulah, Fairul Azni Jafar, Mohd Hisham Nordin and Kazutaka Yokota	FKP, UTeM	Robotics and Automation
18	Preliminary Investigation on Modular Self-Reconfigurable Robot Architecture	Muhammad Haziq Hasbulah, Fairul Azni Jafar, Mohd Hisham Nordin and Kazutaka Yokota	FKP, UTeM	Robotics and Automation
19	Kinetic and Stability Cu-SBA-15 catalysts in Reduction of N2O with CH4	Mohd Haizal Mohd Husin, Mohd Ridzuan Nordin, Imran Syakir Mohamad and Chin Sim-Yee	FKM, UTeM	Others
20	Review on Corrosion of Palladium Coated Copper Wire Bonds under High Temperature Storage Stress Test	Chan Lam Cha, Kok-Tee Lau and M. Zaimi	Infineon	Materials Science and Engineering
21	Tracking Control Performance of a 2-DOF Robotic Finger using PID and LQR Controller	Mariam Md Ghazaly, Mohamad Adzeem Mohamad Yuden, Chin Kiat Yeo, Zulkeflee Abdullah and Aliza Che Amran	FKE, UTeM	Robotics and Automation

Paper ID	Title	Authors	Institution	Field
22	Museum Mobile Application using Quick Response (QR) Code	Raihana Syahirah Abdullah, Zarif Dayana Ismail	FTMK, UTeM	Information Technology
23	Wireless Cloud Storage using IoT device	Norharyati Harum, Nuru Azma Zakaria and Zaheera Zainal Abidin	FTMK, UTeM	Information Technology
25	An investigation of the lateral velocity behaviour and its effect on the trajectory generation of the autonomous non-holonomic vehicle	Muhammad Aizzat Zakaria, Baarath Kunjuni, Nurul Afiqah Zainal, Anwar P. P. Majeed, Umar Zakir, Hazeli Rasul	UMP	Robotics and Automation
26	Vehicle Tracking System by Using Cell Tower Localization	Mohammed Alrifaie and Norharyati Harum	FTMK, UTeM	Information Technology
27	Perception of Rehabilitation Patients in Malaysia towards Animal Robot PARO	Winal Zikril Zulkifli, Syamimi Shamsuddin, Lim Thiam Hwee, Fairul Azni Jafar and Nur Syafiqah Rayme	FKP, UTeM	Robotics and Automation
28	Trajectory Tracking Analysis of Planar End-Effector Upper Limb Rehabilitation Device	He Yue Lim and Muhammad Aizzat Zakaria	UMP	Robotics and Automation
29	Supervised Learning with Malaysian Dataset for Human-robot Interaction	Winal Zikril, Syamimi Shamsuddin, Thiam Hwee Lim and Ahamad Zaki Mohamed Noor	FKP, UTeM	Robotics and Automation
30	Link Quality Indicator for Performance Evaluation in 6LoWPAN Routing Protocol	Nin Hayati Mohd Yusoff, Nurul Azma Zakaria and Norharyati Harum	FTMK, UTeM	Information Technology
31	Supplier Development Practices: From Manufacturers' Perspectives	Rahayu Tukimin, Wan Hasrulnizzam Wan Mahmood, Mohd Razali Muhamad, Norhafiza Mohamed	KKTM Kuantan	Manufacturing Engineering
33	Unequal Clustering Routing Algorithms in Wireless Sensor Networks: A comparative study	Ali Abdul-hussian Hassan, Wahidah Md Shah, Mohd Fairuz Iskandar, Mohammed Saad Talib, Ali AbdulJabbar Mohammed, Zaidoon Kamil Maseer	FTMK, UTeM	Information Technology
34	Investigation of dimensional accuracy on simultaneous five-axis tool paths strategies for biomedical product utilizing CATIA V5	Syahrul Azwan Sundi, Raja Izamshah, Mohd Shahir Kasim, Mohammad Shah All Hafiz and Mohammad Fitri Aiman Azlan	FTK, UTeM	Manufacturing Engineering

Paper ID	Title	Authors	Institution	Field
35	Predictive functional control with reduced-order observer based PSO for pneumatic positioning control	Khairuddin Osman, Azira Abd Rahman, Siti Fatimah Sulaiman, Sharatul Izah Samsudin and Amar Faiz Zainal Abidin	FKEKK, UTeM	Others
36	Development and Fabrication of Automatic Pump-down System for Split Unit Air Conditioning System	Mohd Farid Ismail, Muhammad Asrul Affendi Mat Nor, Safarudin Gazali Herawan, Noor Saffreena Hamdan, Mohd Faruq Bin Abdul Latif	FTK, UTeM	Mechanical Engineering
37	High strain rates effect on the dynamic properties of E-glass/ jute using SHPB	Muhamad Shahirul Mat Jusoh, Mohd Yazid Yahya, Haris Ahmad Israr Ahmad, Meor Syazalee Meor Sha	UTM	Materials Science and Engineering
39	An Automated Irrigation System Using Arduino Microcontroller	Aslinda Hassan, Bing Seng Siah, Wahidah Md Shah and Nazrulazhar Bahaman	FTMK, UTeM	Information Technology
41	A study on the effect of vehicle vibration on human biodynamic model	Nurul Afiqah Zainal, Muhammad Aizzat Bin Zakaria, Baarath Kunjunni and Anwar P. P. Abdul Majeed	UMP	Automotive
42	A conceptual framework of non-circular segmentation using modified greedy algorithm for iris recognition	Zaheera Zainal Abidin, Nurul Azma Zakaria, Norharyati Harum, W. Md Shah, A. Hassan, H. Rahman	FTMK, UTeM	Information Technology
44	Application of Material Cataloguing System in Small and Midsize Manufacturing Firms	Ameer Razzie Rizzuan Roslan, Wan Hasrulnizzam Wan Mahmood and Fairul Azni Jafar	FTK, UTeM	Manufacturing Engineering
45	Analysis of Two In-Wheeled DC Motor for Autonomous Electric Vehicle: Simulation and Experiment	Baarath Kunjunni, Muhammad Aizzat Zakaria, Nurul Afiqah Zainal and Anwar P.P Majeed	UMP	Automotive
46	Analytical Study in Rotational Motion on Different Blade-shape Design of HAWT for Wasted Kinetic Energy Recovery System (WKERS)	Goh Jee Boon, Zamberi Jamaludin, Fairul Azni Jafar, Mahasan Mat Ali, Mohd Najib Ali Mokhtar and Tan Chia Hwa	FKP, UTeM	Design
47	Design and development of ergonomics labeling machine for cashiers	Fong Ling Chai, Fatin Ayuni Mohd Azli Lee, Nadiah Ahmad, Isa Halim and Radin Zaid Radin Umar	FKP, UTeM	Robotics and Automation

Paper ID	Title	Authors	Institution	Field
48	Android Malware Traceability Matrix for Digital Forensic Investigation	Mohd Zaki Mas'Ud, Siti Rahayu Selamat, A'aisyah Mardhiyyah Mohammad Shahini and Shahrin Sahib	FTMK, UTeM	Information Technology
49	Development of a Data Acquistion System for Blood Bank; Collection to Distribution System	Siva Kumar Subramaniam, Mazran Esro and Nurfidhah Azman	FKEKK, UTeM	Electronics
50	Analysis and Development of a Self-Dimming Module for Road Traffic Signal	Siva Kumar Subramaniam, Mazran Esro and Nur Diyana Mohd Hamidi	FKEKK, UTeM	Electronics
53	Investigation and Implementation of Beacon technology on Human Tracking system in Oil and Gas Environment	Siva Kumar Subramaniam, Mazran Esro and Hamizah Fasihah Hairanil Firdaus	FKEKK, UTeM	Computers
54	Design of Soil movement Sensor for Detection of Possible Landslide	Mazran Esro, Siva Kumar Subramaniam and Nur Alia Batrisyia Iskandar Md Zainalabidin, Khairuddin Osman	FKEKK, UTeM	Electronics
55	High throughput implementation of RIPEMD-160 using unfolding transformation	Shamsiah binti Suhaili, Takahiro Watanabe, Maimun binti Huja Husin, Kuryati bt Kipli, Norhuzaimin bin Julai, Rohana binti Sapawi	UMS	Design
56	Automatic tool selection module for an adaptive CNC controller	Muhammad Azri Othman, Zamberi Jamaludin and Mohamad Minhat	FKP, UTeM	Manufacturing Engineering
58	Interaction between Work System Performances with Process of Greening the Supplier	Norhafiza Mohamed, Wan Hasrulnizzam Wan mahmood, Mohd Razali Muhamad, Muhamad Zaki Yusup, Rahayu Tukimin	FTK, UTeM	Technology Management
59	LPG gas sensor detection using IoT	Mazran Esro, Siva Kumar Subramaniam and Forolan Millon	FKEKK, UTeM	Electronics
60	Modelling and implementation of IoT based Flood Observatory System (FOS)	Siva Kumar Subramaniam, Mazran Esro and Mohamad Yusry Lee Ikhwan Lee	FKEKK, UTeM	Electronics
61	Swaying Phenomenon of Express Railway Train in Malaysia	Mohd Azman Abdullah, Mohd Azli Salim, Norazman Abu Hassan, Nor Akmal Mohd Foat , Muhammad Farid Anwar Mohd Shukri and Ahmed Esmael Mohan	FKM, UTeM	Automotive

Paper ID	Title	Authors	Institution	Field
62	Possible Attacks by Manipulating IPv6 Tunneling Traffic on 6to4 Network	Nazrulazhar Bahaman, Rizki Munawir Utomo Yusuf, Aslinda Hassan and Erman Hamid	FTMK, UTeM	Information Technology
63	IOT Bus Tracking System	Erman Hamid, Chen Jian Tat, Nazrulazhar Bahaman and Nor Azman Mat Ariff	FTMK, UTeM	Information Technology
64	Modelling of exoskeleton robot for walking rehabilitation	Mohd Razali Sapiee, Mohammad Hamiruce Marhaban, Asnor Juraiza Ishak and Muhammad Fahmi Miskon	UMP	Robotics and Automation
65	Simulation of Ant Colony Optimization on Hole Making Performance	Haslina Abdullah, Tuan Muhammad Lutfi Tuan Zahari and Mohamad Shukri Zakaria	UTHM	Manufacturing Engineering
66	The Evaluation of Machinability and Surface Roughness of AISI 1060 Carbon Steel in Conventional Lathe Machine	Mohd Ahadlin Mohd Daud, Kamarul Arifin Zakaria and Mohd Basri Ali	FKM, UTEM	Mechanical Engineering
67	Study on temperature profile of internal combustion engine exhaust gas for implementing waste heat recovery	Safarudin Gazali Herawan, Kamarulhelmy Talib, Azma Putra, Shamsul Anuar Shamsudin and Mohd Farid Ismail	FTK,UTeM	Automotive
71	FMEA and Reliability Analysis of Critical Equipment in the Malaysian Palm Oil Mill	Ilyana Abdullah, Wan Hasrulnizzam Wan Mahmood, Muhammad Hafidz Fazli Md Fauadi and Mohd Nizam Ab Rahman	FTK, UTeM	Manufacturing Engineering
72	Effect of citric acid composition on the citrate-nitrate auto-combustion synthesis of ZnO nanoparticles	Mohd Shahadan Mohd Suan, Izzat Mohamad Yusof and Lee Sheih Chung	FKP, UTeM	Materials Science and Engineering
73	Visual Perception Diagnostic Tools For Autistic Learners	Faaizah Shahbodin, Helmi Adly Mohd Noor and Zanariah Jano	FTMK, UTeM	Information Technology
75	The Acceptance of Customers Towards Online Booking Hotel In Southern Region, Malaysia	Mohd Fazli Mohd Sam, Nurul Faez Mohd Shurkan, Albert Feisal Ismail and Md Nor Hayati Tahir	FPTT, UTeM	Technology Management
76	The Control Approach of Vehicle Steer by Wire System by Implementing Single Input Fuzzy Logic Controller	Mohd Zaidi Mohd Tumari, A Shamsul Rahimi A Subki, Ab Wafi Ab Aziz, Mohammad 'afif Kasno and Mohd Riduwan Ghazali	FTK,UTeM	Electrical Engineering

Paper ID	Title	Authors	Institution	Field
77	The awareness level of manufacturing complexity management: An initial study on Malaysians industrialist perspective	Mohd Noor Hanif Mohd Rosdi, Wan Hasrulnizzam Wan Mahmud and Mohd Razali Muhammad	KKTM Kuantan	Manufacturing Engineering
78	Density and Spalling behavior of Reactive Powder Concrete after Exposure to Fire Flame	Zainab Sabah Rasoul, Jariah M. Juoi, Mohd Razali Mohamad, Mohammed M. Kadhum	FKP, UTeM	Materials Science and Engineering
79	Work Study in Assembly Process Based on MOST Integrating With Lean Ergonomics	Ahmad Nawawi Mohd Amin, Wan Hasrulnizzam Wan Mahmood and Seri Rahayu Kamat	FTK, UTeM	Manufacturing Engineering
80	Estimation and identification of corrugated cardboard strength using tensile test	Norfariza Ab Wahab and S. Nagasawa	FTK, UTeM	Materials Science and Engineering
82	Structural Framework Design Analysis for Development of a Tidal Testing Rig	Mohd Fariduddin Mukhtar, Mohd Idain Fahmy Rosley, Nur Afifa Hafiz, Abdul Munir Hidayat Syah Lubis, Noreffendy Tamaldin, Yuhani Yusof	FTK, UTeM	Design
83	An Evaluation of Step-Up DC-DC power condition ICs for energy harvesting applications	Ali Abdal-Kadhim, Swee Leong Kok and Chow Keat	FKE, UTeM	Electrical Engineering, Electronics
84	Revisit hot plate poling method of P(VDF-TrFE) thick film in sensing applications	Chow Khoon Keat, Kok Swee Leong, Lau Kok Tee and Ali Mohammed Abdal-Kadhim.	Politeknik Ungku Omar	Materials Science and Engineering
85	The Current Understanding on Leadership Styles Demanded by Talent Recruitment for Engineering Managers	Arbaeyah Abdul Razak and Nur Amirah Sarani	UNISEL	Technology Management
86	Effect of PEG addition on the microstructure of TiO2 coating on ceramic substrate	Nur Najwa Aqilah Kamrul Zaman, Jariah Mohamad Juoi and Muhammad Hidayat Sulaiman	FKP, UTeM	Materials Science and Engineering
87	Experimental Investigation Of Hybrid Rotary Ultrasonic Assisted Micro Drilling On Chemically Strengthened Glass	Abd. Rasid Muhamad Firdauz, Raja Abdullah Raja Izamshah, M.S.A. Aziz, M.S. Kasim, A. Mizobuchi and T. Ishida	FKP, UTeM	Manufacturing Engineering
89	Addition of Ag into TiO2 Coating via Dipping and Precursor Method	Norhafizah Zaharuddin, Jariah Mohamad Juoi, Zulkifli Mohd Rosli and Muharniza Azinita Musa.	FKP, UTeM	Materials Science and

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90	Application of design for manufacture and assembly (DFMA) method to passenger car door design	Md Fahmi Abd Samad and Kjeldsen Yusuf	FKM, UTeM	Engineering Manufacturing Engineering
92	The Significance Effect of Peltier Liquid-Cooled Panel System for Air Conditioners Appplication	Mohamad Haniff Harun, Muhamad Faizal Yaakub, Mohd Firdaus Mohd Ab Halim, Khalil Azha Mohd Annuar, Arman Hadi Azahar, Mohd Shahrieel Mohd Aras and Amar Faiz Zainal Abidin	FTK, UTeM	Electrical Engineering
93	Empowering Higher Education Data Openness with Selective Methodology	Siti Nur'Asyiqin Ismael, Othman Mohd and Yahaya Abd Rahim, Kamel Mohamad	FTMK, UTeM	Information Technology
94	A Prototype of Wireless Indoor Surveillance Using Raspberry Pi Robot Car	Zakiah Ayop, Sathesgumar Rethinamani, Syarulnaziah Anawar and Siti Rahayu Selamat	FTMK, UTeM	Information Technology
95	MyDentist, A Proposed Interactive Patient Dental Clinical Information System with RFID based Patient Registration	Syahir Akbar Zakarna, Raja Rina Raja Ikram and Mohd Hariz Naim	FTMK, UTeM	Information Technology
96	Augmented Reality with responsive web for body organ flash	Norazlin Mohammed and Anthony See Chin Siong See Chin Siong	FTMK, UTeM	Computers
97	Effect of welding parameters and cleaning with acetone on cold rolled mild steel thin plate	Ruzaini Binti Mohd Nawi, Mohamad Nizam Ayof and Nur Izan Syahriah Hussein	FKP, UTeM	Manufacturing Process
98	Development of Interactive Hologram (i-HO) System	Nazreen Abdullasim, Wan Sazli Nasaruddin Saifudin and Sarni Suhaila Rahim	FTMK, UTeM	Information Technology
99	Heart Rate Trend of Composite Manufacturing Workers in Hand Layup Process	Nur Syafiqah Rayme, Seri Rahayu Kamat and Syamimi Shamsuddin	FKP, UTeM	Manufacturing Engineering Management
100	Hybrid Wireless Range Extender : LTE (3G/4G) Over Wi-Fi	Karrar Ibrahim and Norharyati Harum	FTMK, UTeM	Information Technology
102	Modeling of Spray Angle and Nozzle Size to Gas Release in Processing Urea Fertilizers by Using Fluidized Bed Granulator	Norhidayah Mohamad, Azizah Shaaban, Sivarao	MMU	Materials Science and Engineering

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104	Yaw Tracking Performance for a Person-Following Robot	Ahmad Zaki Shukor, Aine Ilina Tarmizi, Nuratiqa Natrah Mansor, Muhammad Herman Jamaluddin, Hairol Nizam Mohd Shah, Zamre Abd Ghani, Mohammad Kamil Sued	FKE, UTeM	Robotics and Automation
105	Development Biosignal Monitoring for Insomnia Using ECG Prediction	Novi Azman, Sandy Rahmat Wicaksono, Viktor Vekky Ronald Repi, Mohd Khanapi Abd Ghani, Ernawati Sinaga, Muhammad Haikal Satria	FTMK, UTeM	Information Technology
106	Development of user interface for cyber physical system (CPS) integrated with material handling system	Mohamad Shariff Osman, Azrul Azwan Abdul Rahman and Mohd. Hisham Nordin	FKP, UTeM	Robotics and Automation
107	Enhancing the Vehicle Reservation for Decision Making	Raymond Leong Chee Wai and Nor Hafeizah Hassan	FTMK, UTeM	Computers
108	Facile preparation of cellulose nanocrystals of banana trunk fiber via acid hydrolysis method	Rose Farahiyan Munawar, Nursyuhada Ismah Muhammad Ali, Afraha Baiti Arif, Jeefferie Abd Razak, Noraiham Mohamad, Mazliah Mazlan and Nurul Husna Mohd Hassan	FKP, UTeM	Materials Science and Engineering
109	Land Cover Change Detection Using Multispectral and Multitemporal Remote Sensing Data	Ummi Kalsom Hashim, Asmala Ahmad, Mohd Yazid Abu Sari, Othman Mohd, Hamzah Sakidin and Abd Wahid Rasib	FTMK, UTeM	Information Technology
110	Cutting Capabilities for Macro-Micro Cylindrical Shapes Component by Wire Electrical Discharge Turning (WEDT)	Muhammad Akmal Mohd Zakaria, Raja Izamshah Raja Abdullah and Mohd Shahir Kasim	FKP, UTeM	Manufacturing Engineering
111	A New Residence Determination Method for User Authorization in Geosocial Network Neighborhood	Shen Loong Low and Syarulnaziah Anawar	FTMK, UTeM	Computers
112	The effect of voltage on weldment size cold rolled steel sheet joint using low arc joining technology	Saiful Din Sabdin, Nur Izan Syahriah Hussein, Mohammad Kamil Sued, Mohd Aidil Shah Abdul Rahim and Mohamad Nizam Ayof	FKP, UTeM	Manufacturing Engineering

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113	An Analysis of Radio Frequency Connector Insertion Loss Measured by Network Analyzer From 300 kHz Until 8.5 GHz	Ming Hui Tan, Ahmad Yusairi Bani Hashim and Mohd Rizal Salleh	FKP, UTeM	Electrical Engineering
114	GLIDer: Fleet Management Solutions using Location Intelligence	Safiza Suhana Kamal Baharin, Nor Hafeizah Hassan, Maslita Abd Aziz and Zahriah Othman	FTMK, UTeM	Information Technology
115	Integration of Hash Function and Salted Algorithms in enhancing Security of QR Code Gate System	Erman Hamid, Lim Chong Gee, Nazrulazhar Bahaman and Mohd Zaki Mas'Ud	FTMK, UTeM	Information Technology
116	Surface roughness comparison between printed part manufactured via open source and commercial 3D printing machine	Lim Guo Dong, Mohd Rizal bin Alkahari, Faiz Redza bin Ramli, Mohd Nizam Sudin	FKM, UTeM	Design
117	Optimization of SDN Controller for Networks Management Performance	Omran Alssaheli, Zaheera Abidin and Nurul Azma Zakaria	FTMK, UTeM	Computers
118	STEM Engagement of 5-axis Industrial Pick-and-Place Pneumatic Robotic Arm Remote-Manipulation	Ahmad Anas Yusof and Syarizal Bakri	FKM, UTeM	Robotics and Automation
119	Effects of eco-innovation and market demand on sustainability performance	May Kee Lee, Nor Hazana Abdullah and Wan Nurul K. Wan Ahmad	UTHM	Technology Management
121	Hybrid cellular layout for jobshop manufacturing: A case study	Nadiah Ahmad, Radin Zaid Radin Umar and Puteri Eliani Fikri Abdullah Kamil	FKP, UTeM	Technology Management
122	A Technology Foresight Study on HR Apps: Identifying the Drivers	Nor Hazana Abdullah, Muhammad Zaki Abd Aziz, Alina Shamsuddin and Eta Wahab	UTHM	Technology Management
123	Effect of Various Coating Materials on Wear Properties of Electrodeposited Composite Coating	Intan Sharhida Othman, Muhamad Ammar Farhan Maula Mohd Azam, Mohd. Shahir Kasim, Muhammad Zaimi Zainal Abidin and Syahrul Azwan Sundi	FKP, UTeM	Materials Science and Engineering
124	Musculoskeletal Disorder Prevalence: A Comparative Study among Manufacturing Industries	Nor Hazana Abdullah, Zulkeflee Abdullah, Nor Aziati Abdul Hamid and Rosli Asmawi	UTHM	Manufacturing Engineering

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125	A framework of project-based learning for enhancing student competencies through digital video production	Lim Seh Hoe, Tay Choo Chuan and Hanipah Hussin	IPTK, UTeM	Others
126	Anthropometric parameter consideration in designing lumbar support device for manufacturing industrial workers	Noor'Ain Azizan, Ruzy Haryati Hambali, Seri Rahayu Kamat and Nur Syafiqah Rayme	FKP, UTeM	Manufacturing Engineering
127	The Influence of Difference Quenching Technique on Bobbin Tool	Siti Noor Najihah Mohd Nasir and Mohammad Kamil Sued	FKP, UTeM	Manufacturing Engineering
128	The Effect of Physical Environment Comfort towards Employee's Well-Being: A Case Study at Malaysia Technical University	Nor Aziati Abdul Hamid, Kelvin Gerald Sandanadass, Nor Hazana Abdullah, Rosmaini Tasmin, Md Fauzi Ahmad	UTHM	Technology Management
129	High performance of superhydrophobic durian shell-magnetite electromagnetic wave absorber for UHF RFID application	Rose Farahiyan Munawar, Afraha Baiti Arif, Maisarah Abu, Mohd Edeerozey Abd Manaf, Intan Sharhida Othman and Nazlia Girun	FKP, UTeM	Materials Science and Engineering
130	Performance Evaluation of Routing Protocols in Manet	Methaq Abdullah Shyaaa and Nurul Azma Zakaria	FTMK, UTeM	Information Technology
131	Formulating ensemble mobile malware detection through n-gram system call sequence features	Nor Azman Mat Ariff, Mohd Zaki Mas'Ud, Amizah Aida Ahmad, Nazrulazhar Bahaman and Erman Hamid	FTMK, UTeM	Computers
132	Development of Integrated Vaccine System (IVS) for Vaccination Database	Mohd Azrul Hisham Mohd Adib, Nur Hazreen Mohd Hasni, Nor Fazlin Zabudin, Muhammad Shahminan Lukman	UMP	Computers
133	Estimation of Aboveground Biomass at Species Level in Tropical Rain Forest Using High Resolution Remote Sensing Satellite Data	Abd Wahid Rasib, Hamzah Mohd Ali, Nur Fatihah Amran, Hamdan Omar, Abdul Rahman Kassim, Azahari Faidi, Muhammad Zulkarnain Abdul Rahman, Alvin Lau Mengshin, Abdul Razak Mohd Yusoff, Rozilawati Dollah and Asmala Ahmad	UTM	Information Technology

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134	Development of Brady-Tachy Heart Automotive (B-T Heartomotive) Device for Monitoring Heart Rate during Driving	Nor Fazlin Zabudin, Muhamad Hazim Khalili, Nizam Abdullah, Nur Hazreen Mohd Hasni and Mohd Azrul Hisham Mohd Adib	UMP	Robotics and Automation
135	Preliminary Study : Modeling of Blood Flow Simulation on Different Cerebral Aneurysms Geometry Using FSI Method	Nurul Najihah Mohd. Nazri, Nor Fazlin Zabudin, Nur Hazreen Mohd Hasni and Mohd Azrul Hisham Mohd Adib	UMP	Medical and Modelling
136	Development of Exoskeleton Robotic Leg (ExRoLEG) for Kids with Cerebral Palsy	Szeto Yang Han, Prashant Raj Ramani, Low Jian You, Law Ming Yan, Nur Hazreen Mohd Hasni, Nor Fazlin Zabudin and Mohd Azrul Hisham Mohd Adib	UMP	Robotics and Automation
137	Improvement of a Visual-based Anthropometry Measurement System using Microsoft Kinect and a Rotating Platform	Mohd Faiz Bin Wahid, Seri Rahayu Kamat, Dian Darina Indah Daruis, Syamimi Shamsuddin, Ruzy Haryati Hambali and Mohamad Hanif Md Saad	FKP, UTeM	Robotics and Automation
138	Implementation of regular expressions in designing CSDES interpreter	Norhidayah Mat Seman, Zamberi Jamaludin and Mohamad Minhat	FKP, UTeM	Robotics and Automation
140	Comparison of Tracking Performance between Nonlinear Proportional-Integral-Derivative (NPID) Double Hyperbolic Controller and NPID Controller	Sahida Che Ku Junoh, Lokman Abdullah, Syed Najib Syed Salim, Norhidayah Mat Seman, Zain Retas, Chiew Tsung Heng, Nur Amira Anang	FKP, UTeM	Robotics and Automation
142	Development of Energy Regenerative System from Air Conditioner Waste	Nur Anis Suraya Salim, Fairul Azni Jafar, Goh Jee Boon and Tan Chia Hwa	FKP, UTeM	Robotics and Automation
143	The Effect of Heat Treatment to Tensile Properties of Intermetallic Nickel Aluminide for Wheel Hub Airless Tyre Application	Halida Hanim Hafiz Afandi, T. Joseph Sahaya Anand, Intan Sharhida Othman and Sivarao Subramonian	FKP, UTeM	Materials Science and Engineering
144	Wettability of Aluminum-alloys Surface with Various Surface Roughness and Thickness Coating	Solehah Jasmee, Ghazali Omar, Nor Azmmi Masripan and Anita Akmar Kamarolzaman	FKM, UTeM	Materials Science and Engineering

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145	Haptic Robot Assist for Object Manipulation in V-Rep Simulation	Nuratiqa Natrah Mansor, Muhammad Herman Jamaluddin and Ahmad Zaki Shukor	FKE, UTeM	Robotics and Automation
146	The Study of Mild Steel Mechanical Properties using I-kaz 4D Analysis Method via Piezofilm Sensor	Mohd Irman Ramli, Mohd. Zaki Nuawi, Mohammad Rasidi Mohammad Rasani, Nor Azazi Ngatiman, Mudather Bahr Eldeen Hamid Nour, Muhammed Noor Hashim, Ahmad Fuad Ab. Ghani	FTK, UTeM	Mechanical Engineering
147	Effect of temperature to fracture toughness of coir fiber composite	Meor Syazalee Meor Sha, Rozli Zulkifli and Muhamad Shahirul Mat Jusoh	UKM	Materials Science and Engineering
148	Plant Species Identification Based on Shape and Vein Extraction	Othman Mohd, Mohd Rasyid A. Rahim and Mohd Haffez Khalik	FTMK, UTeM	Information Technology
149	Tensile properties of degraded NR/EPDM nanocomposites in different automotive oils	Khairu Ilwani Karim, Noraiham Mohamad, Jeefferie Abd Razak, Hairul Effendy Ab Maulod, Mazliah Mazlan, Mohd Asyadi Azam Mohd Abid, Mohd Shahir Kasim, Raja Izamshah Raja Abdullah	FKP, UTeM	Materials Science and Engineering
150	Towards a Persuasive Computing Approach for Cyberbullying Awareness in Social Media	Farah Nadia Azman and Mohamad Lutfi Dolhalit	FTMK, UTeM	Computers
151	Optimization of Compression Molding Process for NR/EPDM Elastomeric Material	Muhammad Zaki Kasman, Raja Izamshah Raja Abdullah and Mohd Shahir Kasim	FKP, UTeM	Materials Science and Engineering
152	Effect of Functionalized Hex-Boron Nitride Particle Washing on Electrophoretic Deposition Coating Yield and Uniformity	Kok-Tee Lau, Jayaganasan Narayanasamy, Muhammad Zaimi, Nurizzatul Zahirah Abdul Latiff, Muhamad Hanif Hashim and Shahrizal Samsudin	FTK, UTeM	Materials Science and Engineering
153	Effect of repair welding on microhardness testing by using dissimilar materials pipes by using GMAW	Suraya Laily, Nur Izan Syahriah Hussein, Mohd Shukor Salleh, Mohd Nizam Ayof, Nadia Mazwa Abdul Wahid	FKP, UTeM	Materials Science and Engineering
154	Proses Optimization of Friction Stir Welding Process for AA5052 Alloy using Taguchi Method	Mohd Hairizal Bin Osman, Mohammad Kamil Bin Sued, Mohd Hidayat Bin Ab Rahman, Nurul Ain Binti Maidin, Mohammad Khalid Bin Wahid, Mohd Nazri Bin Ahmad	FTK, UTeM	Manufacturing Process

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156	Chemical and Mechanical Treatments of Recycled Carbon Fiber Reinforced Polymer	Adel M. Alkaseh, Mohd Edeerozey Abd Manaf, Zurina Shamsudin and Edynoor Osman	FKP, UTeM	Materials Science and Engineering
157	Indium Zinc Oxide Coating Characteristics on Non-woven Kenaf via Simple Dip Coating	Nurhernida Abdullah Sani, Mohd Edeerozey Abd Manaf, Qumrul Ahsan, Rose Farahiyan Munawar and Edynoor Osman and Mohd Yuhazri Yaakob	FKP, UTeM	Materials Science and Engineering

LIST OF ABSTRACT

Paper 2

Hierarchical Voltage Sensing to Perform Solar – Wind Energy Sources Complementary

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Keywords: Energy Complementary; Complement Solar – Wind; Voltage Sensing

ABSTRACT – This study introduces the hierarchical voltage sensing method using the voltage division method to sense and measure the solar – wind energy sources regulated output voltages. To perform the on the regulated output voltages, a simple voltage divider circuitry is designed and developed. Hence, this paper explains about the methodology of voltage sensing method and voltage division method performances which is the methodology to perform complementary between the solar-wind energy sources.

Paper 3

Effect of Acetone Vapor on Tensile Strength of Fused Deposition Modeling Printed Part

Nurul Ain Maidin[1,3*], Mohd Hidayat Ab Rahman[1,3], Mohd Rizal Alkahari[2], Mohd Hairizal Osman[1,3], Mohd Nazri Ahmad[1,3], Mohammad Khalid Wahid[1,3], Nurul Shahira Farhana Fadzli[1],

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Keywords: additive manufacturing; fused deposition modeling; 3D printing

ABSTRACT – Additive Manufacturing (AM) has the benefit being capable to create very complex geometries, which could be impossible with traditional methods or fabricated at a high cost [1]. For material cost properties, the cost of 3D printing parts is mostly related to the size of the product. The research is used polymer-based material specifically acrylonitrile butadiene styrene (ABS). In this research, an acetone vapor post process will be employed to investigate the effect of tensile strength of the printed part after applying the vaporing process. Mechanical anisotropy behaviour of the specimen are investigated via tensile test. The results of the implementation of acetone vapor as post processing of FDM printed part are compared with the original printed part in term of their tensile strength.

Paper 4

Road power generation by applying conversion system

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Keywords: Power generation; electrical energy; speed breaker

ABSTRACT – Road power generation is a concept that converts the kinetic energy from vehicles into electrical energy. Therefore, this research is to develop road power generation which take the stroke motion of vehicles and cause the motor to rotate thus generates the electricity for street lighting. This system implement using a speed breaker with 8 cm and 15 cm height and 7 cm length of rack and to be attached to the road. The result shows that this system can generate up to 32 watt for several vehicle that slide on the plate.

Paper 5

A review on system integration of industrial 4.0

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Keywords: Time-Driven Based Costing; Mahalanobis-Taguchi System; Industry 4.0

ABSTRACT – Nowadays, manufactures are encouraged to embrace the industry 4.0 in an effort to transform manufacturing landscape by eliminating isolation system and optimizing staffing for key personnel. The aim of this work is to identify current and previous publish journal which is 5 years back that contribute in industry 4.0.This work focused on system integration that generated unused capacity using Time-Driven Activity Based Costing (TDABC), and optimizing staffing system using Mahalanobis- Taguchi System (MTS). Therefore, integration of abnormal diagnostics through MTS and costing sustainment through TDABC is the biggest opportunity to eliminate unnecessary complexity in production environment.

Paper 6

Optimization of PID Controller's parameters for Gantry Crane Application using Glowworm Swarm Optimization Algorithm

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Keywords: gantry crane; optimization; glowworm swarm optimization; pid; parameter tuning; swarm intelligence

ABSTRACT – This paper investigates the implementation of Glowworm Swarm Optimization in tuning parameters of PID Controllers for the gantry crane application. Each glowworm location in the search space represents five parameter values of PID controllers. Then, the paper implements the generic Glowworm Swarm Optimization Algorithm using sum of absolute error of the trolley displacement as fitness for evaluating agent fitness. Result obtained shows the potential of the algorithm in tuning parameters of controller for gantry crane application.

Paper 7

Study on Workstation of Composite Mold using RULA Analysis

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Keywords: RULA; optimized; workstation

ABSTRACT – This paper presents an ergonomic investigation towards worker posture activities in composite mold using Rapid Upper Limb Assessment (RULA) analysis. Environment of the mold was setup using CATIA V6 by referring to the actual environment and it is then analyzed using RULA to obtain the posture of workers in different point in mold. An optimization process is done subject to initial data obtained and it is analyzed using RULA analysis to obtain final score that is aimed to achieve action level 3 up to level 1. As a result, the redesign of workstation is optimized ergonomically based in the final score

Paper 8

Mathematical Modeling of Quarter Car Suspension Systems on Square road profile

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Keywords: Mathematical Modeling; Car Suspension; Road profile

ABSTRACT – Suspension systems have been widely applied to vehicles. It gives a comfortable ride to the driver through many type of road profile. A simple mathematical model of a passive quarter car suspension system has been formulated analytical to determine whether the suspension of car model will give a comfortable ride to a square road profile. This study is using Ford Scorpio car model data that are being applied with considering the basic quarter car model and the refinement of basic quarter car model.

Paper 9

Application Of Fuzzy Logic Modelling In Fluid Friction Of Bore Pipe

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Keywords: Fuzzy logic modelling; fluid friction; bore pipe

ABSTRACT – Fuzzy logic modelling is a type of artificial intelligence that can help to calculate and predict output from experiment. Thousands of data can be applied and prediction can be made based on these data. Thus, saving time and reducing cost in handling experiment. This research introduces a fuzzy logic modelling in fluid friction in order to forecast the head loss in pipe. Then the mean absolute error is calculated to compare the value forecast by fuzzy logic modelling and the experimental value. The analysis shows that the modelling can be used as an approach to find the head loss in bore pipe.

Paper 11

Effect of Driving Signal Waveform to the Motion Characteristics of a Rotary Switched Reluctance Actuator

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Keywords: Rotary angle; switched reluctance; actuator motion characteristic

ABSTRACT – This paper presents the effect of driving signal waveform to the motion characteristics of a rotary switched reluctance actuator (SRA). The motion characterization is conducted on the SRA prototype and the excited current magnitude is fixed at 1A excitation current magnitudes for 6s which includes a 2s delay. Two different driving signals are examine, i.e.: (i) step input signal and; (ii) high frequency pulse signal. The results revealed that the high frequency pulse signal 20Hz, 1:4 duty ratio gave a significantly higher rotary displacement by 72.090 compared to the step input signal 65.980 by incremental of 10.49%.

Paper 13

Evaluation Of Decentralized Fans Effectiveness In Office Building Ventilation System

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Keywords: Decentralized fan; ventilation; damper

ABSTRACT – This research aimed to evaluate the effectiveness of decentralized fan to the centralized air conditioning system for a small office. In this research, a duct trainer kit is developed and the temperature distribution, face velocity of the diffuser and power consumption of two cases with damper and two cases with decentralized fan with minimum and maximum speed of centralized fan respectively are compared. Result shows that decentralized fan with maximum centralized fan speed has the higher face velocity at the diffuser and shorter temperature distribution period but has slightly higher power consumption compared to other three cases.

Paper 14

Thermoplastic Mixture with Oil Palm Fiber Flow Properties in Rheological Behaviour

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Keywords: rheological; thermoplastic; fiber

ABSTRACT –These investigations were carried out on four types of thermoplastic which are Polypropylene (PP), Low Density Polyethylene (LDPE), High Density Polyethylene (HDPE) and Acrylonitrile Butadiene Styrene (ABS). These thermoplastic materials deal with the results of mixing of the of Oil Palm Mesocarp Fiber. The flow properties in rheological behavior was documented by compared the viscosity and shear rates between pure resin and mixture resin at specific temperature. The results were presented as rheological curves in which the changes in viscosities of the materials at different shear rates were determined.

Paper 15

The effect of surface roughness on ultrasonic assisted milling of Inconel 718

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Keywords: Ultrasonic assisted machining, Ultrasonic vibration machining, Surface roughness

ABSTRACT – Ultrasonic assisted machining is a combination of precision machining with a small-amplitude vibration tool to improve machining capabilities. Recently, ultrasonic assisted machining has been the main focus of research particularly on ultrasonic vibration effects on machining processes. However, the characteristic of ultrasonic vibration has a potential to influence workpiece surface roughness. Therefore, the main objective of this study was to evaluate the performance of the ultrasonic assisted machining on the surface machined roughness in comparison with the conventional way. The result showed that the ultrasonic vibration improved the surface roughness up to 27% on flooded machining condition.

Paper 16

Step Counter for Ankle Rehabilitation

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Keywords: Step counter, ankle rehabilitation system, servo motor

ABSTRACT – A new 3-DOF step counter for ankle rehabilitation system with servo motors was proposed in this study. The aim was to control and move ankle to the 3 step angles in order to execute ankle dorsiflexion/plantarflexion rotation (x-axis), internal/external rotation (y-axis) and inversion/eversion rotation (z-axis). The system was developed based on Arduino Uno microcontroller and the gyro meter module (MPU-6050) was used to show the ankle movement of patients. The results show that the servo motor was capable to provide enough power to move ankle as it rotates to the position that needed controlled by the android device.

Paper 17

Simulation Study of DTTO Modular Robots with 2 DOF to Propagate Multiple Configurations

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Keywords: DTTO robot; simulation; configuration

ABSTRACT – Most of the Modular Self-reconfigurable (MSR) robot is being developed in order to have the capability of achieving different locomotion gaits. In this study, a 3D-printed MSR robot called DTTO was used to study the achievable propagation that can be made based on three of DTTO robot module. As DTTO robot is developed based on Modular Transformer (M-TRAN), DTTO robot has number of Degree of Freedom (DOF) same as M-TRAN which is 2 DOF. The robot propagation was simulated in Virtual Robot Experimentation Platform (V-REP) software. The result of the simulation shows that the DTTO MSR robot can propagate multiple configuration and it is suitable for the purpose of further research on MSR robot architecture.

Paper 18

Preliminary Investigation on Modular Self-Reconfigurable Robot Architecture

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Keywords: modular; architecture; self-reconfiguration

ABSTRACT – Modular Self-Reconfigurable (MSR) robot is a robotic system which involves a group of identical robotic modules that are connecting together and form a structure. Such robotic system allows reconfiguration of the robots to adapt to the specific tasks. However, the use of this robot is very limited. This robot is at the early stage of development. This paper is written to analyze self-reconfigurable modular robot that has been till today. Improvements made for each developed MSR robot but still a lot of lacking. However, it still has the potential to be widely applied in future and this paper provide information for our future plan that is to establish control system for the MSR robot.

Paper 19

Kinetic and Stability Cu-SBA-15 catalysts in Reduction of N2O with CH4

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Keywords: Kinetics, Stability activity, Cu-SBA-15 catalysts, activation energy

ABSTRACT – The kinetics of N2O decomposition and reduction via CH4 were investigated over Cu on SBA-15 molar ratio (1:30) was studied based on physical mixture, impregnation method and pH adjustment method preparation. All catalytic activities were carried out in a flow reactor system at atmospheric pressure with 100 mL/min total flow. The Cu/SBA-15 pH adjustment method has highest activity compared to another samples prepared. Generally, the activation energies become lower for N2O decomposition with present of CH4 whereas Cu/SBA-15 prepared by pH adjustment method was lowest activation energy, Ea (63 kJ/mol) compare to N2O decomposition (92 kJ/mol) and demonstrated a good stability.

Paper 20

Brief Review on Corrosion of Palladium Coated Copper Wire Bonds under High Temperature Storage Stress Test

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Keywords: Corrosion, palladium coated copper wire, high temperature storage stress test, mold compound, HTSL

ABSTRACT – Palladium coated copper (PCC) wire is replacing gold and bare copper (Cu) wire because of its superior mechanical properties, better reliability and manufacturing yield. However, the PCC wire bonding in automotive devices experience corrosion problem under high temperature storage stress (HTS) test. Literature review indicated copper sulfide that involved in corrosion on PCC wire is originated from mold compound of semiconductor packages. It is proposed that a change to the mold compound formulation (by removing the sulfur base adhesion promoter) and an improvement of the PCC wire's corrosion resistance through the usage of new alloying element.

Paper 21

Tracking Control Performance of a 2-DOF Robotic Finger using PID and LQR Controller

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Keywords: Tracking control; PID controller; LQR controller

ABSTRACT – This research focuses on the tracking control performances of two degrees of freedom (2-DOF) robotic finger mechanism in achieving precision motion control as initial research towards developing a multi-fingered robotic hand system. Behaviors such as instability, large steady-state error and poor transient performance often occurred in the robotic hand mechanism. In this research, the proposed controllers will depend on the angular position control of each motor joints, i.e. the position control of the 2-DOF robotic finger mechanism. Two control strategies namely (i) Proportional Integral Derivative (PID) controller and (ii) Linear Quadratic Regulator (LQR) controller were chosen to be compared via simulation and experimental works. The controller results were validated by tracking control with frequency from 0.1 Hz to 0.5 Hz at different reference amplitudes. From the analyze results, it was concluded that LQR controller exhibits the best tracking control performances. The LQR controller had demonstrated an improvement in steady-state error by 98.5 % (0.11 °) in a series of experimental tracking tests.

Paper 22

Museum Mobile Application using Quick Response (QR) Code

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Keywords: mobile, QR code

ABSTRACT – This paper presents a museum mobile application using quick response (QR) code. There are generally a few sorts of guide systems when visiting the museum, for example traditional multilingual tour expositor, touch screen computers for inquiries and tape or CD guide machine. All of them appear to hold up under various types of issues. Besides that, the challenges is some visitors find out that museum dull and difficult to engage these visitors with the artifacts in the museum. So, this project is conducted to help user to get information faster and easier. The system in mobile applications is going to be tested and evaluated towards the user. The paper is developed using following steps; preliminary study of the project, data collection, development of system interface, repository development and testing the system. The parameter for this project is data of the artifact and identification of the artifact (id). The significant contribution is that it will easier the user to gain the information about the artifacts in an interesting way in just one scan using mobile applications.

Paper 23

Wireless Cloud Storage using IoT device

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Keywords: IoT device; cloud storage; Raspberry Pi

ABSTRACT – This paper presents the development of portable wireless cloud storage (PWCS) using IoT technology. PWCS is developed by using an IoT device, Raspberry Pi which is also popular because of its small size, high portability function and low cost microprocessor. Those characteristics ensure a low cost and high portability of PWCS. The performance of the developed PWCS is compared with existing cloud storage software based on transfer rate and response time.

Paper 25

An investigation of the lateral velocity behaviour and its effect on the trajectory generation of the autonomous non-holonomic vehicle

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Keywords: trajectory tracking, autonomous vehicle, non-holonomic vehicle

ABSTRACT – This paper addresses the importance of consideration of the vehicle dynamics, especially when the trajectory tracking controller is subjected to an abrupt steering command from the controller. The simulation is carried out from the actual two in-wheel electric vehicle parameters. It is found out that under sudden steering change commands at different velocities, the effect of the lateral velocities becomes apparent particularly at high-speed tracking as the direction of the lateral velocity is not aligned with the direction of the vehicle's manoeuvre during the initial phase. This finding is significant in such a way that the nonlinearities of the vehicle's dynamic will cause a disturbance in trajectory tracking control and should be taken into consideration when developing a trajectory tracking control.

Paper 26

Vehicle Tracking System by Using Cell Tower Localization

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Keywords: Vehicle tracking; cell tower localization; IoT

ABSTRACT – Vehicle tracking system is a fleet management solution and a total security. It is used to determine vehicle's location by using different methods like GPS. The GPS tracking system is easy to implement and used but the use of it increases the cost of hardware and energy consumption. GPS also has a drawback if it isn't pointing then it may give inaccurate measurements. The vehicle unit will be attached to the vehicle and configured to get the required information from the cell tower to represent the location on the map in real-time. This paper presents a prototype of a vehicle tracking system using cell tower localization based on IoT.

Paper 27

Perception of Rehabilitation Patients in Malaysia towards Animal Robot PARO

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Keywords: Human-robot interaction; rehabilitation; animal-robot PARO

ABSTRACT – Robotics application in mental healthcare are on the rise worldwide, but in Malaysia, the awareness is still low. Thus, the aim of this study to investigate the perception of Malaysians towards PARO, a robotic seal. A survey with ten questions were administered to 12 patients at a rehabilitation centre. Results were tested with Kuder Richardson 20 (KR-20) test for reliability and Chi-square analysis for validation. Statistically, 80% of the respondents gave positive response on their emotions and acceptance of PARO as a robot. This shed encouraging light on future applications of animal robots during therapy for rehabilitation patients in Malaysia.

Paper 28

Trajectory Tracking Analysis of Planar End-Effector Upper Limb Rehabilitation Device

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Keywords: End-effector, planar, upper-limb rehabilitation

ABSTRACT – Rehabilitation devices have become one of the more sought-after focus areas among researchers in the robotics field, where it could be used to assist patients in the process of stroke recovery. This paper illustrates the mathematical modelling and simulation of a planar end-effector rehabilitation device for the upper limb. The rehabilitation device is of two degrees of freedom, and is used in this research due to its cost effectiveness and practicality. The trajectory tracking of the end-effector of the device is done via simulation in MATLAB, and feedback control system is utilized to control the actuators used in the system. The results of the simulation suggest that the mathematical modelling of the system is able to predict the behaviour of the system, which is to be implemented in this robotic device for upper limb rehabilitation.

Paper 29

Supervised Learning with Malaysian Dataset for Human-robot Interaction

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Keywords: supervised learning; OpenCV; smile detection; human-robot interaction

ABSTRACT – In human-robot interaction (HRI), outcome assessment is crucial. This paper presents a tool constructed for HRI analysis based on machine learning. Data preparation for the machine learning involved a small program whose function is to first process a dataset which contains a number of face images. Then the dataset is fed through a machine learning algorithm. Finally using live detection from a webcam, the live input for the program is used to predict whether or not the person is smiling during HRI. The constructed dataset in this study was successfully able to detect the human smile.

Paper 30

Link Quality Indicator for Performance Evaluation in 6LoWPAN Routing Protocol

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Keywords: 6LoWPAN, Routing Protocol, Network Performance

ABSTRACT – 6LoWPAN is a link network that allows each node connect to other nodes directly. However, the limitation of 6LoWPAN frame length is 127 bytes over IEEE802.15.4. Thus, the performance issues especially in link quality as seen by end nodes become more challenging in designing routing protocol. Therefore, this paper emphasizes on the link quality indicator (LQI) which has significant effects on 6LoWPAN routing protocol in achieving efficient network performance Quality of Services (QoS). The finding shows that there are three (3) indicator namely overhead, throughput and latency in order to achieve efficient performance QoS in the 6LoWPAN routing protocol.

Paper 31

Supplier Development Practices: From Manufacturers' Perspectives

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Keywords: Green supplier development; Malaysian manufacturers; EMS ISO-14001

ABSTRACT – This study is aiming to explore the acceptance level of green supplier development programme (GSDP) implementation by Malaysian manufacturing firms. A total of 71 datasets collected from Malaysian manufacturing firms with EMS ISO-14001 certification is used in a psychometric test analysis. The results show that the current achievement of green supplier development (GSD) practices by Malaysian manufacturing firms is still lower than the priority that set by them. Further analysis using factor analysis, suggested that 25 GSD practices can be extracted into 5 factors, namely capability development, evaluation, collaborative communication, assessment and resource transfer.

Paper 33

Unequal Clustering Routing Algorithms in Wireless Sensor Networks: A comparative study

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Keyword: Wireless Sensor Network; Unequal clustering features; Unequal cluster algorithms.

ABSTRACT - In order to prolong the life span of sensor nodes, wireless sensor nodes are grouped into clusters, and in each cluster at less there is one node act as a cluster head, gathering the sensing data from its cluster member and forwarding to sink or base station. Clustering is the most popular energy efficient technique and provides various

advantages like energy efficiency, lifetime, scalability and less delay; clustering has classified into two categories equal cluster size and unequal cluster size. In unequal approach, the size of the cluster is modifying proportionally according to the distance from the base station, small size close to the base station and whenever the cluster located farther from the base station, the cluster size will be larger. For the importance of this approach and lack the papers that deal with it in deep details, we have stimulated to perform this work. In this study, firstly we classified this approach, according to clustering features. Second, we classified unequal cluster algorithms in terms of nature of algorithm that used in the clustering. Then we combined these classifications in one compare table, the purpose of this work is to statement of the characteristics of protocols according to clustering characteristics and clustering algorithms.

Paper 34

Investigation of dimensional accuracy on simultaneous five-axis tool paths strategies for biomedical product utilizing CATIA V5

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Keywords: dimensional accuracy, tool paths strategies, sculptured shape, biomedical product

ABSTRACT – A sample of biomedical product was chosen to be machined by five-axis CNC milling machine with two multi-axis surface tool paths strategies offered by CATIA V5 namely Isoparametric and MultiAxis Sweeping in order to investigate the effect of dimensional accuracy of machined parts for both mentioned strategies. Femoral knee part is chosen due to its sculptured shape which indirectly proves capability of five-axis machining in producing complex shapes. Rexscan CS2 3D-scanner device and Geomagic Control X software are utilized to qualitatively analysed the dimensional accuracy of the machined samples. From the graphical results obtained, Isoparametric tool paths strategy illustrates slightly better dimensional accuracy than Multi-Axis Sweeping.

Paper 35

Predictive functional control with reduced-order observer based PSO for pneumatic positioning control

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Keywords: Predictive functional control; particle swarm optimization; pneumatic control

ABSTRACT – The employment of Particle Swarm Optimization (PSO) algorithm in determining the best value of parameter alpha (Ψ for Predictive Functional Control (PFC) used in pneumatic system was proposed in this study. A reduced-order observer was used together with PFC to estimate the internal states of pneumatic system.

The performance of Predictive Functional Control with Reduced-order Observer (PFCRO) with and without employment of PSO were compared. The validation was done in simulation and experiment using MATLAB/Simulink. The results revealed that PFCRO using PSO gave better response in controlling the pneumatic positioning system compared to PFCRO without using PSO.

Paper 36

Development and Fabrication of Automatic Pump-down System for Split Unit Air Conditioning System

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Keywords: Refrigerant Recovery; Leak Prevention; Environment

ABSTRACT – Pump-down is a process of storing refrigerant in the outdoor unit. In normal practice, pump down was done manually before any service or repair. This experimental project focused on developing an automatic pump-down system attached to split-unit as part of leak prevention effort. A 1 hp split-unit was connected with two set of pressure switches and solenoid valves work as stopper to shut of both lines in the event of leakage. Compressor continue running until all refrigerant were pumped into the outdoor unit. Few leakage case were constructed to examine the capability of the new automatic pump down system. The results show that 99.98% refrigerant were able to recovered.

Paper 37

High strain rates effect on the dynamic properties of E-glass/jute using SHPB

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Keywords: SHPB; Hybrid; Composite

ABSTRACT – Presently, the application of natural fibres widely gains attention from academia and industries as an alternative material in the composite system. The introduction of the hybrid composite using natural and synthetic fibres is extensively investigated on the static mechanical properties. However, the investigation on the high strain rates effect is less reported, might be due to the difficulty of the experimental set-up as well as the limitation of dynamic testing apparatus. Split Hopkinson pressure bar (SHPB) was utilized in this present study to characterize the dynamic mechanical properties of hybrid composite between E-glass with jute fibres at three different strain rates - 755, 1363 and 2214 s-1. Results showed that the tested specimens significantly influenced by the value of strain rates applied. E-glass/jute specimen exhibited the strain-rate dependent behaviour, whereby higher dynamic mechanical properties were recorded when the higher strain rates were imposed. The difference between maximum dynamic stress was 12.1 and 23.9 % when the strain rates were increased from 755 to 1363 s-1 and 1363 to 2214 s-1. Contrary, the maximum strain displayed the different pattern with the highest strain was recorded for the lowest strain rate applied.

Paper 39

An Automated Irrigation System Using Arduino Microcontroller

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Keywords: Arduino; soil moisture sensor, automated irrigation system

ABSTRACT – This paper proposes an automated irrigation using Arduino microcontroller system which is cost effective and can be used farm field or average home garden. The proposed system can automatically water the plants when the soil moisture sensor detects the soil is insufficient of water by using the Arduino microcontroller as the center core. When the soil moisture sensor sense the dry soil, it will show the moisture percentage on the LCD display, and the relay module will switch on the water pump automatically to start the watering process, or vice versa. Hardware testing is conducted to ensure the proposed system is fully functional.

Paper 41

A study on the effect of vehicle vibration on human biodynamic model

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Keywords: Vibration; Vehicle; Biodynamic Model

ABSTRACT – Research on human biodynamic and vehicle model had been conducted over the years to study the vibration impact for both cases. In this study, five degree of freedom (5DOF) human biodynamic model is coupled with full vehicle model to study the relationship on the impact of vibration on each tire towards the brain on the human biodynamic model. The model is analyzed by using MATLAB simulation under vehicle speed of 10 km/h. From this model, it shows that the proposed model able to show the significant impact on skull and brain when the vehicle is on the move or in cornering mode.

Paper 42

A conceptual framework of non-circular segmentation using modified greedy algorithm for iris recognition

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Keywords: iris recognition; non-circular segmentation; greedy algorithm

ABSTRACT – This paper attempts to show the noncircular segmentation, which conceptually designed using modified greedy algorithm. Studies shown that greedy algorithm is accurately segmented the iris. However, limitations occurred as two or more iris templates from the same person is compared during matching phase. In fact, accuracy of the proposed method is higher instead of circular method. Thus, this work is to propose a conceptual framework for noncircular segmentation based on modified greedy. The future implementation of modified greedy algorithm will using MATLAB to segment the iris template according to the original shape and size before stored them into the database.

Paper 44

Application of Material Cataloguing System in Small and Midsize Manufacturing Firms

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Keywords: Material Cataloguing; Small and Medium Enterprises; Case Study

ABSTRACT – The purpose of this paper and case study is to provide a brief review on typical material cataloguing system in Small and Medium Enterprises (SME). The result summaries the general material catalogue management process regarding material identification, request, review and cataloguing. The cataloguing process include to process of creating new template, generating material no, make amendment to the existing parts in inventories and translating information into proper documentation format. This study can be helpful in providing guidance for material cataloguing system as a mean to store and retrieve data in order to establish an effective inventorial management.

Paper 45

Analysis of Two In-Wheeled DC Motor for Autonomous Electric Vehicle: Simulation and Experiment

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Keywords: Dynamic Model; Autonomous Vehicle, Electric Vehicle

ABSTRACT – A simulation model of the electric vehicle is important to test a proposed theory since implementing it in real life could be costly and dangerous since it is susceptible to failure. This paper focuses on the development of an electric vehicle model, which represents a real vehicle. The simulation model is developed by integrating combined vehicle dynamic model, Dugoff's tire model and DC motor model. The result is then compared with a small-scale electric vehicle. The result shows that the simulation model developed depicts accurately the yaw rate, lateral acceleration and longitudinal velocity when compared with the test vehicle.

Paper 46

Analytical Study in Rotational Motion on Different Blade-shape Design of HAWT for Wasted Kinetic Energy Recovery System (WKERS)

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Keywords: Rotational Motion; horizontal axis wind turbine (HAWT); Wasted Kinetic Energy Recovery System (WKERS)

ABSTRACT – Wasted Kinetic Energy Recovery system (WKERS) is a wind renewable gadget to harvest the discharged wind from cooling tower. The WKERS is installed on the cooling tower outlet to collect the wind source for electrical regeneration purpose. This study is to determine the best blade-shape design for a horizontal axis wind turbine (HAWT) as it is believed that the bladeshape design plays a critical role in WKERS. Hence, elliptical blade, swept blade and NREL Phase IV blade are selected to go through Computational Fluid Dynamics (CFD) analysis in SolidWorks design software undergoing rotational flow simulation. During this benchmarking process, 10.0 m/s wind speed is set for the rotational simulation.

Paper 47

Design and Development of Ergonomics Labeling Machine for Cashiers

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Keywords: Ergonomics; sustainability; labeling

ABSTRACT – Frequent exposures to forceful hand exertion and poor wrist posture during manual labeling task of "SOLD" stickers on purchased items increases cashier's risk to injury and musculoskeletal disorders (MSDs). A labeling machine was proposed to address these issues. A needs assessment study was conducted among cashiers to identify issues, before conceptualizing potential solutions. A working prototype of a labeling machine was fabricated and tested among 10 cashiers. The prototype has shown initial promises in improving cashiers' wrist posture and reducing forceful hand exertion. Average strain index of the wrist posture was improved, while overall scanning time was unaffected with the machine compared to current manual method.

Paper 48

Android Malware Traceability Matrix for Digital Forensic Investigation

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Keywords: Digital Forensic, Traceability Matrix, Mobile Malware

ABSTRACT – Android-based mobile devices are among the prominent mobile devices use by the community and the amount of data stored in such devices is much less as compared to the amount of data stored in computers, but this small amount of data is potential to reveal useful information for mobile malware attack incident investigation. The traceability process in a mobile malware incident has become a crucial part of the digital forensic investigation process due to its capability to map the events of an incident from different sources in collecting evidence of an incident to be used for other additional investigation aspects. Thus, the need of finding and mapping evidence in Android platform has

also become more important. Based on this reason, this research project proposes the adaptability of the traceability matrix to represent the relationship in the digital forensic investigation process by assimilating the traceability features in the android base mobile device environment. The aim of this research is to construct the traceability matrix in mobile forensic investigation to identify the relationship between the components of forensic investigation and the incident events discovered on Android-based mobile devices.

Paper 49

Development of a Data Acquistion System for Blood Bank; Collection to Distribution System

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Keywords: Blood bank, blood types, data visualization, RFID tags, IoT

ABSTRACT – Blood is stored in a blood bank which is a bank of blood components, gathered as a result of blood donations that are responsible for collecting, storing and preserved for use of medical purpose. Investigation of the existing blood collection and tracking system is essential to efficiently manage, control and monitor all aspect of a blood bank. A comprehensive data acquisition system from collection location to a cloud-based system enables a paperless system with minimum human intervention to oversee the entire collection to dispatch process in a blood bank. The collected data allows connectivity between the blood banks to effectively conduct and systematically manage their daily activities within one integrated system.

Paper 50

Analysis and Development of a Self-Dimming Module for Road Traffic Signal

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Keywords: Dimming system, LED traffic light, energy optimization, LED, energy saving

ABSTRACT – The road traffic signals have been increasingly replaced with LED displays in the recent years. LED traffic signals contribute to saving for the municipality and taxpayers money at every intersection. The fact that LED traffic signals eliminates energy waste from heat and consumes less power makes them perfect for 24/7 operations throughout the year. The operation of a traffic light is required during day and night where with the current practices, the energy usage would be the same as there is no display dimming function embedded in the LED driver. In the context of Malaysia or most countries around the world, we can achieve 50% of the day and 50% of the night with ambient light and no ambient light. Thus, the research has proposed a dimming system for the LED traffic signals to optimize energy especially during nightfall that could help the local municipality to save up to 50%. The proposed system also ensure the road users to see the LED signal clearly especially during the heavy rain. The project will involve analysis of energy consumption of the traditional LED traffic signals compared to the proposed LED traffic signals with multiple dimming systems.

Paper 53

Investigation and Implementation of Beacon technology on Human Tracking system in Oil and Gas Environment.

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Keywords: Beacon, Internet of Things (IoT), tracking system, oil and gas, pipeline.

ABSTRACT – The oil and gas industry deals with various challenges and one of it is to comply with frequently changing environmental regulations in monitoring and management system. In this research, the focus was on oil and gas industry where remote monitoring of their employee movement performing along with a distributed location. To oversee the workers location through a comprehensive floor mapping system that indicates the real-time status of individuals is required on 24/7 basis. Therefore, the use of a beaconed system on an IOT platform will be applied to the proposed system. The system requires employees to carry a customized beacon badge that is a formal form of the ID of a specific staff. As the employee moves from one location to another location, badge ID will communicate valuable information through the Bluetooth gateway that coordinates the collected information to a cloud-based system for floor mapping process. Such a system ensures the safety of employees in the oil and gas industry when an unwanted accident occurs in their surroundings.

Paper 54

Design of Soil movement Sensor for Detection of Possible Landslide.

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Keywords: Strain sensor; IoT; Landslide

ABSTRACT – Landslides are among several phenomenon which causes serious damage to roadside, highways and properties in Malaysia. Heavy rainfalls promote soil movement, trigger the landslide and causing damages without warning. Landslides near the critical areas such as highways and residence housing need to be closely monitored since it could cause injuries and fatal accidents. This project aims at the design and test a sensor system to detect the soil movement and provide early warning on possible landslide to happen. The sensor is designed with strain gauge on cylindrical stainless steel road together with signal conditioning circuits. The result will indicate the accuracy of the sensing technique to detect soil movement and ultimately predict possible landslide through internet of things (IoT) platform.

Paper 55

High throughput implementation of RIPEMD-160 using unfolding transformation

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Keywords: Unfolding; RIPEMD-160; Throughput

ABSTRACT – Cryptographic hash function is important for digital signature, Hash Message Authentication Code (HMAC) and other data security application. There are different types of hash function such as MD5, SHA-1, RIPEMD-160, SHA-2 and others. In this paper, RIPEMD-160 algorithm has been chosen as one of the hash functions because of the parallel inner structure of this algorithm. The objective of this research is to design and implement RIPEMD-160 with high throughput using different types of methodology. Two types of methodologies are iterative and unfolding design. These methodologies were applied to this RIPEMD-160 design in order to analyze the results of maximum frequency, area implementation and throughput of the design on Arria II GX FPGA family device. By using unfolding transformation, the throughput of the RIPEMD-160 can be improved which is about 884.62 Mbps.

Paper 56

Automatic tool selection module for an adaptive CNC controller

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Keywords: Tool Selection; Adaptive Controller; STEP-NC

ABSTRACT – Selection of the proper cutting tool material for a specific work material is an important prerequisite for success in metal cutting processes. By having the proper tool selection can provide substantial advantages, including enhanced machining operation efficiency, increased machining productivity, improved surface finish quality and reduced cost. However, in current practice, most of this activity is done manually and always needed experience-based judgement by an expert. This paper proposes an automatic cutting tool selection system module as a part of an adaptive STEPNC compliant controller. In this approach, native planning including tool selection for a specific CNC machine tool is done automatically by controller itself. As a result, the level of controller autonomy can be increased, and the need of human intervention or manual inputs can be minimised.

Paper 58

Interaction between Work System Performances with Process of Greening the Supplier

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Keywords: Manufacturing Performance; Greening Supplier; Green Supplier Chain Management

ABSTRACT – This paper aims to explore the manufacturing performance level and the process in greening the supplier in implementing green supply chain initiatives. The relationship between the process in greening the supplier towards manufacturing performance also been investigated. For this purpose, the data that was collected using questionnaire-based survey among Malaysian manufacturing firms were analysed using the factor analysis and correlation test. From the results, it is showing that the manufacturing performance through the implementation of green supply chain management has a positive relationship to supplier activities.

Paper 59

LPG gas sensor detection using IoT

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Keywords: IoT, LPG Gas Leakage.

ABSTRACT – The number of deaths due to the explosion of gas cylinders in Malaysia has been increasing in recent years. Thus, there is a need for a system to detect and prevent the leakage of LPG. Before the development of electronic household gas detectors in the 1980s and 90s, gas presence was detected with a chemically infused paper that changed its colour when exposed to the gas. Since then, many technologies and devices have been developed to detect, monitor, and alert the leakage of a wide array of gases. Petroleum companies have Launched the customer-friendly service called as IVRS (Interactive voice Response) technique for their customers.

Paper 60

Modelling and implementation of IoT based Flood Observatory System (FOS)

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Keywords: Flood Observatory System, flood migration plan, monitoring system, IoT

ABSTRACT – Flash and seasonal flooding events have always been a concern in many countries around the world, particularly in the tropical region with heavy rain falls [1-4]. Traditionally, flood monitoring and forecasting are restricted to events recorded in the floodprone regions that are based on a dedicated noncentralized local-scale system. Such a system is detailed to local data (one-off) only and lack of knowledge to manage flooding events in a large-scale application by the relevant authorities. Thus, there is always a demanding urge to set an effective flood observatory system in line with the increasingly changing environment and growing population located in these flood-prone regions. The key focus area of implementation is to prompt the detection to alert relevant authorities and public in the flood-prone region as events are recorded in the system through IoT platform. An efficient and detailed characterization of flooding model linked to a centralized system would be an asset for relevant authorities to execute rescue and resources planning affords. The collected data is then further used in the analysis and evaluation of flood prediction system for flood mitigation plans by relevant authorities and research community.

Paper 61

Swaying Phenomenon of Express Railway Train in Malaysia

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Keywords: High speed train; train swaying; railway dynamic

ABSTRACT – Currently, only one type of train in Malaysia operated for express transport, which is the Express Rail Link (ERL). Due to high speed operation, 145 km/h, the trains suffers from swaying phenomenon and ride comfort lessening. This paper discusses the swaying phenomenon at several locations of the track. The dynamic performance of the train is also studied.

Paper 62

Possible Attacks by Manipulating IPv6 Tunneling Traffic on 6to4 Network

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Keywords: Transition Mechanism, Neighbor Discovery Protocol, Protocol-41

ABSTRACT – Tunneling mechanism becomes the most delicate transition mechanism compared to others because its offers easier way to start migrating from IPv4 to IPv6. 6to4 tunneling is automatic tunneling to conquer migration issues. In fact, it is believed to be susceptible from several type of attacks. Neighbor Discovery Protocol (NDP) message becomes a potential media to exploit by attacker. As a concern, this paper thoroughly describes on potential of attack reach through the automatic tunneling. It starts with deploying a controlled testbed network environment and running several scenario attack by manipulating NDP in tunneling traffic through 6to4 network. The expected result is to prove that attacking methods is feasible and effective.

Paper 63

IoT Bus Tracking System

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Keywords: IOT; Bus Tracking; Google Map

ABSTRACT – The problem of getting buses is often a nuisance to bus users. It is related to the question of when will the bus time will arrive, how long does it takes to wait or more important is to determine if there is any bus going to a station. This Internet of Things (IoT) Bus Tracking System is a proposed solution that introduced a mobile system that can detect the bus coordinate location. IoT Bus Tracking System is an android-based system that requires users to have the application on their Android devices; where the driver send their coordinate location to the server, and diverted to user's terminal. Iot Bus Tracking System is a Google Map assisted application, which displays the dynamic coordinate location of the bus on the user screen.

Paper 64

Modelling of exoskeleton robot for walking rehabilitation

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Keywords: Lower limb exoskeleton; Exoskeleton robot modelling; Rehabilitation robot

ABSTRACT – A walking rehabilitation exoskeleton robot is used for patient having walking difficulty to undergo walking therapy by wearing it on his lower body. To find out whether such exoskeleton can be used effectively for gait recovery, in the design stage, the robot need to be modelled. This paper presents the response of its joints to the inputs replicating human joints behaviour. Given mathematical inputs and actual experiment data, in block diagram form with PID controller, the model shows that the exoskeleton design is able to follow given joint trajectories thus guiding patient wearing it to recover back walking abilities.

Paper 65

Simulation of Ant Colony Optimization on Hole Making Performance

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Keywords: Simulation, Ant Colony Optimization, Hole making process

ABSTRACT – Hole making operation one of machining process widely used in industrial industry. One of the main criteria in determining the efficiency of machining performance in hole making operation is shortest machining time. In this paper, simulation approach has been done on hole making operation in order to minimize the machining time. Ant colony optimization (ACO) has been used to optimize the machining time. The result based on ACO has been compared with the result obtain based on Genetic Algorithm (GA)

Paper 66

The Evaluation of Machinability and Surface Roughness of AISI 1060 Carbon Steel in Conventional Lathe Machine

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Keywords: surface roughness; machinilibility; turning machine

ABSTRACT – The purposes of this research are to evaluate the relationship between machinability and surface roughness of AISI 1060 carbon steel under different conditions by using conventional lathe machine. In addition, the conditions have been used in this research are dry condition, coolant condition and lubricant condition. The machining parameters have been manipulated are spindle speed and feed rate. While for the cutting tool which is used in this research is carbide. After turning process and surface roughness test have been conducted, the result of each specimen will be compared and find the optimized machining parameter of each types of material by analyzing the value of surface roughness. The optimized machinability and surface finish at spindle speed 1100 rpm and feed rate 0.094 mm/rev.

Paper 67

Study on Temperature Profile of Internal Combustion Engine Exhaust Gas for Implementing Waste Heat Recovery

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Keywords: Internal combustion engine; exhaust gas; waste heat recovery

ABSTRACT – For a vehicle using internal combustion engine (ICE), the waste energy produced by exhaust can be harness by implementing waste heat recovery system. Temperature exhaust becomes a significant factor to be considered for recovering energy. The paper is study on the temperature profile from internal combustion engine of exhaust gas. A set of experiments are conducted in order to study the temperature profile by installing nine points of thermocouple that located along the exhaust gas pipe using the experimental vehicle. It is found that the temperature profile of exhaust gas is consisted in three segments that can lead to implement a waste heat recovery system such as Rankine Cycle system based on the boiling point of fluids.

Paper 71

FMEA and Reliability Analysis of Critical Equipment in the Malaysian Palm Oil Mill

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Keywords: FMEA; Reliability; Palm Oil Mill

ABSTRACT – The paper presents reliability analysis and Failure Modes and Effects Analysis (FMEA) of the critical equipment in the Malaysian Palm Oil Mill (POM) production system. It analyses the equipment failure behaviour and rank the criticality level according to the Risk Priority Number (RPN). The findings indicated that boiler as highest critical equipment in the POM. Meanwhile, the functional of FB5 (discharging steam to the steriliser) shows the highest RPN and it is considered as the most critical function in the POM. Reliability and FMEA analysis are beneficial for practitioners to manage system performance after understanding the behaviour and the effect of equipment failure in the production system.

Paper 72

Effect of citric acid composition on the citrate-nitrate auto-combustion synthesis of ZnO nanoparticles

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Keywords: ZnO; nanoparticles; auto-combustion

ABSTRACT – In this work, the citrate-nitrate autocombustion reaction has been developed as a new route in synthesizing ZnO nanoparticles. The decomposition characteristics of ZnO precursor gels are investigated in regard to citric acid compositions. Via this method, the aqueous Zn nitrate (Zn(NO3)2) was mixed with a calculated amount of citric acid to obtain a series of the mixture solution with citric to nitrate ratio, c/n from = 0.3, 0.4, 0.5, 0.6 and 0.7. The pH of the mixture was adjusted to pH≈7 by adding liquor ammonia and was heated at 250 °C on the hotplate with an infrared lamp at the top. During the drying process, the solution changed to the gel form before automatically combusted and transformed into fine ashes. The TG/DT analysis of the gel samples indicate that the Zn nitrate decomposed in a single step highly exothermic reaction at around 240 °C in samples with c/n ≤ 0.6. While the sample with c/n = 0.7 decomposed with double-step reactions at 240 °C and 300 °C.

Paper 73

Visual Perception Diagnostic Tools For Autistic Learners

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Keywords: Autism; Serious Game; Visual Perception

ABSTRACT –The objective of this paper was to develop autism diagnostic tool using serious games technique as a tool for special education teachers to diagnose visual perception problems among autistic students. A diagnostic tool known as Vi-Per Games was developed based on ADDIE model. Vi-per Games was able to diagnose autistic students without the needs for teachers to have some experience and knowledge of diagnosing visual perception. This prototype will be a high-tech solution to diagnose visual perception problems designed for autistic children.

Paper 75

The Acceptance of Customers Towards Online Booking Hotel In Southern Region, Malaysia

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Keywords: Acceptance; Online Booking; Hotel

ABSTRACT – This study explores the acceptance of customers towards online booking hotel in Southern Region, Malaysia. By using online hotel reservation system to help hoteliers and tourists both will get a lot of benefits, especially in terms of time. Information about setting up their existing business online requires a minimum travel agent. Now, the online booking section only has the development between different methods in terms of booking. In addition, online booking is also a rapidly growing phenomenon nowadays. A total of 40% of the rooms in the cities have used the online system in 2009 and growing. A total of 550 questionnaires were collected and analyzed and shows significance. Data for all variables are being tested using t test and ANOVA techniques.

Paper 76

The Control Approach of Vehicle Steer by Wire System by Implementing Single Input Fuzzy Logic Controller

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Keywords: SIFLC; vehicle steer by wire; SISO

ABSTRACT – The removal of mechanical linkage between the steering wheel and front wheel of Vehicle Steer by Wire (VSBW) system causes the traditional model-based control approaches complex and difficult to apply in practice. This paper presents investigations of single input fuzzy logic controller (SIFLC) for directional control and wheel synchronization of a VSBW system. Two SIFLC are developed for both steering wheel angle and front wheel angle. The SIFLC reduces the conventional two-input FLC (CFLC) to a single input single output (SISO) controller. The implementation environment is developed within Matlab/Simulink software for evaluation of performance in terms of input tracking capability, wheel synchronization and time response specifications.

Paper 77

The awareness level of manufacturing complexity management: An initial study on Malaysians industrialist perspective

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Keywords: Manufacturing complexity; sustainable

ABSTRACT – Manufacturing complexity (MC) has a various definition according to personnel background, experience, demographics, culture and any other related variable. Even though the term MC seems to bring a negative perspective in manufacturing industry, some scholars believed that MC may be beneficial in many other ways. A questionnaire survey has been done in Malaysian industry to assessed Malaysian perception on MC in general as well as the management of MC. Impressively, the result shows that Malaysian has a positive view towards MC where more than half of the respondents agreed that proper MC management is beneficial to the organization.

Paper 78

Density and Spalling behavior of Reactive Powder Concrete after Exposure to Fire Flame

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Keywords: Reactive powder concrete; Density; Spalling.

ABSTRACT – One of the most significant problem that threating the structural safety of buildings is the fire accident. so, it is important to understood the change in the properties of concrete due to exposure to high temperature. Reactive Powder Concrete (RPC) samples were designed, all set and cured for various ages; (3, 7, 28 and 56) days. Density and spalling behavior were determined and evaluated after exposure to real fire flame at (150°C, 300°C, 450°C and 600°C) as well as in (23°C) laboratory temperature. The samples that were not spalled acceptable and classify into two sets based on the cooling treatment. The results showed that there was an increase in the RPC densities for the specimens that were burned at 150 °C compare to laboratory temperature (23°C). A noticeable reduction was also found in the density for samples burned at 300°C and 450°C. At 600°C, about 20 % of the total RPC specimens were partially or completely spalled. In the other hand it was found that the density for samples cooled in water was higher than for others cooled in air.

Paper 79

Work Study in Assembly Process Based on MOST Integrating With Lean Ergonomics

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Keywords: MOST; ergonomics; RULA

ABSTRACT – This paper focused on work measurement using Basic MOST for activity in the cushion and front back jointing and airbag installation approach by lean ergonomics thinking. This paper highlighted on cushion assembly process activities by using MOST and investigates to minimisation of fatigue among the employees in the manufacturing line. Productivity and efficiency is the objective which is to be accomplished for any product manufacturing system in the assembly process. All this initiated which provided detailed information of assembly activities using RULA in CATIA software.

Paper 80

Estimation and identification of corrugated cardboard strength using tensile test

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Keywords: Corrugated cardboard; strength; tensile

ABSTRACT – The corrugated cardboard is widely used in manufacturing industries as a packaging, transportation material and number of other applications. However, the strength of the corrugated cardboard as a sandwich composite structure is not well understood and less studied about it especially using tensile test. The objective of this study is to estimate and identify the strength of corrugated cardboard using tensile test. Experiment were conducted, which used 3 different number (2, 4 and 6) of aluminum rod inserted thru corrugated cardboard. As a result, practical tensile test considering the glue bonding strength was estimated and the factory of these test method was identified. The average yield breaking for all 3 types of results was 53 [MPa] and the average strain breaking was 3.7%.

Paper 82

Structural Framework Design Analysis for Development of a Tidal Testing Rig

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Keywords: Rig; Von Mises; Optimize

ABSTRACT – In the field of simulation and analysis, many testing rigs worked out to simulate the real event for a controlled experiment. Main concern in developing a rig is the costs; considering its size and material used. In this study, a tidal testing rig (TTR) was design as resemblances of tidal phenomena by varying the speed and water flows during the test. The initial design of TTR was analyse with topology optimization. At the end of this study, an optimized design of rig structure was developed by comparing the weight, displacement and safety factor as well as the Von Mises stress value.

Paper 83

An evaluation of step-up DC-DC power condition ICs for energy harvesting applications

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Keywords: Boost converter; Power conditioning circuit; Energy harvesting.

ABSTRACT – This paper evaluates and compare the functionality of two DC-DC step-up power condition circuits based on the popular MAX757 and TPS61040 integrated circuits ICs. These two circuits are potential to be used as a power condition circuit of a wireless sensor node powered by energy harvester. The evaluation will discuss the circuit design, circuit complexity, starting voltage, power, and charging time of a supercapacitor. The findings reveal that the conditioning circuit that based on TPS61040 required a slightly higher starting voltage compares to MAX757. That makes TPS based circuit achieved higher output power and hence shorter charging time. Moreover, TPS circuit produced low ripple noise due to the high switching frequency comparing to the MAX circuit.

Paper 84

Revisit hot plate poling method of P(VDF-TrFE) thick film in sensing applications

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Keywords: hot plate poling; P(VDF-TrFE); thick film

ABSTRACT – This paper presents effect of hot plate polling method on the performance of the P(VDF-TrFE) thick film in sensing applications. Two different type top blocks (alumina and stainless steel) were applied on the P(VDF-TrFE) thick film during the polarization process to act pressure on the thick film for even heat distribution from the hot plate. The output voltage performance of P(VDF-TrFE) thick film was affected by surface-contact heat in between the P(VDF-TrFE) thick film and the hot plate. Therefore, using the stainless steel as top block instead of alumina block is the best solution to increase surface-contact heat transfer from the hot plate where the result of the experiment shows significantly improvement of piezoelectric performance for output voltage.

Paper 85

The Current Understanding on Leadership Styles Demanded by Talent Recruitment for Engineering Managers

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Keywords: leadership; engineering; managers

ABSTRACT – This paper unravels the current notable styles of leadership for engineering managers demanded in order to accomplish great organization performance. Furthermore, by critically reviewing the latest scholarly works on the issue, the authors in this paper hopes to motivate professionals or soon-to-be professionals in engineering fields to acquire the significant set of skills to be strong prospective managers in engineering industry and hence, directly combat the difficulty in leadership among engineering managers.

Paper 86

Effect of PEG addition on the microstructure of TiO2 coating on ceramic substrate

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Keywords: Titanium dioxide (TiO2) coating; polyethylene glycol (PEG); sol-gel

ABSTRACT – The effect of PEG on the microstructure of TiO2 coating prepared by sol-gel dip-coating on ceramic substrate was investigated. TiO2 films, without and with PEG were deposited on Green Innovative Glass (GIG) ceramic tiles. The crystalline phase of the coating was characterized using Glancing X-Ray Diffraction (GAXRD), while the coating morphologies and thickness were analyzed using Scanning Electron Microscope (SEM). Results showed that the addition of PEG reduces cracks in the coating and induces pores, thicker film and with the presence of anatase and rutile phase.

Paper 87

Experimental Investigation of Hybrid Rotary Ultrasonic Assisted Micro Drilling on Chemically Strengthened Glass

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Keywords: Rotary Ultrasonic Assisted Drilling, Micro-Hole, Chemically Strengthened Glass.

ABSTRACT – The usage of Chemically Strengthened Glass (CSG) has steadily increased mainly for electronic devices. Due to its superior strength and crack resistance, conventional drilling process for this material is almost impossible. Considering these facts, in this paper experimental investigation of hybrid rotary ultrasonic assisted micro drilling (RUAD) on CSG were investigated. The experimental investigation covered on various aspects on drilling CSG includes ultrasonic drilling parameters, clamping jig design, cutting condition and drilling strategy.

Paper 89

Addition of Ag into TiO2 Coating via Dipping and Precursor Method

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Keywords: AgTiO2, AgNO3, Ag nanoparticles

ABSTRACT – Addition of Ag into TiO2 coating were carried out by using two different methods. The investigated method is firstly by deposited TiO2 using silver nanoparticles solution and second is by using AgNO3 precursor. The prepared AgTiO2 were characterized by several analytical methods like X-ray diffraction method (XRD), scanning electron microscope (SEM) and energy dispersive spectroscopy (EDS). AgTiO2 coating produced via dipping the substrate into Ag nanoparticles exhibited less presence of Ag in the coating compared to coating produce by using AgNO3 precursor into the sol. Moreover, coating produced by using AgNO3 precursor exhibited Ag presence at both surface and the TiO2 layer with uniform distribution.

Paper 90

Application of design for manufacture and assembly (DFMA) method to passenger car door design

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Keywords: design for manufacture and assembly, DFMA, automotive

ABSTRACT – Design for manufacture and assembly (DFMA) guidelines aim to reduce part count, number of welds and number of operations. In this paper, the effectiveness of DFMA method is shown in passenger car design. Using Boothroyd and Dewhurst analysis, it employs a quantitative analysis of the design. Each part of the design is rated with a numerical value depending on its assembly requirements. The product is then redesigned, using the numerical values as a goal to be minimized. The outcome is a new design that has a shorter assembly time.

Paper 92

The Significance Effect of Peltier Liquid-Cooled Panel System for Air Conditioners Appplication

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Keywords: Peltier Effect, Cooling System, Peltier liquid-cooled panel

ABSTRACT – This paper focused on the replacement of the outdoor (compressor) unit with the System panel liquid-cooled air conditioners. The Peltier system is to replace the existing cooling system that uses gas to a cooling system using water by applying Peltier effect. The idea is to prevent from using refrigerant and to simplify the system using water as cooling agent. It will help in lower the cost of maintenance and electricity. The experimental is done in the 10 square feet and using peltier liquid-cooled panel as replacement for conventional outdoor unit (compressor). With the use of Peltier effect it can cool the water inside the water tank and flow it through the main system. This system is capable to produce up to18°C and 1.3 A/h in one hour period by using low fan setting. As conclusion, with proper design system this can be able to replace the compressor and lower the cost for maintenance.

Paper 93

Empowering Higher Education Data Openness with Selected Methodologies

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Keywords: Open Data Framework, Higher Education, Higher Education Open Data

ABSTRACT – The phenomenon of delivering an Open Data initiative becomes pervasive in every country. Communities nowadays are starting to consider Higher Education (HE) Open Data portal in deriving the ideas and understanding about HE aspirations; thus can assist them in making wise decision for the future. The needs of implementing Malaysia HE Open Data is crucial and demanding. In some countries, HE Open Data portal has been introduced as one of the best approach in encouraging student engagement and academic activities. This paper discussed about blended of methodologies that have been used towards data openness for selected HE countries.

Paper 94

A Prototype of Wireless Indoor Surveillance Using Raspberry Pi Robot Car

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Keywords: IoT; Indoor Surveillance; Raspberry PI

ABSTRACT –Using robot cars has been the best choice for surveillance of the unrecognized area. This project proposed a prototype of Wireless Indoor Surveillance Robot Car using Raspberry Pi to enable real time video surveillance and which controlled by smartphone or laptop. From the test, the monitor is able to capture real time image and also detect the battery remaining power which saves the management cost.

Paper 95

MyDentist – A Proposed Interactive Patient Dental Clinical Information System with RFID based Patient Registration

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ABSTRACT – This paper presents MyDentist, a proposed interactive Patient Dental Clinical Information System with RFID based patient registration to reduce the overall time for a dental patient visit. This system, MyDentist, was developed for the dental clinic in Universiti Teknikal Malaysia Melaka (UTeM). Requirements elicitation was done throughout a nine-month period and key staff including dentist and nurses in the dental clinic. The system was tested by clinic staff and results show that MyDentist reduced overall visit time per patient. The result of the implementation dramatically improves the performance of certain workflow process, particularly during the patient queue and doctor patient consultation.

Paper 96

Augmented Reality with responsive web for body organ flash

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Keywords: Augmented Reality (AR), Responsive Website, Flash card

ABSTRACT – This study is about the modern technology which is Augmented Reality (AR) being applied in the education sector as new teaching materials. This technology is capable to display virtual object in reality via application. For example, a student is able to view the entire angle of an organ through AR compared only 2d image or picture on the textbook. This creates a new way where a class or lesson can be conducted more interesting. Responsive website acts as a platform to cover the information which do not included in the application. Users able to interact with the application through direct input or touch screen to zoom and rotate. Also via button, users can view or hide the information or the label based on their preference.

Paper 97

Effect of welding parameters and cleaning with acetone on cold rolled mild steel thin plate

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Keywords: Welding; cold arc; acetone

ABSTRACT – This paper investigates the effect of the acetone and welding parameters on the thin plate of cold rolled mild steel. The welding processes were conducted by Kuka KRC4 robotic gas metal arc welding (GMAW), whereby a jig was used to clamp the plate and a mild steel wire of ER70S-6 as the filler material. The results showed that with the current 39A, voltage 14 V, constant welding speed which is 0.4 mm/min and without cleaning the surface of thin plate with the acetone, the weld have holes on the surface after the welding process.

Paper 98

Development of Interactive Hologram (i-HO) System

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Keywords: Hologram; interactive; engine

ABSTRACT – Interactive Hologram (i-HO) is an interactive system for viewing real-time three dimensional (3D) content on a holographic pyramid panel. This system consists of i-HO engine and i-HO projection panel. Interactive Hologram engine is a program for processing 3D content, while i-HO projection panel is a pyramid viewing panel that enable the view of each side of 3D content. The proposed system opens the possibility for creating an exciting 3D interactive content. This paper presents a novel development of an interactive hologram which successfully overcome the limitation of traditional hologram, such as linear and video-based, no interaction and limited content representation.

Paper 99

Heart Rate Trend of Composite Manufacturing Workers in Hand Layup Process

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Keywords: Hand layup process; heart rate; ergonomics; composite manufacturing

ABSTRACT – Hand layup is considered as a manual labour process which uses physical strength while working. During work, heart rate is the simplest tracker of a human physical state. Thus, in this paper, heart rate is collected in between work tasks. The aim of this paper is to investigate the effect of hand layup process on the heart rate behaviour of workers in a composite industry. Results show that more than 40% of the workers in one of the composite manufacturers in Malaysia, had heart rate level that was out of the normal resting heart rate level at 62 to 78 bpm. The trend illustrated that the workers' average heart rate had nearly exceeded the boundary of normal heart rate level. In conclusion, the hand layup process can be classified under the moderate intensity activity according to the average heart rate data obtained.

Paper 100

Hybrid Wireless Range Extender : LTE (3G/4G) Over Wi-Fi

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Keywords: Hybrid Wireless; D2D Communication; IoT

ABSTRACT – Today a growing number of people need to work on laptops with wireless Internet connection. There are two common wireless Internet access solutions: wireless local area network via hotspot, and high speed wide area cellular network via mobile broadband. The increasing of modern devices and sensors everywhere and enter it in many things in world, for this reason the demand for the Internet is increasing. The aim of this project is to solve out of coverage problem and support D2D communication in IoT environment. We also compare the prototype performance and make comparison between with/without using our proposed prototype.

Paper 102

Modeling of Spray Angle and Nozzle Size to Gas Release in Processing Urea Fertilizers by Using Fluidized Bed Granulator

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Keywords: Fluidized Bed Granulation; Ammonia release; Simulation

ABSTRACT – The fluidized bed granulation process is used in various applications in areas like pharmaceuticals, chemical, fertilizer and various industries. This process takes place inside a fluidized bed column where a binder solution is sprayed onto the powder in order to granulate the powder. Controlled spraying and optimum nozzle diameter of the binder solution is necessary for an optimal process. It is important to determine dependence of spray angle and nozzle properties at different scales used during development, as this information can be used as a basis for establishing process parameters for the manufacturing process. This paper presents the influence of ammonia release with multiple parameters used for spray angle and nozzle size characteristics of starch urea solution sprayed for the top spray granulation process in a fluidized bed chamber.

Paper 104

Yaw Tracking Performance for a Person-Following Robot

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Keywords: Yaw Tracking, Inertial Measurement Unit, Robot Control

ABSTRACT – This research focuses on the yaw tracking of a human with an Inertial Measurement Unit (IMU) for the purpose of a person-following robot. Since robot assistance is becoming widely used in the community, it is important that robots could follow a human being for purposes such as to carry items or to maintain security. The yaw tracking was implemented by the following method; the human holds (or wears) the IMU which detects the yaw angle of the human. The yaw angle is then transmitted to the robot wirelessly and the robot uses the yaw angle of the human as reference and adjusts its orientation accordingly. Experiments were done by adjusting the orientation of the human between 0 to 90 degrees at different angles. The results show that, although the yaw rate data is approximated in integers, the tracking was successfully done with average of less than 5 degree of error in the experiments.

Paper 105

Development Biosignal Monitoring For Insomnia Using ECG Prediction

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Keywords: ECG; Insomnia; PSQI

ABSTRACT – Insomnia is the most common medical disorder found at young people and elderly. Prolonged sleep disorders will result in the biological sleep cycle changes, decreased body resistance and work performance, irritability, depression, lack of concentration, fatigue, which can ultimately affect the safety of self or others. The level of sleep disturbance is determined, commonly by using Pittburth Sleep Quality Index (PSQI) questionnaire on psychological and also Polysomnography for physiological measurement, which is a combination of EEG, EOG, EKG and so on. For that purpose, an electrocardiogram (ECG) instrument is used to record cardiac activity at any given time. In this research, we studied the relationship between PSQI questionnaire with the prototype ECG in sleep insomnia patients. The ECG measurements that show the electrical signal activity of the heart are used to diagnose and treat heart disease.

Paper 106

Development of user interface for cyber physical system (CPS) integrated with material handling system

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Keywords: Cyber-Physical System; Material handling system

ABSTRACT – Cyber-physical system (CPS) is one of the key technologies of Industry 4.0. CPS is a crossing system structure between physical and software component to enable different component to exchange information. The existing open platform communication (OPC) has enabled researchers to communicate between programmable logic controller (PLC) and simulation software, thus becoming the based structure for CPS. To interact with the physical system, a user interface was developed. It can control a dedicated material handling system. Hence, the objective of this investigation is to develop a user interface that will improve the performance and capabilities of the system.

Paper 107

Enhancing the Vehicle Reservation for Decision Making

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Keywords: vehicle reservation; decision making; java

ABSTRACT – The conventional approach required the admin or even the staff to enter the record manually which is not environmental friendly by consuming big portion of papers. Moreover, the admin or even the staff would have to spend a considerable amount of time in order to locate the relevant maintenance record. The conventional approach of keeping data manually via paper based approach is also having the risks to have data redundancy, and to the worst extend, the data might be loss or stolen leaving no way to track the previous records. This objective of this project are to design and develop vehicle reservation system that ease the information tracking of student, driver, and bus destination, also to evaluate the usability and user experience upon the usage of bus reservation system.

Paper 108

Facile preparation of cellulose nanocrystals of banana trunk fiber via acid hydrolysis method

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Keywords: Cellulose nanocrystals; Banana; Acid hydrolysis

ABSTRACT – Lignocellulosic fibers have been received an intense attention to many researchers due to their tremendous advantages. The aim of this study is to prepare cellulose nanocrystals (CNC) that derived from banana trunk fibre (BTF) via acid hydrolysis method. The effect of hydrolysis time and temperature correlation is studied in order to find the optimum conditions of CNC of BTF which are possessed good crystallinity in their crystal structure. Crystallinity index and crystallite size is determined and evaluated by using x-ray diffraction spectrometer (XRD). Thus, the CNC has been successfully produced with the optimum condition at 90 ℃ for 30 minutes by the 31.73 % crystallinity index and 5.47 nm of the crystallite size which act as a sustainable source due to the cheap, ecofriendly and its availability while preventing pollution to the environment that caused by BTF wastes.

Paper 109

Land Cover Change Detection Using Multispectral and Multitemporal Remote Sensing Data

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Keywords: Land cover; change detection; remote sensing

ABSTRACT – Land cover classification is an essential process in remote sensing work flow. For this purpose, supervised methods have been preferred by many researchers due to its practicality and accuracy compared to unsupervised methods. Nevertheless, there have been very minimal effort to evaluate the performance of different supervised methods particularly for tropical land covers such as those in Malaysia. The study reported in this paper aims to detect land cover changes using multispectral and multitemporal remote sensing data. The data come from Landsat TM satellite covering the area of Klang, located in Selangor, Malaysia. Landsat bands 1, 2, 3, 4, 5 and 7 are used as the input for three supervised classification methods namely maximum likelihood (ML), neural network (NN) and support vector machine (SVM). Region of interests (ROI) are drawn for each of the land cover classes in order to extract the training sets. The accuracy of the generated classifications are then assessed by comparing the classifications with a reference data set using a confusion matrix in which showing SVM gives a more stable and realistic results compared to ML and NN.

Paper 110

Cutting Capabilities for Macro-Micro Cylindrical Shapes Component by Wire Electrical Discharge Turning (WEDT)

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Keywords: WEDT; micro cylindrical; micro fins.

ABSTRACT – This paper presents on evaluation for cutting capabilities of wire electrical discharge turning (WEDT) for combinatorial macro and micro size dimension features. The experimental result demonstrated WEDT found has capability to formed blending of micro dimension straight shafts and fins (~200 µm) to the macro dimension of ellipse, cone and hour glass features that made by Ti6Al4V as materials.

Paper 111

A New Residence Determination Method For User Authorization In Geosocial Network Neighborhood

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Keywords: Geosocial network; Authorization; Virtual neighborhood

ABSTRACT – Geosocial network neighborhood application allows user to share information and communicate with other people within a virtual neighborhood or community. User authorization is an essential part in a geosocial network neighborhood, to specify access rights and privileges to resources. Therefore, determination of residence status is important to enforce access control in the virtual neighborhood application. In this paper, a new method for user authorization using residence determination status is presented. To identify resident status, a combination of successful self-check-in track record and minimum amount of threshold frequency is needed to upgrade the resident profile. As a result, the newly proposed method enables the geosocial application to represent different resident profile: temporary and permanent residency.

Paper 112

The effect of voltage on weldment size cold rolled steel sheet joint using low arc joining technology

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Keywords: Arc welding; Voltage; Cold-rolled; Automotive

ABSTRACT – The present trend in the fabrication industries is the use of automated welding processes to achieve high precision and to increase the rate of the productivities. ColdArc welding is a modification of the short-circuit transfer mode for thin plate requirements. The main objective from this experiment is to identify the effects from the parameters in sizing the weldment which is normally related to voltage on cold rolled sheet plate joint. It is found out that, this kind of joint design and geometry shows good value in weldment reinforcement. It has been proven that increasing the voltage values will increase the bead width size.

Paper 113

An Analysis of Radio Frequency Connector Insertion Loss Measured by Network Analyzer From 300 kHz Until 8.5 GHz

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Keywords: Calibration; Radio Frequency; Network Analyzer

ABSTRACT – This paper is an analysis of Radio Frequency (RF) connector insertion loss measured by network analyser from 300 kHz until 8.5 GHz. The chosen connector was a 3.5 mm male to 3.5 mm female connector as device under test (DUT). The purpose of the study is to study the characteristic of the DUT insertion loss against the frequency swept across it. Meanwhile the reference standards used in this study were National Instruments PXIe-5632 network analyser and National Instruments Automatic Vector Network Analyzer (VNA) calibration module.

Paper 114

GLIDer: Fleet Management Solutions using Location Intelligence

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Keywords: location intelligence; fleet management; spatial analysis

ABSTRACT – Fleet management is the optimization of costs, risks and efficiency in fleet operations. Organization such as university rely on fleet managers to control costs, maximize profitability, and mitigate risks of their fleet vehicles. Daily and weekly log sheets which used text-based approach to record vehicle usage and defects including the address caused spatial analysis cannot be conducted and presented accurately. Hence, lacking in-depth understanding of behavior and influences. We aim to address this problem by developing a GeoLocation Intelligence Data (GLIDer) tools which may conduct spatial analysis and provide visualization wizard to enhance the vehicle fleet management system. We show that GLIDer can address multiple vehicle issues and tasks at once.

Paper 115

Integration of Hash Function and Salted Algorithms in enhancing Security of QR Code Gate System

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Keywords: QR Code; Hash Function; Salted Algorithms

ABSTRACT – Our project deals with a QR Code Gate System that uses the integration of Hash Function and Salted Algorithms in enhancing the security aspects. This type of a gate system can be used in many type of organization, where the salted algorithm is implemented to protect the hashing value and minimal the possibility from any attack. It implemented in a system that using a valid staffs' QR code pass card to activate the gate. The system is based on VB.NET, PIR motion sensor, servo motor, Arduino microcontroller, Piezo buzzer and camera.

Paper 116

Surface roughness comparison between printed part manufactured via open source and commercial 3D printing machine

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Keywords: Fused deposition modeling (FDM); 3D printing; additive manufacturing (AM)

ABSTRACT – Additive manufacturing (AM) or 3D printing has been growing as a new trend in manufacturing in the era of Industrial Revolution 4.0. However, the cost of owning a commercial and high quality 3D printer is still considerably high and not affordable to everyone. Thus, a low cost 3D printing machine has been developed in house using open source system and later was analyzed for its performance on surface roughness. Comparison was made between the in-house developed 3D printer to the commercial 3D printer. The experiment shown that the developed 3D printer has acceptable printing quality in comparison to commercial 3D printer.

Paper 117

Optimization of SDN Controller for Networks Management Performance

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Keywords: Optimization; SDN; Network

ABSTRACT – Software-defined networks (SDNs) are a new type of network for solving the limitations of legacy networks. In a modified approach, by adding feature to SDN to improve certain performance metrics of a network, such as packet loss and link congestion. The improvement of such metrics leads to an improvement in the total throughput of the network. This research focuses on network performance in software-defined networking. A Mininet emulator tool is used to propose an SDN, and Floodlight is used as the SDN controller. Moreover, the spanning tree algorithm is implemented on the SDN controller to handle loops, delays and packet losses, thereby optimising network performance.

Paper 118

STEM Engagement of 5-axis Industrial Pick-and-Place Pneumatic Robotic Arm Remote-Manipulation

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Keywords: Industrial Robotics, Pneumatic pick and place, STEM education, Remote-manipulation

ABSTRACT - This paper presents a first account of a public interaction with a remote-manipulation of an industrial pneumatic pick and place robot during a public STEM engagement. The aim of the engagement is to build public and student awareness of the advancement of remote-manipulation technology, and to observe their acceptance and interest of the system. The history of STEM education and remotemanipulation of robotic system are provided in the first part of the paper. The second and third part of this paper is dedicated to the preparation and implementation of the proposed system in the field. The last section is dedicated to the survey results and conclusion of the project.

Paper 119

Effects of eco-innovation and market demand on sustainability performance

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Eco-innovation, market demand, sustainability performance

ABSTRACT – This study used open system perspective to investigate the effect of eco-innovation on sustainability performance as moderated by market demand. Specifically, it is postulated that market demand interacts with the relationship between eco-innovation activities which lead to superior sustainability performance. A cross sectional survey among one hundred and twenty nine ISO 14001 certified manufacturing companies in Malaysia was conducted. Data were analysed using PROCESS SPSS to identify the moderation effect. The results showed that eco-innovation and market demand significant affect sustainability performance with R2= 0.512. However, market demand does not moderate the relationship between eco innovation and sustainability performance.

Paper 121

Hybrid cellular layout for jobshop manufacturing: A case study

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Keywords: cellular layout, jobshop, hybrid

ABSTRACT – This study applies the concept of hybrid cellular layout to design a new layout for a jobshop. The production flow analysis was performed through the product routing and machine-part matrix. Similarity coeffcicents were also calculated to analyze the machines interdependencies. Through the creation of layout modules, the proposed layout design is able to reduce the traveling time and distance significantly.

Paper 122

A Technology Foresight Study on HR Apps: Identifying the Drivers

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Keywords: Technology Foresight, human resource apps, future of works

ABSTRACT – Emerging flexible types of employees has necessitated the use of HR Mobile Apps where HR functions could be accessed anywhere. However, future use of HR Mobile Apps is not well known in Malaysia. The purpose of this study was to identify drivers of HR Mobile Apps usage among Multi-National Companies (MNC) in Malaysia. Foresight tools such as STEEPV analysis and impact-uncertainty were used to answer the research questions. The drivers of the HR Mobile Apps were identified by using STEEPV analysis and questionnaires were distributed to forty-two MNC in Klang Valley. It is found that external integration and human resource digital mindset scored the highest in impact-uncertainty analysis.

Paper 123

Effect of Various Coating Materials on Wear Properties of Electrodeposited Composite Coating

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Keywords: Nickel-Phosphorus, AA7075, Quarry Dust, Electrodeposition

ABSTRACT – The pure nickel, nickel-phosphorus (Ni–P) coating and nickel-phosphorus- quarry dust (Ni–PQD) composite coatings were deposited on zincated aluminium alloy 7075 (AA7075) substrate by using electrodeposition technique. The electrodeposition process was carried out for 1 hour at 40ºC under the current density of 3 A/dm2 in a modified nickel Watt's bath containing QD particles at 50 g/L. The produced composite coatings and QD were characterized and tested using scanning electron microscopy (SEM), particle size analyser (PSA), X-Ray Fluorescence (XRF) and wear test. The present of QD in the coatings has improved the wear resistance due to the presence of high silica and alumina content in the quarry dust particles.

Paper 124

Musculoskeletal Disorder Prevalence: A Comparative Study among Manufacturing Industries

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Keywords: musculoskeletal disorder, furniture, food, electronics

ABSTRACT – Prevalence of Musculoskeletal disorder (MSDS) has dramatically increased from five cases in 1995 to more than 400 cases in 2012. Manufacturing workers are more at risk due to the nature of their works which include excessive force, repetitive movements and poor posture. However, different industries pose different contextual risks based on the production processes. This study attempts to compare MSDS among employees from three manufacturing industries namely electronics, furniture and food and beverages. It is found that there are significant differences of musculoskeletal disorder prevalence among industries for all body parts except for upper back.

Paper 125

A framework of project-based learning for enhancing student competencies through digital video production

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Keywords: Competencies; project-based learning; framework.

ABSTRACT – This study research was aims to provide a framework, a set of guideline for secondary school pedagogical change. Thus, project-based learning(PBL) is a key to support students more competitive in an external environment. Students produce an educational video based on the topic they are learning. Integrating technology in PBL to enhance student competencies based on education curriculum Malaysia, which consist of communication, collaboration, creation, critical thinking. The data were collected through a questionnaire for 63 respondents. The results show significant positive results in terms of student competencies. PBL framework provides appropriate structure for determining all level of student competencies.

Paper 126

Anthropometric parameter consideration in designing lumbar support device for manufacturing industrial workers

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Keywords: Lumbar support device; Anthropometry; Manufacturing industrial

ABSTRACT – Global competition will influence many of manufacturing industries in their product marketing and results in neglecting their workers' healthcare. Back pain is considered as a common disease in manufacturing field because of the condition during working. Anthropometry has been used as a guideline in designing this product towards the comfort and ergonomic. This parameter can create the design that can fit to Malaysian body shape. An analysis was used as a measurement for the whole body and specific dimension in designing lumbar support. The data was collected using manual measuring method with standard equipment that measure human body shape. This parameter was described for three percentiles which are 5th, 50th and 95th percentile. This study provides a fit lumbar support parameter that suit to the Malaysian population.

Paper 127

The Influence of Difference Quenching Technique on Bobbin Tool

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Keywords: Bobbin tool; hardening; quenching

ABSTRACT – The main thing that ensures joining in bobbin friction stir welding process is the strength of bobbin tool to resist the force and torsion when fully penetrate through the material to be welded. The common material used for fabricating the bobbin tool is AISI H13 tool steel. In order to increase the mechanical properties of the fabricated bobbin tool often the hardening process been carried out. However, the formation of sludge and scale on the bobbin tool lead to the slip of bobbin tool from tool holder during welding. This sludge and scale formed by the effect of the quenching process. This study investigates the different quenching techniques in order to improve the strength of bobbin tool as well as reducing the formation of scale on the bobbin tool.

Paper 128

The Effect of Physical Environment Comfort towards Employee's WellBeing: A Case Study at Malaysia Technical University

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Keywords: Physical Environment Comfort; Employee Well-Being; Sick Building Syndrome

ABSTRACT – This research aims to study the effect of physical environment comfort towards employee's well-being at one of the technical university in Malaysia. Besides, the study attempt to identify the most significant health problem faced by the employees related to sick building syndrome (SBS) symptoms. The research focused on faculty buildings consist of administrative office, lecture rooms and common rooms. The study measured four main wellbeing symptoms; ophthalmic, respiratory, psychological and dermal. The findings revealed ophthalmic symptoms are the highest syndrome with three major symptoms experienced by the employees were strained eye or tired eye (36.7%), headache (25%), and light-headedness (25%). The correlation analysis indicated the physical environment comfort of lighting and visual factors not significantly affect employee's well-being, while the noise factor negatively significant to employee's well-being. The findings highlighted that the physical work environment does not affect employee's well-being. The study also proved that the establishment of DOSH committee at the university level does affects the overall percentage of employee's well-being.

Paper 129

High performance of superhydrophobic durian shell-magnetite electromagnetic wave absorber for UHF RFID application

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Keywords: Magnetic sheet; Durian shell; RFID

ABSTRACT – This paper investigates the absorption performance of durian shell-magnetite nanocomposite sheet as electromagnetic wave absorber in ultra high frequency (UHF) radio-frequency identification (RFID) application

near metallic environment. A novel and green electromagnetic wave absorber of flexible, light, thin and low cost nanocomposite sheet that can work in high frequency range is invented. RFID encountered a problem to read the information transmitted from tag that attached on metal which may lead to application disturbance. Therefore, magnetic sheet that functioned as electromagnetic (EM) wave absorber is used to solve the problem. In this study, durian shell (Durio zibethinus Murray) cellulose fiber was embedded with Fe3O4 via lumen loading technique and the surface of nanocomposite sheet was coated with stearic acid hydrophobic formulation. Different UHF RFID reading distances were achieved at different % of degree of loading and different saturated magnetization. SEM micrograph shows that the Fe3O4 nanoparticles are existed and well distributed in the durian shell lumens fiber. The microwave absorption properties of the sheets were tested by ultra high radio-frequency identification RFID. The RFID reading distance of the samples increases continually with the increasing of loading degree and magnetization of samples.

Paper 130

Performance Evaluation of Routing Protocols in Manet

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Keywords: MANET; Ad-Hoc; MANET routing protocols

ABSTRACT – Mobile Ad-Hoc Network (MANET) is a collection of wireless mobile hosts forming a temporary network without the aid of any stand-alone infrastructure or centralized administration. The primary goal of any ad-hoc network routing protocol is to take on the challenges of the dynamically changing topology. The design of these routing protocols is challenging due to the mobility and the dynamic nature of the mobile adhoc networks. In this study, the MANET characteristics and challenges are highlighted. In addition, acomparison was conducted between three (3) protocols; namely, DSR, DSDV and AOVD in terms of both properties and performance in order to determine the impact of routing protocol selection in critical information exchange in MANET.

Paper 131

Formulating ensemble mobile malware detection through n-gram system call sequence features

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Keywords: Mobile Malware Detection; Ensemble method; N-gram

ABSTRACT – The extensive usage of mobile devices among the community has turned the mobile technology as one of the driven force in the increase of malware attacks. The rapid evolution of mobile malware has overcome the malware signature detection approach. This approach requires a constant signature update and only able to detect a known mobile malware. Anomaly detection approach can overcome this issue but using a single classifier can degrade the classification accuracy. Based on this reason, this research formulate an ensemble of different n-gram system call sequence features to improve the accuracy of mobile malware detection. However, the determination of the best number of sequence (n) to be used as the features have become an issue. In order to resolve this drawbacks, this research introduces an approach that applied different ngram sequence call feature to construct n number of classifier models. The probability output of each classifier is then combined to produce a better prediction output that determines the mobile application is benign or malicious. The combination of this multiple-classifier produces a better predictive performance compared to a single classifier.

Paper 132

Development of Integrated Vaccine System (IVS) for Vaccination Database

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Keywords: Vaccine, Integrated System, Database, Data Storage

ABSTRACT – The conventional manual method of recording vaccination information is less organized and difficult to be retrieved back. IVS is an integrated information technology system that tries to address the weaknesses in the conventional method by preparing a database storage for vaccination information and also mobile application to remind the parents of the next vaccination date. IVS is still in the early development with positive progress.

Paper 133

Estimation of Aboveground Biomass at Species Level in Tropical Rain Forest Using High Resolution Remote Sensing Satellite Data

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Keywords: Aboveground Biomass; Species; Remote Sensing

ABSTRACT – The estimation of aboveground forest biomass at species level is crucial due to the high variability in tropical forest tree species. Therefore, this study aims to estimate aboveground biomass (AGB) at different tree species by using remotely sensed data. The study was carried out at Forest Research Institute Malaysia (FRIM), Kepong Selangor. High resolution WorldView-2 satellite image was used to classify tree species based on nearest-neighbor method, where the AGB was estimated by using classical allometric equation. A number of sample trees were measured on the ground and five species were chosen namely Neobalanocarpus heimeii, Dryobalanops aromatica, Dryobalanops oblongifolia, Shorea bracteolata, and Dipterocarpus baudii, respectively. Classification of these species was based on spectral signatures measured on the leaves samples by using spectroradiometer. Correlation analysis was applied to estimate the AGB at individual stand from spectral bands and vegetation indices derived from the images. The result indicated that the polynomial function produced the best correlation between NIR2 and AGB with a coefficient of determination (R2) of 0.685 and RMSE at ±2.539. As a conclusion, this study successful to show that Worldview-2 satellite image able to be used to estimate aboveground biomass at different species at high density tropical rainforest.

Paper 134

Development of Brady-Tachy Heart Automotive (B-T Heartomotive) Device for Monitoring Heart Rate during Driving

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Keywords: Brady-Tachy, Heart Rate, Automotive, Device, Driving

ABSTRACT – The rate of car accidents is worrying nowadays. Other than problems in driving attitudes and skills, road accidents are also caused by uncontrollable factors such as medical conditions and drowsiness. These factors can be avoided by having early detection. B-T Heartomotive device is a device that can detect early signs of drowsiness and health problems by measuring the heart rate of the drivers. Heart rate measurement can reveal a lot about the physical conditions of an individual. B-T Heartomotive device consists of three main components: the sensor, microcontroller and heart rate monitor.

Paper 135

Preliminary Study: FSI Modeling of Blood Flow Simulation on Different Cerebral Aneurysms Geometries

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Keywords: Blood flow, Modeling Simulation, Cerebral Aneurysms, Fluid Structure Interaction.

ABSTRACT – A ruptured aneurysm can immediately become life-threatening and requires prompt medical treatment. Previous practices depended on medical image prediction and physicians' experiences. Nowadays, the development of computational technology such as numerical and modeling simulation has enabled good prediction to be done onto cerebral aneurysm patients. This paper focuses on modeling the blood flow simulations in different simplified aneurysms models. Fluid Structure Interaction (FSI) method was used to simulate these models. The results resonated well with the current studies on wall shear stress (WSS) distribution and pressure differences between geometry A, B and C.

Paper 136

Development of Exoskeleton Robotic Leg (ExRoLEG) for Kids with Cerebral Palsy

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Keywords: Exoskeleton, Cerebral Palsy, Robotic Leg, Kids

ABSTRACT – Cerebral palsy is a neurological disorder that happens to a child's brain due to injury or malfunction during growth. This primarily affects body movement and muscle coordination. Our exoskeleton robotic leg, (ExRoLEG) aims to act as a rehabilitation device that supports children with cerebral palsy to walk. This includes walking posture, walking pattern and strengthening. This study focusses on the development of exoskeleton robotic leg for allowing kids with cerebral palsy disorder to achieve early walking independent age compared to conventional methods. Various factors are considered to avoid risks or failures including materials, safety, engineering calculations and user friendliness.

Paper 137

Improvement of a Visual-based Anthropometry Measurement System using Microsoft Kinect and a Rotating Platform

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Keywords: Anthropometry; Kinect; Camera

ABSTRACT – This study involves an improvement and setup of a new anthropometry method using Kinect system with respondent rotary station. In general, measurements using visual technology have been claimed as a more accurate tool to obtain anthropometric data compared to the conventional method using manual tools. However, most of the research that has been done so far does not involve the measurement of a whole human body for ergonomics study using Kinect system. This research attempts to improve a new method using Kinect system as an advanced tool to support whole body measurement study through respondents rotary station. A 3D human model is generated and then measured using specific software. Next, the system measurements are validated and compared with the manual measurement method's results. The findings from this study can contribute to the product design requirement and applications that involves human body measurement to gain comfort for any product's user.

Paper 138

Implementation of regular expressions in designing CSDES interpreter

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Keywords: MATLAB GUI; regular expressions; CAD/CAM

ABSTRACT – Normally, control system design utilizes input signal sourced from Simulink library either to evaluate tracking performance or disturbance rejection. This paper introduces CAD/CAM system as the input signal in control system design. With the aim to integrate between CAD/CAM system and control system, an interpreter namely "CAD/CAM-Simulink Data Exchange System (CSDES)" is developed. This paper explains the design of regular expressions utilized in extracting x and y data positions from ISO 6983. Results show the extracted data then be used as one of input signal in control system design.

Paper 140

Comparison of Tracking Performance between Nonlinear Proportional-Integral-Derivative (NPID) Double Hyperbolic Controller and NPID Controller

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Keywords: NPID Double Hyperbolic Controller; NPID Controller; Tracking Performance

ABSTRACT – This paper presents the comparison of performance evaluation of controllers under cutting force disturbance with spindle speed of 2500 rpm. Nonlinear Proportional-Integral-Derivative (NPID) Double Hyperbolic controller design is more effective in improving the tracking performance of the system compared to conventional NPID controller. The performance evaluation with two different speeds of motor; 0.2 Hz and 0.4 Hz is conducted based on maximum tracking error and root mean square error (RMSE). The experimental results of NPID Double Hyperbolic controller show the improvement based on tracking performance by more than 80% compared to NPID controller.

Paper 142

Development of Energy Regenerative System from Air Conditioner Waste

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Keywords: Wind Turbine; Renewable energy; Air Conditioner Waste

ABSTRACT – Nowadays, the global energy consumption is increased rapidly especially in the developing countries. This is due to the high of the population and economic growth that lead to higher demands of the energy that only can make it in a critical situation. Thus, it has to be conserved in good ways so that these non-renewable energy sources would not be depleted in the future. Hence, the aim of this project is to develop an energy regenerative system from air conditioner waste. Wind turbine mechanism is been applied throughout this project. And the objective are to design and develop a prototype of Waste Kinetic Energy Recovery System (WKERS) and analyze the performance of prototype with the experimental test.

Paper 143

The Effect of Heat Treatment to Tensile Properties of Intermetallic Nickel Aluminide for Wheel Hub Airless Tyre Application

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Keywords: Tensile, Intermetallics, Wheel Hub

ABSTRACT – This paper presents the effect of heat treatment to the tensile properties of the proposed material for Wheel Hub airless tyre. Since the impact that is receive by wheel hub can be up to 500°C, heat treatment process is applied to the intermetallic nickel aluminide to see how it affects the material's structure and performance. After heat is applied, the specimen will run the tensile test. This testing can show the mechanical behaviour of the material easily. In order to validate the result, finite element analysis (FEA) will be done to the wheel hub model by applying the output obtain from the tensile test as an input to the analysis. For simulation, static analysis will be applied. As a result, annealed 500°C will show best performance in terms of safety factor of more than 1.0 from the analysis.

Paper 144

Wettability of Aluminum-alloys Surface with Various Surface Roughness and Thickness Coating

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Keywords: contact angle; surface roughness, thickness

ABSTRACT – Corrosion continues to be an obstacle in protecting electronic components. A coating with higher hydrophobicity is required to protect the electronic components. A surface with high roughness and thin film coating may improve the hydrophobicity of a surface. Thus, a study was conducted to explore the influence of roughness and coating thickness on the coated and uncoated Aluminum alloys. They were roughened by using silica carbide abrasive paper and coated with spray paint-polymer coating. It was found that roughness and coating thickness strongly influenced the wettability Al-alloys due to air trap and its geometrical structured (P-V, W and D).

Paper 145

Haptic Robot Assist for Object Manipulation in V-Rep Simulation

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Keywords: haptics, V-Rep, object manipulation

ABSTRACT – Across the modernizing of technology, some of the common works in human daily life can be assisted by robots. Sportsmen, elders, physicians and factory workers are groups of target people that getting the convenience and supports from the robot assist. Preceding researchers have studied numerous kind of techniques to approach this problem. In this paper, a revised method on how to follow the object movement with the assist of KUKA YouBot will be explained. The robot will follow the object direction with the information extracted from the vision sensor. In early findings, the robot is able to maintain its movement despite in different directions.

Paper 146

The Study of Mild Steel Mechanical Properties using I-kaz 4D Analysis Method via Piezofilm Sensor

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Keywords: I-kaz 4D; impact hammer; piezofilm sensors

ABSTRACT – An alternative advanced statistical analysis method known as the I-kaz 4D or I-kaz 4 channels which using the sensor fusion concept by applying four sensors to collect the vibration signals that excited by the impact hammer was introduced in this study. The study carried for copper (Cu). The specimens were in shape of circular, rectangular and square. The impact force was set with the range of different forces. The four piezofilm sensors been placed at specimen's surface to observe and record the vibration signal after the impact. The obtained results been compared with the results obtained by I-kaz 4D method.

Paper 147

Effect of temperature to fracture toughness of coir fiber composite

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Keywords: Natural composite, coir fiber, fracture toughness

ABSTRACT – Coir fibers were used as reinforcement for natural fiber composites for various applications. This study is intended to analyze the effect of temperature on the quality of fracture toughness in mode II, GIIC for coir fiber composites. Samples are fabricated by using cold press and polyester resins are used as matrix. End Notched Flexural (ENF) test was performed to investigate the effect on GIIC with the addition of heat during tests which is performed at ambient temperature, 600C and 1000C. Results from tests conducted found that effect of temperature cause the critical energy release rate decreased with increasing of temperature.

Paper 148

Plant Species Identification Based on Shape and Vein Extraction

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Keywords: Otsu' method, image recognition; leaf image retrieval

ABSTRACT – This study was conducted to obtain accurate confirmation of the leaves recognition. Pattern recognition of plants based on the leaves identification become a popular trend. Each leaf has its own identity that brings a lot of information that can be used to identify and classify the origin or type of plant. This paper proposes the recognition of plants based on shape and veins to determine the type of plant. The main objective of this paper is to identify the suitable technique for plant classification.

Paper 149

Tensile properties of degraded NR/EPDM nanocomposites in different automotive oils

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Keywords: Natural rubber; ethylene propylene diene monomer; graphene nanoplatelets

ABSTRACT – In this study, the tensile properties of NR/EPDM blends and NR/EPDM nanocomposites were compared after immersed in different type of automotive oils (brake oil; engine oil; gear oil) for 6 days 9 hours. The tensile properties of the swollen rubber were measured and degraded fracture surfaces were validated under optical microscope. NR/EPDM blend and NR/EPDM nanocomposites in brake oil have the lowest reduction in tensile strength followed by engine and gear oil. Nonetheless, within both rubbers, the reduction of tensile strength of NR/EPDM nanocomposites is lower for all types of oil of 19.92% in brake oil, 3.26% in gear oil and 0.27% in engine oil compared to NR/EPDM blends respectively.

Paper 150

Towards a Persuasive Computing Approach for Cyberbullying Awareness in Social Media

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Keywords: persuasive computing; cyberbullying; social media

ABSTRACT – Traversing the age of Industry 4.0, cyberbullying has become a growing concern for Malaysia and worldwide connected citizens with the rapid rise of Internet of Things device consumption. With the ever-increasing cyberbullying occurrences via social media, it is imperative to harness cyberbullying awareness that is valuable towards sustainable development of society. Although there have been social and technological efforts responding to cyberbullying misbehavior, these studies centered on cyberbullying causal factors and internet safety technologies designed for battling cyber victimization; rather than restraining the act of engaging in cyberbullying. Hence, this study proposes a persuasive computing approach to cultivate awareness on cyberbullying. Established as interactive technology that changes persons' attitudes or behaviors, adoption of persuasive computing techniques into screen-based interaction allows principled communication on cyberbullying; through persuasive coaching, monitoring, emphatic, and engaging application. Therefore, this paper appoints the motivations and importance of further research on investigating how persuasive computing can be utilized for influencing users' awareness towards cyberbullying.

Paper 151

Optimization of Compression Molding Process for NR/EPDM Elastomeric Material

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Keywords: NR/EPDM Elastomeric; Response Surface Methodology (RSM); Compression Molding

ABSTRACT – Natural Rubber/Ethylene Propylene Diene Monomer (NR/EPDM) elastomeric is gaining popularity in the growing automotive industry owing to the fact in terms of sustainability. With extensive studies and increasing number of applications for future advancement, the need for accurate and reliable guide in processing this type of elastomer has increased enormously. The present work, deals with the study of compression molding parameters (i.e. temperature, pressure, heating time and pressure time) and its effects against NR/EPDM elastomeric mechanical properties aim on establishing optimized setup of processing parameters. The optimization are achieve through Response Surface Methodology (RSM), Box-Behnken approach as the design of experiment. Adequacy of models is analyzed statistically using analysis of variance (ANOVA) in determination of significant input variables and possible interactions.

Paper 152

Effect of Functionalized Hex-Boron Nitride Particle Washing on Electrophoretic Deposition Coating Yield and Uniformity

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Keywords: Thermal conductivity, dielectric strength, polyelectrolyte, electrophoretic deposition, hexagonal boron nitride

ABSTRACT – Low-cost electrophoretic deposition (EPD) has been utilized to apply targeted hBN coating of TO247 transistor package at controllable manner. The current paper investigates the effect of hBN particles washing on the electrophoretic deposition (EPD) coating after Poly(diallyldimethylammonium chloride (PDADMAC) functionalization. EPD yields and coating coverage condition were obtained using weighing method and optical microscopy imaging. Usage of washed PDADMAC-functionalized hBN particles improved EPD yield and surface coverage of EPD coatings at 0.3-0.6 wt% PDADMAC concentrations range.

Paper 153

Effect of repair welding on microhardness testing by using dissimilar materials pipes by using GMAW

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Keywords: Repair Welding; Orbital Welding; Gas Metal Arc Welding

ABSTRACT – Repair welding on dissimilar material is not not only saves cost, but the usage is more economical and lighter. Microhardness specimens in which to measure the hardness of welded specimen which are Stainless Steel 304 (AISI 304) and Carbon Steel 1387 (BS 1387) by using Vickers Hardness Test and compare it with base specimen.

The microhardness of repair welding was assessed by using Taguchi method with three times repetition. In this article, it show that low current with high rotational speed contribute to high hardness value, while the hardness of weld metal was lower than base metal and HAZ.

Paper 154

Proses Optimization of Friction Stir Welding Process for AA5052 Alloy using Taguchi Method.

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Keywords: Friction Stir Welding; Taguchi Method; Aluminium alloy 5052; Tensile Strength

ABSTRACT – Process optimization is important in manufacturing field for best utilization of resources. In this work, AA5052 with thickness of 2 mm is butt weld using friction stir welding (FSW) process. The optimization is using Taguchi method. Spindle speed and weld rate are varied between 800 rpm – 1000 rpm and 5 mm/s- 20 mm/s respectively. The weld is tested using tensile test as the response of signal to noise ratio 'larger is better'. From the parameter optimization work 100 Mpa of tensile strength is produced. The significant factor that impact the weld quality is the weld rate.

Paper 156

Chemical and Mechanical Treatments of Recycled Carbon Fiber Reinforced Polymer

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Keywords: Recycled carbon fiber; Fiber treatment; SEM analysis

ABSTRACT - The use of carbon fiber waste is a reasonable approach to benefit the performance of carbon fiber and considered as green effort for disposal management. In this study, recycled carbon fiber reinforced polymer (CFRP) was chemically treated using nitric acid to remove the resin. The treated fibers then pulverized to obtain short carbon fibers of about 90 µm. Individual carbon fibers were successfully removed from the matrix resin by the chemical treatment. Scanning electron microscopy (SEM) images showed a very limited damage of the chemically treated fibers. Pulverized fibers showed a rougher surface due to the mechanical abrasion. However, thermogravimetric analysis (TGA) showed that the chemically treated fiber still contained other elements at about 7 wt%, even after the chemical treatment. The actual identity of the elements needs to be characterized in details by using equipment such as energy dispersive X-Ray (EDX).

Paper 157

Indium Zinc Oxide Coating Characteristics on Non-woven Kenaf via Simple Dip Coating

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Keywords: Indium zinc oxide; Kenaf; Dip-coating

ABSTRACT – The coating of indium zinc oxide (IZO) on non-woven kenaf was studied by experimenting the effect of dipping time in IZO solution on non-woven kenaf via simple dip coating method. Kenaf samples were directly dipped into IZO solution at five different periods of time before dried and annealed at 150°C. The final products of IZO coated fiber were analysed based on its morphological and elemental studies. It was found that as the dipping time increased, the coating surface turned out to be coarser and uneven which also led to surface crack. However, the coating surface resulted in smooth appearance at a specific range of time of 10-20 minutes. The presence of transparent IZO coating on kenaf was supported by the elemental analysis results by energy dispersive X-ray spectroscopy (EDS) that proved the presence of zinc and indium elements, even though the indium element was not observed in the EDS spectrum due to its minimal amount.

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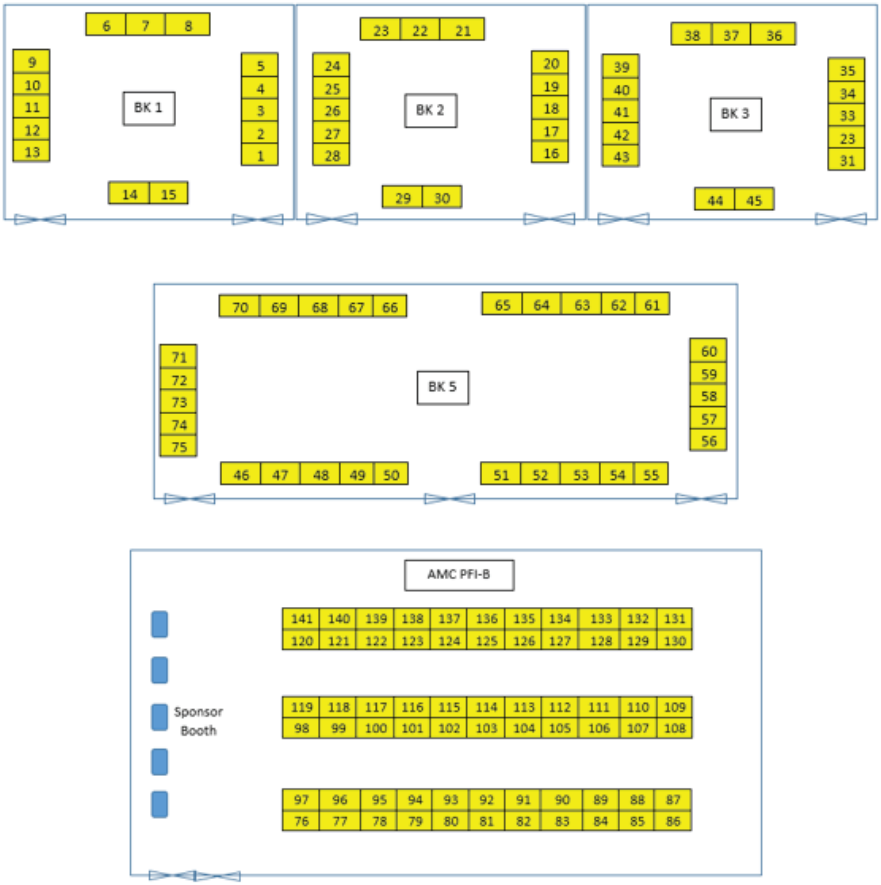

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