# PARALLEL SESSION ICBMEHS2024

## 11th September 2024
## Parallel Session 1 : 10.45am-12.45pm

**Venue: ROOM 1**

**Chair: DR. ZAHRAN MD KHUZAIRI**
**Co-Chair: Nursyah Fitri Binti Mahadi**

| No | ID | Time | Title | Presenter/Authors | Abstract |
|---|---|---|---|---|---|
| 1 | 36 | 10.15 am | Color Contrast Enhancement On Cervical Cell Images | Wan Azani Mustafa (Universiti Malaysia Perlis) <wanazani@unimap.edu.my> | Cervical cancer is a common disease that can be transmitted by women. The Pap Smear test is used to detect precancerous changes in cervical cells based on the color and shape of their nuclei and cytoplasm. Manually performing the problem can be time-consuming, and it can exacerbate inconsistencies and errors because the cervical cell itself does not differ in texture and color from normal cells. The study's objectives include discovering a new method for color contrast enhancement of cervical cell images, evaluating the method, and developing a Graphical User Interface. This research will improve the color contrast of cervical cells, allowing for faster and more accurate detection of these cells. Histogram equalization is used to improve color contrast, which is then converted to grayscale before being segmented using the threshold technique. The image obtained after histogram equalization has a higher color contrast and is more visible where cells were detected. |
| 2 | 02 | 10.40 am | Prospect for Flow Occlusion into Aneurysm of Internal | Ryuhei Yamaguchi (Tohoku University) <ryuhei.yamaguchi.e8@tohoku.ac.jp> | The internal carotid artery (ICA) is one of important and interesting arteies in the neurosurgical field. In particular, the occlusion of inflow into aneurysm is most importance. In this prospect, we described the experimental approach to the flow characteristic of |

| | | | Carotid Artery by Stent | Nadia Shaira Shafii (Universiti Teknologi Malaysia) <nadiashaira@utm.my> Makoto Ohta (Tohoku university) <Makoto.ohta@tohoku.ac.jp> | the internal carotid artery (ICA) with aneurysm. Most notification subject is how to fabricate the experimental deformable phantom model and selection stent. Using a special technique, we are trying to fabricate the thin deformable phantom model. In general, it is difficult to fabricate the phantom model with the thickness of less than 0.5 mm. The fabrication was used in 4 steps, i.e., the subtraction of stl data from DICOM data, mold production, and elastomer dipping, and finally the removal of mold from phantom. The fabrication for phantom are the material of mold, how to dip the elastomer, and how remove of mold from the phantom.<br/>Keywords: ICA, Aneurysm, mold, dipping, phantom.<br/> |
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| 3 | 04 | 11.05 am | DermoDetect: Skin Cancer Detection Using Deep Learning | Jayalakshmi G (Sahyadri college of engineering and management) <jayalakshmijaya21516@gmail.com> | Skin cancer is a common yet potentially deadly condition that affects the skin's surface layers. Efforts are essential worldwide to prevent this disease and mitigate its impact on individuals and communities. This involves increasing awareness about the disease, identifying risks, and stressing the importance of an early diagnosis. In our research, we explore a groundbreaking use of deep learning techniques for early detection of skin cancer through dermatoscopy images. Types of skin cancer focused on in this research include Actinic Keratoses and Intraepithelial Carcinoma (akiec), Basal Cell Carcinoma(bcc), Benign Keratosislike Lesions (bkl), Dermatofibroma (df), Melanoma (mel), Melanocytic Nevi (nv), Pyogenic Granulomas,<br/>and Hemorrhage (vasc). The goal is to use these methods to<br/>consistently predict these types accurately. The main technology<br/>used in this Python project is Convolutional Neural Network<br/>(CNN) architecture. CNNs are highly effective because they can<br/>automatically pull important data from images, making them<br/>excellent for tasks like photo classification. Our CNN based<br/>classifier uses the HAM10000 dataset, which includes 10015 high resolution images from varied sources and methods for training. This system demonstrates remarkable results in identifying skin issues. It achieved an impressive training accuracy of 96.00% and a validation accuracy of 97.00%. Such high levels of accuracy prove that our deep |

| | | | | | learning skin cancer prediction tool is reliable for early diagnosis, aiding doctors effectively. |
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| 4 | 08 | 11.30 am | Optimal Paired Features from the O'Hara Rudy Dynamic (ORd) Ventricular Cell Model for Predicting Drug-Induced Cardiotoxicity | Vilinaa Murali ( Universiti Teknologi Malaysia ) <murali@graduate.utm.my> Asnida Wahab (Univerisiti Teknologi Malaysia) <asnida.aw@utm.my> Nor Nisha Nadhira Nazirun ( Universiti Teknologi Malaysia ) <nnnadhira2@graduate.utm.my> Ali Ikhsanul Qauli ( Kumoh National Institute of Technology ) <ali.ikhsanul@kumoh.ac.kr> Moo Lim Ki ( Kumoh National Institute of Technology ) <kmlim@kumoh.ac.kr> | Sudden cardiac death, often triggered by ventricular tachycardia and fibrillation, is a significant public health concern. Due to cardiotoxicity, a major issue in pharmaceutical research is drug-induced Torsades de Pointes (TdP). The O'Hara-Rudy dynamic (ORd) model, a popular in silico ventricular cell model, is used to assess TdP risk from drugs, but relying on a single in silico biomarker may inaccurately classify drug risk. This study aims to find the optimal paired features from the ORd model to improve predictions of torsadogenic drug effects. Utilizing a dataset of 12 drugs (24,000 samples, 14 features), leading to 91 feature pairs, their performance was evaluated using ordinal logistic regression (OLR). Catri and qInward were found to be the most influential in determining drug risk categories, indicating these features as the optimal pair. This finding can enhance the management of torsadogenic drug adverse effects through better preventive and treatment strategies. |
| 5 | 28 | 11.55 am | Evaluating E slot Microstrip Antenna for Breast Cancer Hyperthermia Treatment | BIBI SARPINAH BINTI SHEIKH NAIMULLAH  Bibi Sarpinah (UiTM Sarawak) | This study aims to evaluate the performance of an E-slot microstrip antenna compared to a non-slot rectangular microstrip antenna for hyperthermia treatment in breast cancer. Hyperthermia treatment involves elevating the temperature above body temperature to denature and shrink the tumors. A small, medium, and large tumour was inserted in a breast phantom, and the chest wall was |

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| | | | | <sarpinah187@gmail.com><br>Kasumawati Lias ( UNIMAS )<br><ikasumawati@unimas.my><br>Ahmad Tirmizi Jobli ( UNIMAS )<br><jatirmizi@unimas.my><br>Norlida Buniyamin ( UiTM Shah Alam )<br><nbuniyamin@uitm.edu.my><br>Mazlina Mansor Hassan ( UiTM Sarawak )<br><mazlinamansor@uitm.edu.my> | included. Both breast phantom and E-slot microstrip antenna were developed in SEMCAD X. The fitting tool determines the electrical and thermal properties based on the Gabriel database. The tumor has a higher relative permittivity and conductivity compared to healthy tissue. The results demonstrate that the E-slot microstrip antenna improves directivity, gain, return loss, and SAR spatial average. Additionally, SAR distribution with an E-slot microstrip antenna demonstrates uniform heat distribution and more focus on the tumour. These findings suggest that the E slot microstrip antenna can be applied for effective hyperthermia treatment. |
| 6 | 37 | 12.20 am | Selection Moment Invariants Feature Extraction Techniques of Medical Images based on Intraclass Analysis | Wan Azani Mustafa (Universiti Malaysia Perlis)<br><wanazani@unimap.edu.my><br>Mohd Wafi Nasrudin ( Universiti Malaysia Perlis )<br><wafi@unimap.edu.my> | Medical imaging is the technique and process of imaging the interior of a body for clinical analysis and medical intervention. It becomes difficult to retrieve the related image when the images are deformed by some geometric deformation. This difficulty can be solved by using the Moment invariant technique since this technique is very useful for invariant feature extraction due to its rotation, translation, and scaling invariance properties. In this paper, two moments namely Legendre and Krawchouk moment invariants techniques have been utilized to extract the medical image and address the issues of geometric transformation. This work is conducted based on scale-invariant, rotation invariant and combined rotation and scale invariance. The selection of the best moment invariants technique is determined based on intra-class analysis. As the result, the Krawtchouk Moment Invariants able to |

| | | | | | produce the lowest error as compared to Legendre Moment Invariants based on the Total Percentage Mean Absolute Error. |
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**Venue: ROOM 2**

**Chair: ASSOC PROF DR. RANIA AL-ASHWAL**
**Co-Chair: Chong Jia Qi**

| No | ID | Time | Title | Presenter/Author | Abstract |
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| 1 | 16 | 10.15 am | Hemodynamic Effect of Coiled Middle Cerebral Artery Aneurysm – A Preliminary Study | Nadia Shaira Shafii (Universiti Teknologi Malaysia) <nadiashaira@utm.my> Ryuhei Yamaguchi (Tohoku University) <ryuhei.yamaguchi.e8@tohoku.ac.jp> | Intracranial aneurysm rupture is one of the asymptomatic diseases that could cause internal bleeding in the brain with high potentially fatal. One of the treatments for aneurysms is an endovascular coil. However, the common related issues to this treatment are recanalization and coil migration. This study aims to predict the flow behavior and thrombus development through computational simulation between the untreated and 0.7 coiled MCA aneurysm since thrombosis formation is essential for holding the coil. An experiment was conducted with only a 10.3% difference in velocity. The analyzed hemodynamic parameters that are accountable for the initiation of thrombosis showed that the coiled MCA aneurysm results in a uniform outflow velocity, 17.4% larger area of WSSlow, and 35.68% lower pressure difference compared to the untreated MCA aneurysm. Therefore, these results showed that high porosity coiling may reduce the risk of migration, rebleeding, and recurrence problems after surgery. |

| 2 | 01 | 10.40 am | Right Hand or Left Hand? Association of handedness with cognition performance and DRD2 genotype | Yin Qing Tan (University of Tunku Abdul Rahman) <tanyq@utar.edu.my> Jorene Lim ( University of Tunku Abdul Rahman ) <jorene1119@1utar.my> Hong Kiat Ooil ( University of Tunku Abdul Rahman ) <ooihongkiat@1utar.my> Si Yun Tee ( University of Tunku Abdul Rahman ) <siyun95@1utar.my> | The study investigates the relationship between handedness and cognitive performance, exploring the potential impact of the DRD2 Taq1A genotype. Using a cohort of participants with varying handedness, cognition performance was assessed through multiple tasks measuring Speed of Processing and Working Memory. Results demonstrate a significant association between handedness and Speed of Processing, potentially influenced by the DRD2 Taq1A genotype. These findings suggest a possible interaction between genetic factors and handedness in cognitive function. |
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| 3 | 44 | 11.05 am | Anti-Cancer Potential of Sungkai Leaves (Peronema Canescens Jack): Network Pharmacology and Molecular Docking Insights into Apoptosis Pathway in Breast Cancer | Nadilla Hafani Putri<br><br>Nadilla Putri (Universitas Andalas) <2010342022_nadilla @student.unand.ac.id > Dessy Arisanty ( Universitas Andalas ) <dessyarisanty@med. unand.ac.id> Fauzan Syarif Nursyafi (Universitas Andalas) <2010347003_fauzan | Breast cancer remains the leading cause of cancer-related mortality, particularly in Indonesia. Given the limitations of current treatments, there is an urgent need for alternative therapies, such as plant-based options. This study investigates the potential of Sungkai (Peronema canescens Jack) leaves as an anti-cancer agent targeting breast cancer through apoptotic pathways, utilizing network pharmacology and molecular docking analyses. Sungkai leaf extracts were analyzed using LC-MS/MS, while in silico methods identified interactions between leaf compounds and breast cancer-related targets. Key proteins, including ESR1, AKT1, BCL2, SRC, and JUN, associated with the PI3K-Akt pathway, were targeted. Molecular docking results indicated that Sungkai compounds, such as stemocurtisinol (-6.7034 kcal/mol), norlaudanosine (-6.7235 kcal/mol), carbocromen (-7.2805 kcal/mol), chlorogenic acid (-6.6631 kcal/mol), and 4-methylphenyl dodecanoate (-6.7959 kcal/mol), exhibit strong binding affinities to |

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Bcl-2, surpassing that of doxorubicin, a widely used cancer drug. These findings suggest that Sungkai leaves hold promise as a potential anti-cancer therapy for breast cancer, warranting further research to validate their efficacy.

Keywords: Peronema canescens, Apoptosis, Breast cancer, Network pharmacology; Molecular docking

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| | | | | Muhammad Faiz Md Shakhih (Universiti Teknologi Malaysia) <mfaizms@utm.my> | |
| 4 | 45 | 11.30 am | Exploration of The Anticancer Activity of Squid Ink (Loligo sp.) As A Multitarget Therapy For Non-Small Cell Lung Cancer: In Silico Studies | ISMAIL FAIZAN GIBRAN<br>Ismail Gibran (Universitas Andalas) <2010347002_ismail@student.unand.ac.id><br>Dio Kurniawan ( Universitas Andalas ) <2010342001_dio@student.unand.ac.id><br>Ahmad Rafi ( Universitas Andalas ) <2010342015_ahmad@student.ac.id><br>Onessy Rustan ( Universitas Andalas ) <2110342013_onessy@student.unand.ac.id><br>Salsabilla Khanza ( Universitas Andalas ) <salsabillaalkhanza85@gmail.com><br>Alponsin Alponsin ( Universitas Andalas ) <alponsin@gmail.com><br>Cimi Ilmiawati ( Universitas Andalas ) | Lung cancer is a major cause of death, with high incidence in Indonesia, especially West Sumatra. Non-small cell lung cancer (NSCLC) is the most common type of lung cancer, influenced by age, gender, genetics, smoking, and carcinogen exposure. This study explores the anti-cancer activity of squid ink on NSCLC using in a silico methods. Squid ink compounds were extracted through lyophilization and ethanol maceration, followed by phytochemical analysis and GC-MS. Molecular docking with MOE software showed that rescinnamine had the highest binding affinity to EGFR (-8.61 kcal/mol) and KIF5B-RET (-8.42 kcal/mol). Glycerol 1-palmitate strongly binds to KRAS (-8.06 kcal/mol) and MET (-7.28 kcal/mol). Octadecanoic acid, 2-(2-hydroxyethoxy) ethyl ester, binds to EML4-ALK (-7.26 kcal/mol). This study suggests squid ink as a potential chemopreventive agent for NSCLC.<br><br>Keywords: Non-Small Cell Lung Cancer, Loligo sp., molecular docking, competitive inhibitor, chemopreventive |

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| | | | | | <ilmiawati@med.unand.ac.id><br>Andani Putra ( Universitas Andalas ) <andani1508@med.unand.ac.id><br>Asnida Wahab (Univerisiti Teknologi Malaysia) <asnida.aw@utm.my><br>Siti Aisyah Mualif (Universiti Teknologi Malaysia) <aisyahmualif@utm.my> | |
| 5 | 47 | 11.55 am | Transcranial Magnetic Stimulation Evoked Electroencephalography Potential Denoising with Hampel Filter | ARIEF RUHULLAH BIN A HARRIS<br><br>Arief Ruhullah Harris (Universiti Teknologi Malaysia) <ruhullah@utm.my><br>Azli Yahya (FBME, UTM) <azliyahya@utm.my><br>Tian Swee Tan (Universiti Teknologi Malaysia) <tantswee@utm.my> | Transcranial magnetic stimulation (TMS) has become a well-established non-invasive tool for cortical stimulation in neurology and psychiatry research. Combining TMS with electroencephalography (EEG) allows for the investigation of immediate and direct neuronal responses to TMS, including cortico-cortically mediated activity. TMS-evoked potentials (TEPs) are significantly impacted by large, high-frequency magnetic artifacts generated by direct interference with the EEG electrodes. These artifacts, characterized by high amplitude and frequency, persist for up to 40 milliseconds post-stimulation. Conventional filtering methods with limited sampling rates introduce ripple artifacts beyond this window, contaminating the underlying neural signals. A Hampel filter was applied to remove the magnetic artifacts, followed by a Wavelet filter to attenuate other noise components in the TEP signals. The results demonstrate the effectiveness of this approach in eliminating artifacts and revealing TMS-evoked potentials within the EEG data. | |

| No | ID | Time | Title | Presenter | Abstract |
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| 6 | 49 | 12.20 pm | An Integrated Wearable Nasal Humidity Sensor With Deep Ai For Continuous Respiratory Assessment | Natarajan Sriraam (M.S Ramaiah Institute of Technology) <dr.sriraam.natarajan @ieee.org> Purnima Ramesh (Ramaiah Institute of Technology) <purnima.r@msrit.edu > Kiran D (MSRIT) <kiran.d@msrit.edu> | An integrated wearable nasal based flexible humidity sensor that captures the variations from right and left nostrils, with deep-AI model to monitor the respiratory activities has been proposed in this study. The miniaturized sensor with electronics assembly was fixed to the medical mask and respiratory activities such as normal breathing, deep breathing, rapid breathing and shallow breathing were assessed. An ensemble model constructed with a combination of 1D CNN, LSTM deep neural network model, and SVM was deployed to classify the breathing status during different tasks using humidity signals from right and left nostrils individually and in combination. The study was conducted with 82 healthy volunteers with 2 trials after obtaining ethical clearance. The proposed integrated framework of electronic nasal mask with deep AI model showed an overall accuracy, F1-score and MCC of [92 % , .91 and 0.894 ]for humidity signals from right and left nostrils together over [88%,0.87 and 0.842] , [63% ,0.61 and 0.505] for right and left nostril data individually |

**Venue: ROOM 3**

**Chair: EN. NORAZMEIN ABDUL RAMAN**
**Co Chair: Nor Nisha Nadhira binti Nazirun**

| No | ID | Time | Title | Presenter | Abstract |
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| 1 | 05 | 10.15 am | Conceptual Model of Football at National Level: A Qualitative Inquiry | MOHAR KASSIM (UPNM) <mohar@upnm.edu .my> Ahmad Rafaie Mat ( UPNM ) <Ahmadrafaie99@g mail.com> | The performance of Malaysian sports today is not at a satisfactory level when compared to the performance of the country's sports in the 70s and 80s, especially in football, which is the sports that have seen the most significant decline. This study involved (n=25) respondents consisting of head coaches, trainers, and team managers. The data collection process is done through a qualitative method, which is through a semi-structured interview session. The results of this study found that there are several factors such as leadership factors, management support system, coaches' and players' requirements, |

| | | | | Fadhlina Che Ros (UPNM) <fadhlina@upnm.edu.my> | and the environment affecting four main components which are individual consideration, being influenced by an ideal, motivation, inspiration and intellectual stimulation that have an enormous influence on team and athlete performance. In conclusion, this study have two impacts, the external impact (leadership, management support system, coaches' and players' requirements and environment) referred to the development characteristics for coaching staff, sports managers, and players through interview session in future. While an internal impact (individualized consideration, idealized influenced, inspirational motivation and Intellectual stimulation) towards to excellence in team performance. |
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| 2 | 06 | 10.40 am | A Qualitative Study to Develop the Coaches Requirement Athletic Model. | MOHAR KASSIM (UPNM) <mohar@upnm.edu.my> Ahmad Rafaie Mat ( UPNM ) <ahmadrafaie99@gmail.com> Fadhlina Che Ros (UPNM) <fadhlina@upnm.edu.my> | The performance of Malaysia especially athletics nowadays was highly questionable by most of the Malaysian if make the comparison with the performance in the 70s and 80s era, which is the athletics in Malaysia have seen the significant decline gradually. This study involved (n=8) respondents consisting of head coaches, trainers, and team managers. Qualitative method has been chosen in collecting the data, which is through a semi-structured interview session. This study found that coaches' requirements in athletics are affecting several factors such as athletes' consideration, cognitive stimulation that have a big influence on team and athletes' performance and motivational factor. In conclusion, this study produced a positive impact on the training, knowledge and education of athletics at various level. |
| 3 | 38 | 11.05 am | Effects Of Biofeedback Training On Hrv, Mood State And Shooting Performance Of Shooters | Huang Donghai (Universiti Malaysia Pahang Al-Sultan Abdullah) <henanhuangdonghai@aliyun.com> Muhammad Nubli Abdul Wahab ( Universiti Malaysia Pahang Al-Sultan | This study investigates the effects of biofeedback training on the HRV, emotional state, and shooting performance of athletes. Subjects undergo a 12-week biofeedback training experiment. Results indicate significant improvement in athletes' HRV frequency domain indices ($p < 0.05$), reduced negative emotions like tension and anger ($p < 0.05$), increased vitality and positivity, though changes in fatigue and self-emotional state weren't statistically significant ($p > 0.05$). Shooting performance significantly improved post-training ($p < 0.01$). This suggests that biofeedback training positively impacts autonomic nervous system function, emotional stability, and shooting skills. |

| | | | | Abdullah )<br><nubli@umpsa.edu.my> | Correlation analysis shows TP (total power) positively correlates with shooting performance, while LFnorm (low frequency normalization) negatively correlates. Anger negatively correlates with shooting performance, as does vigor with depression, underscoring the importance of emotional regulation in shooting performance. Biofeedback training significantly enhances shooting performance by improving HRV, optimizing emotional state, and strengthening emotional regulation abilities. |
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| 4 | 07 | 11.30 am | Cranial Electro Stimulation Review: A Safer Alternative for the Treatment of INSOMNIA | indra gunawan (poltekkes kemenkes jakarta 2) <indra@graduate.utm.my><br>Maheza Irna Mohamad Salim (Universiti Teknologi Malaysia) <maheza@utm.my> | Use of Cranial Electro Stimulator (CES) for Insomnia therapy. Data from research results submitted to the Federal Drug Administration (FDA) for treatment approval are compared with data using CES therapy other than using CES. Proposed methods, actions, side effects, safety factors and efficacy of the CES device are discussed. The results show that there is enough data to show that CES technology is as effective or more effective in the treatment of insomnia therapy compared to insomnia drugs, with fewer side effects. A prospective study should be conducted to directly compare CES with drug therapy for insomnia and to compare different CES technologies with each other. |
| 5 | 31 | 11.55 am | A Preliminary Study: Optimal Caffeine Intake Variables on Cognitive Performance Increment Using Response Surface Methodology | Raymond Teoh (University Teknologi Malaysia) <raymondteohyong@graduate.utm.my> | This research studies the association between caffeine intake variables with body condition and cognitive performance through Response Surface Methodology (RSM), aiming to formulate a caffeine dosage level and activation time that benefits cognitive performance without affecting body health. A modelled equation representing the caffeine intake dosage and cognitive performance increment based on data from previous research work was obtained through the modelling of RSM. Throughout this preliminary work, the optimal caffeine variable recommended by RSM was 0.727 mg/kg body mass with the activation time of 32.2 minutes post caffeine consumption. The mean of cognitive performance increment was 25.46 % with the desirability of 1. Due to the dataset limitation, further data collection will be carried out after ethics approval and new data will be analysed with other optimisation method. |

| 6 | 51 | 12.20 pm | Simplified Computational Fluid Dynamics Model for Perforated Mitral Valve | Rudiyanto Philman Jong ( Universiti Malaysia Sarawak ) <jprudiyanto@unimas.my> Nuraisyah Amira Mohd Daman Huri ( Universiti Teknologi Malaysia ) <nuraisyahamira@graduate.utm.my> Kahar Osman (UTM) <kaharosman@utm.my> Mohamad Ikhwan Kori (Universiti Teknologi Malaysia) <mohamadikhwan@utm.my> | Functional mitral regurgitation (Type I) could occur due to leaflet perforation or cleft (Carpentier, 1983). There are risks of functional mitral regurgitation might worsen to degenerative regurgitation and ultimately mitral valve failure. Computational fluid dynamics (CFD), an in-silico method, is proven to have the capability of modeling blood flow in cardiovascular system (Dedè et al., 2021), particularly in this case for regurgitation flow behaviour. This paper presented the application of computational fluid dynamics to evaluate the mitral regurgitation due to mitral valve leaflet perforation by simulating the hypertensive conditions and mitral valve perforation severities. The results show that the amount of blood flow to the left atrium increased with the increased perforation severity and hypertension severity. The increase of perforation severity has caused the average reduction of blood flow percentage of up to approximately 8.01% for severe perforation. Hence, the more severe the hypertension and perforation, the more complications a person may experience. With more blood flow back to the left atrium, it may lead to several complications including hypoxemia and cyanosis. |

**Venue: ROOM 4**

**Chair: DR NORHALIMAH BINTI IDRIS**
**CO-Chair: Nurin Tihani binti Nazemi**

| No | ID | Time | Title | Presenter/Authors | Abstract |
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| 1 | 09 | 3.00 pm | Enhancing Neonatal Care Through an IoT-Based Monitoring System for Infant Incubators | Shatiskumar Sugumaran<br><br>Shatiskumar Sugumaran (Universiti Teknologi Malaysia) <shatiskumar.sugumaran@gmail.com> Muhamad Amin Abd Wahab (Universiti Teknologi Malaysia) <muhamadamin.abdwahab@utm.my> | This study presents an innovative prototype system for infant incubators, designed to enhance the monitoring process for medical assistants in the Neonatal Intensive Care Unit (NICU). Utilizing an ESP32 microcontroller integrated with IoT technology, the system features a Blynk mobile application interface for real-time data visualization. Addressing the challenges of understaffing and high workload in the NICU, the system offers continuous monitoring of temperature, humidity, infant position, and heartbeat in the incubator. The functionality of the device has been thoroughly established using the Rapid Application Development (RAD) methodology, covering phases such as requirements analysis, system design, testing, and delivery. Test results show minimal discrepancies in heart rate readings compared to the Samsung Galaxy Watch 5 (-0.44% to 1.72%) and the heart rate app (-0.82% to 0.67%) in terms of percentage difference. Percent error of the temperature measurements varied between -5.94% to 5.29% compared to the incubator display and -3.29% to 4.33% compared to the FLUKE Baby Incubator Analyzer, while the humidity percent error ranged from -13.69% to -7.92%. The system also effectively triggers a notification within 10 seconds when the baby manikin moves out of the safe zone. |

| | | | | | Overall, the prototype demonstrated reliable performance in monitoring critical NICU parameters, providing a user-friendly and efficient solution to improve neonatal care. |
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| 2 | 11 | 3.25 pm | T2DM: Understanding and Designing Mobile Application for Type 2 Diabetes Self-Management | Lim Hui Si (UTP) <lim_20000420@utp.edu.my> | This paper presents the overview of developing a comprehensive and user-friendly mobile application to assist individuals with type 2 diabetes mellitus (T2DM) in managing their condition. The app is designed to objectively measure dietary consumption, physical activity, blood sugar levels, medicines, and bodyweight. Moreover, author had conducted the interview session with T2DM patients, their guardians, and health professionals to identify their needs and requirements. The paper focuses on the potential benefits of mobile apps for T2DM management, such as better patient outcomes and higher participation. It also emphasizes the increasing global prevalence of T2DM and the significance of innovative approaches to address this health condition. |
| 3 | 29 | 3.50 pm | IoT-Based Smart Reminder System for Medication Adherence | Tick Hui OH (Multimedia University) <thoh@mmu.edu.my> Shen Yee Pang ( Multimedia University ) <sypang@mmu.edu.my> Yasothei Suppiah ( Multimedia University ) <yasothei.suppiah@mmu.edu.my> | Medication non-adherence is a worldwide issue where patients do not take their medications as prescribed, albeit unintentionally. This has resulted in significant worsening of illness and led to increased preventable health care costs due to additional medical appointments, emergency department visits and hospitalizations. Hence, a smart reminder and dispenser system is proposed to automate the dispensing of medication at preset times by using Blynk IoT app. The system's smart features include medication inventory tracking, low-stock alerts, and ensuring users never to miss doses again to keep their health on check. The system can accurately dispense medication and provide notifications for medication sessions, time to refill and missed doses. The device is designed to switch seamlessly to a lithium-ion backup battery during power outages, maintaining continuous operation as a critical service. This project exemplifies the practical application of IoT and automation in healthcare, promoting consistent medication routines and reducing the risk of missed doses. |
| 4 | 48 | 4.15 pm | Comprehension Review on | Hamza Musa Muhammad | Fracture healing is a complex physiological process that can occur directly through bone union or indirectly through callus formation. |

| | | | Techniques of Monitoring Fracture Healing | AISYAH AHMAD SHAFI (UTM) <aisyah.as@utm.my> | Monitoring this intricate process is crucial for ensuring proper recovery and preventing complications. Currently, the primary method for monitoring fracture healing involves the use of radiographs, which provide infrequent and subjective snapshots of bone healing progression. This kind of monitoring method not only creates harm to the patient due to the radiation but the infrequent monitoring may miss to detect the complication of healing. In this review, state of the art of several technique to monitor the phase of fracture healing is reviewed. |
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| 5 | 32 | 4.40 pm | Electromyogram Acquisition System using Graphene-Based Sensor | Peng Yilin ( UTM ) <peng1lin@foxmail.com> Nurul Ashikin Abdul-Kadir (Universiti Teknologi Malaysia) <ashikin.kadir@utm.my> NURIZZATI MOHD DAUD (UTM) <nurizzati.md@utm.my> Syaidah Md Saleh (Universiti Teknologi Malaysia) <syaidahmdsaleh@gmail.com> Mohd Azhar Abdul Razak (UTM) <mohdazhar@utm.my> Siti Aisyah Mualif (Universiti Teknologi Malaysia) <aisyahmualif@utm.my> | Graphene-based sensors have shown great potential in various biomedical applications due to their excellent electrical properties and biocompatibility. This study focuses on the development of graphene-based sensors for electromyography (EMG) acquisition systems. By using reduced graphene oxide (rGO) on a textile substrate, we aim to overcome and address the limitations of traditional wet electrodes, such as skin irritation and signal instability due to gel drying. The process involves fabricating dry electrodes and testing them for several key parameters, including cytotoxicity, electrical properties, and EMG signal acquisition performance. Preliminary tests have shown that rGO electrodes have good stability and biocompatibility and provide high signal fidelity. Compared with traditional wet electrodes, rGO electrodes are not only suitable for long-term use, but they also eliminate the need for the use of conductive gel, reduce skin irritation, and provide longer-lasting, stable EMG signals. |

| | | | | | Fauzan Khairi Che Harun ( UTM ) <fauzan@utm.my> Keith Moey ( Flexttech Innovation Sdn Bhd ) <keith.moey@flextte ch.com> M Khairy ( Flexttech Innovation Sdn Bhd ) <mkhairy@flexttech. com> | |
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| 6 | 50 | 5.05 pm | Simulation Study for Optimizing Dimensions of Electrodes for Detecting Muscle Fatigue in Electrical Impedance Tomography (EIT) | | RASHA ALKHAFAJI ( Department of Medical Instrumentation Techniques Engineering, Technical Engineering College, Northern Technical University, Mosul ) <rasha.dhyaa@ntu. edu.iq> Kaviarasu Nandaguru ( Sports Innovation & Technology Centre (SITC), Institute of Human Centered Engineering, Universiti Teknologi Malaysia ) | This research delves into improving muscle activity detection using Electrical Impedance Tomography (EIT) by addressing muscle fatigue in athletes, workers and individuals undergoing rehabilitation. EIT, known for its non-invasive nature, relies on precise electrode setups to ensure accurate impedance measurements. Three different electrode configurations (A, B and C) were constructed using COMSOL Multiphysics software to identify the configuration that offers the sensitivity and uniformity in electric field distribution. The effectiveness of each configuration was evaluated based on its ability to provide consistent electrical field measurements for physiological monitoring. Configuration C, with its smaller size, is optimal due to its performance in uniformity and detailed measurement capabilities. This setup exhibited voltage readings and a distributed electric field making it well-suited for high-resolution imaging tasks when used concurrently with the Wiener-Back Projection (WE-BP) algorithm for image reconstruction. The research outcomes play a role in enhancing EIT systems by providing insights into optimizing electrode configurations, for enhanced detection and monitoring of muscle fatigue. |

| | | | | <kavi5112000@gmail.com><br>Adam Wong Yong Khang ( Centre for Telecommunication Research & Innovation (CeTRI), Universiti Teknikal Malaysia Melaka ) <adamwong@utem.edu.my><br>Kian Sek Tee ( Faculty of Electrical and Electronic engineering, Universiti Tun Hussein Onn Malaysia ) <tee@uthm.edu.my><br>Fatin Phang (Universiti Teknologi Malaysia) <p-fatin@utm.my><br>Jay Suman (Universiti Teknologi Malaysia) <jaysuman@utm.my> | |
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**Venue: ROOM 5**

**Chair: DR. AIZREENA AZAMAN**
**Co-Chair: Nik Nur Ain Azrin**

| No | ID | Time | Title | Presenter/Authors | Abstract |
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| 1 | 10 | 3.00 pm | Optimum Machining Condition Of Electrical Discharge Machine Through Flyback Power Supply For Machining Hip Implant | Author: AP Azli<br><br>Azli Yahya (FBME, UTM) <azliyahya@utm.my><br>Nor Hisham Khamis ( UTM ) <hisham@utm.my><br>norhalimah idris ( utm ) <norhalimah@utm.my><br>Nor Liyana Safura Hashim (UTM) <nlsafura88@gmail.com> | Hip joint is an important joint in human body that help in our daily movement. Wear rate is known as the major concerns for determining the lifespan of MoM hip implant. Surface texturing is now employed in implant design due to the improved lubrication performance as well as reducing wear and friction. Electrical Discharge Machining using flyback power supply is suggested since it results in no-burr formation. Optimum Machining condition of EDM process such as VGap, IGap, Ton and Toff has resulted better performance measurement such as Tool Wear Rate (TWR), Material Removal Rate (MRR), and Surface Roughness (SR) whereas, MRR is the most dominant performance measure in this study since it affects the quality of micro-dimples in term of consistency of material being removed for hip implant surface. |
| 2 | 21 | 3.25 pm | Exploring SAR Analysis of Implantable Antenna in Biomedical Applications: An Overview | DiviyaDevi Paramasivam ( Universiti Teknologi Malaysia ) <diviyadevi@graduate.utm.my><br>Maria Alessandra S. Florida ( Universiti Teknologi Malaysia ) | The exposure of the human body to continuous electromagnetic (EM) radiation emitted by the implanted antenna in biomedical devices is a crucial criterion that needs to be considered when designing one. In particular, the absorption of energy during exposure to EM radiation varies according to the body parts, and can be determined by the Specific Absorption Rate (SAR). Therefore, this paper provides a generic overview of the SAR analysis of the implantable antenna within the head, heart, breast, and limbs based on the reported studies. In addition, it was found that the reduction of maximum allowable input power from 1.00 W |

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| | | | | <sabiniano@graduate.utm.my><br>Alvir Jamil ( Universiti Teknologi Malaysia )<br><alvir20@graduate.utm.my><br>Raimi Dewan (Universiti Teknologi Malaysia)<br><raimi.dar@utm.my><br>Hashimu Uledi Iddi ( University of Dar es Salaam )<br><hashimuledi@udsm.ac.tz><br>Nuradilah Yusri ( Universiti Teknologi Malaysia )<br><nuradilah@graduate.utm.my> | to 0.04 W, resulted in SAR values that are 36 % and 81 % lower than the limit for the fat and muscle layers, respectively. Thus, analyzing antennas in varying input power, body parts, and tissue layers is crucial for implantable antennas to exhibit a regulated SAR value. |
| 3 | 22 | 3.50 pm | | Validation of Electronic Analogue Modeling for Pressure-Volume Loops in Normal and Hypoplastic Left Heart Syndrome (HLHS) | Armad Mohammad Aiman Mohammad Radzman ( Universiti Teknologi Malaysia )<br><aimanbinradzman@gmail.com><br>Ahmad Zahran Md Khudzari (Universiti Teknologi Malaysia)<br><zahran@biomedical.utm.my><br>MOHD FITRI MOHD YAKUB (Universiti | The cardiovascular system plays a vital role in transporting blood throughout the body. Electronic analogue modelling offers a valuable tool to simulate and analyse its physiological and pathological states, reflected by pressure-volume (PV) loops. While prior studies have investigated cardiovascular circuits, there is a gap in analysing both normal and HLHS (a critical congenital heart defect) using PV loops. This study addresses this gap by employing Multisim software to simulate and compare PV loops of normal right and left ventricles against pathological right ventricles in HLHS. Notably, the simulated PV loops exhibited high similarity to real-life patient data, validating the reliability of the circuit model. This paves the way for further application of the model in simulating diverse cardiovascular conditions |

| | | | | Teknologi Malaysia) <mfitri.kl@utm.my> Muhammad Sharifuddin Abd Rahim ( Universiti Teknologi Malaysia ) <msharifuddin6@graduate.utm.my> Jackson Godfrey Rusanyu ( Mbeya University of Science and Technology ) <jackson.rusanyu@must.ac.tz> Azli Yahya (FBME, UTM) <azliyahya@utm.my> Sivakumar Sivalingam ( Institut Jantung Negara ) <sivakumar@ijn.com.my> | |

| 4 | 24 | 4.15 pm | SAR performance for Breast Cancer Hyperthermia Treatment using 2.45 GHz and 0.915 GHz Circular Non-Invasive Microstrip Antenna integrated with | MAZLINA BINTI MANSOR HASSAN<br><br>Mazlina Mansor Hassan (Universiti Malaysia Sarawak) <mazlina2206@gmail.com> | This research presents a hyperthermia treatment procedure using a circular microstrip patch antenna integrated with a water bolus to destroy malignant tissues. Hyperthermia uses high temperatures from 41℃ to 45℃ to denaturate cancer tissues into necrotic tissues. SEMCAD X 14.8.4 is used as a software simulator to develop antenna, breast phantom, cancer cells and water boluses. Three cancer tissue diameters are considered in the research, which are 15mm, 34mm and 59mm, based on analysis of the mammogram images received from the referred Hospital. 2.45GHz and 0.915GHz antennas were used as the operating frequencies in the research to destroy the malignant tissues. Different shapes of deionized and distilled water boluses integrate with the antenna to reduce the |

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| | | | various shapes of Water Boluses | | unwanted hotspots and maintain the focus position distance. Water boluses of different shapes and antenna frequencies provide sufficient focus position distance, penetration depth and estimation times during the execution of the hyperthermia treatment. |
| 5 | 26 | 4.40 pm | Measuring Human Blood Glucose via Infrared Sensor | ALROUD AHMED IBRAHIM SALAMEH<br><br>Fazrena Hamid (Universiti Tenaga Nasional) <fazrena@uniten.edu.my><br>Ahmed Alroud ( Universiti Tenaga Nasional ) <PE21447@student.uniten.edu.my> | This study introduces an innovative method for measuring human blood glucose levels using the TCRT5000 optoelectronic sensor, which operates at a near-infrared (NIR) wavelength of 950 nm. Unlike traditional methods, this approach eliminates the need for painful real-time blood sampling, making the process non-invasive and more comfortable for patients. The sensor is designed to measure glucose levels by detecting the intensity of infrared light reflected from the patient's fingertip. Data analysis from samples of 15 patients revealed a strong linear correlation between glucose levels and sensor voltage readings, with an $R^2$ value of 0.9959. This result indicates high accuracy and reliability in the sensor's performance, suggesting that this method could provide a viable alternative for glucose monitoring in patients with diabetes. |
| 6 | 12 | 5.05 | Food Calorie Estimation using Computer Vision : A Review | Paula Queipo-Alvarez Paula Queipo-Alvarez (Uc3m) <paulaqueipo1@gmail.com><br>Mario Munoz-Organero ( Universidad Carlos III de Madrid ) <munozm@it.uc3m.es><br>Asnida Wahab (Univerisiti Teknologi Malaysia) | This literature review describes new developments on estimating food calories using computer vision. It benefits nutritional monitoring, food logging and dietary assessment. Monitoring the diet, glycemic indices, total calories and consumed nutrients can improve the health and fitness of everyone. Key subtasks include image segmentation, classification, category recognition, category detection, volume estimation, quantity detection and nutrients estimation. A study of 56 publications showed the promising results of pretrained convolutional neural networks and multi-task learning frameworks. Some models achieved more than 90 % accuracy in food segmentation and recognition and less than 15 % relative error in calorie estimation. However, there is still a long way to go with multi-layered dishes and homemade sauces, so categorising and annotating recipes and nutritional content in databases is still necessary. |

| | | | | <asnida.aw@utm.my> Mohd Shafry Mohd Rahim (UTM) <shafry@utm.my> | |
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**Venue: ROOM 6**

**Chair:  DR NORHANA JUSOH**
**Co-Chair: Zatul Faqihah**

| No | ID | Time | Title | Presenter/Authors | Abstract |
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| 1 | 52 | 3.00 pm | Chitosan/trigona Honey Drop-casted Films For Wound Healing | Norjihada Izzah Ismail<br><br>Surya Budi Waluya ( Universiti Teknologi Malaysia ) <sbw2102@gmail.com><br>Norjihada Izzah Ismail (Universiti Teknologi Malaysia) <norjihada@utm.my> | The need of frequent changing of gauze dressings and the discomfort following removal as well as widespread cases of multidrug resistant bacteria especially in the hospital setting demands development of innovative dressings. This study aimed to fabricate chitosan/Trigona honey (CS/TH) wound dressing films and examine the physicochemical characteristics of these films for potential wound dressing applications. CS/TH films were prepared by a drop-casting method at three different concentrations of TH, particularly 10 %w/v, 20 %w/v, and 30 %w/v. Several physicochemical characterization analyses were performed including surface morphology, structural composition, wettability and in vitro drug release. The CS/TH films revealed the presence of rod-shaped bacteria, probably the Bacillus spp. which is originated from the TH. A strong, broad peak was observed at 3000-3500 cm-1 representing O-H and N-H stretching as well as hydrogen bonding interactions contributed by chitosan and TH carbohydrates. |

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| | | | | | Other prominent absorption bands include C-H stretching at 2929 cm-1, vibration of C=C in aromatic rings and C=O stretching of amide I at 1640 cm-1 and C-O stretching at 1000 cm-1. The inclusion of TH in the films decreased the contact angle, producing more hydrophilic CS/TH films. It was demonstrated that CS/TH-30 film with highest concentration of TH showed contact angle of 63.10° ± 3.63 whereas the CS film has contact angle of 77.50° ± 1.66. The in vitro drug release showed fast release of CS/TH-30 (73.8 %) after four hours of incubation compared to CS/TH-10 and CS/TH-20 which exhibited cumulative release of 9.4 % and 56.8 %, respectively. It can be concluded from this study that the CS/TH drop-casted films exhibited more favorable physicochemical properties than the CS films as wound dressings. The presence of TH may enhance the wound healing capabilities of CS/TH films. |
| 2 | 15 | 3.25 pm | Total Mixed Ration Silage for Feeding Ruminants: A Review | GUNARANGINI A/P MUNIANDY<br><br>Guna Rangini (Universiti Teknologi Malaysia) <gunarangini@graduate.utm.my><br>MIRA PANADI (UNIVERSITI TEKNOLOGI MALAYSIA) <mirapanadi@utm.my> | A method of feeding known as total mixed ration (TMR) was developed, in which animals are provided with a diet consisting of concentrates and forage to provide the necessary nutrients for the animals. The roughage component of TMR comprises of fodder, hay, and silage while the concentrate component and certain vitamin and mineral supplements. Currently, the TMR is likely the most widely used and effective method for feeding livestock animals. The TMR needs to be mixed freshly before feeding to animals. However, there are certain disadvantages of using TMR, particularly when TMR is exposed to air, which will lead to aerobic deterioration. This condition not only leads to nutrient loss but also results in harmful metabolites that harm ruminants. Hence ensiling TMR not only inhibits the development of harmful microorganisms but also preserves the nutritional value of the feed resources, enhances the palatability by modifying odors and flavors, and balances the moisture content of crops. It has been a common practice to incorporate byproducts into TMR silage to improve the nutritional value of the feed composition. |

| 3 | 40 | 3.50 pm | Comparative Evaluation Of Acoustic Properties Of Bone Phantom With Different Porosities | WAN NUR YASMIN DIYANA WAN SALLEHUDDIN (UNIVERSITI TEKNOLOGI MALAYSIA) <wannuryasmindiyana@graduate.utm.my> | Cancellous bone supports bone strength and reduces weight through its porous structure beneath the cortical bone layer. Due to ethical concerns and limited availability of human cancellous bone, this study explores 3D printed and commercial bone phantoms for educational and research purposes. Using standard Stereolithography (SLA) resin, bone phantoms with different porosity patterns were created. Ultrasound transmission techniques measured sound speed, attenuation, and amplitude. Results showed the resin phantom with 31.76% porosity had an attenuation of 0.4347 dB/cm, while the commercial phantom with 80.20% porosity had 2.0024 dB/cm. The resin phantom had a 74.43% error difference, compared to 17.79% for the commercial phantom. Both materials significantly differed in sound speed from real cancellous bone (3800 m/s). Therefore, the commercial bone phantom with 80.20% porosity more closely mimics real cancellous bone based on the error of difference for attenuation parameters. |
| 4 | 27 | 4.15 pm | Malaria Parasite Detection in Thin Blood Smear Images with Rouleaux formation Morphology | Fatima Abdullahi Muhammad (Universiti Teknologi Malaysia) <mfatima@graduate.utm.my> Rubita Sudirman ( Universiti Teknologi Malaysia ) <rubita@fke.utm.my> Nor Aini Zakaria (Universiti Teknologi Malaysia) <norainiz@utm.my> | Despite immense effort to eradicate malaria, it remains a global endemic disease with half of the world population at a risk of infection. Blood smear microscopy is the gold standard technique of diagnosing malaria, but this technique is highly subjective and time consuming with accuracy depending on the expertise of the technician which is highly lacking in malaria endemic regions. In Malaria endemic regions, malaria microscopy often reveals comorbidity with other diseases such as bacterial infection. The presence of such infection leads to the stacking together of Red blood cells (RBC) like chains of coins, this abnormality of the RBC is termed Rouleaux formation. A lot of studies have been done to automate malaria diagnosis using deep learning techniques, but none has tackled the detection of malaria parasite with regards to rouleaux formation. Hence this study trained all variations of YOLOv8 to detect the presence of two species of malaria parasite and white blood cells in RBCs with rouleaux formation achieving a mean average precision of up to 80%. |

| 5 | 19 | 4.40 pm | Formulation Of Antimicrobial Toothpaste Containing Bromelain Enzyme | DAYANG NORULFAIRUZ ABANG ZAIDEL (MJIIT, UTM Kuala Lumpur) <dnorulfairuz@utm.my> | The purpose of this study was to develop the toothpaste formulations containing the most stable Bromelain activity. The toothpaste developed was characterized in terms of viscosity, moisture content, antimicrobial activity and sensory evaluation. The results indicated that the component extracted from pineapples possesses antibacterial properties. The bromelain toothpaste was developed to meet all the necessary criteria for maintaining oral freshness and preventing tooth decay caused by bacteria. It was then compared to a commercially available toothpaste. Medical assessment: The color of the substance is white with a slight yellowish tint. It has a smooth texture and a pH value of $8.63 \pm 0.05$. The formulation has good spreadability and is stable. The assessment of the antimicrobial effects on Staphylococcus aureus indicates that the prepared bromelain toothpaste demonstrated significant activity, as evidenced by a zone of inhibition (ZOI) of $1.8 \pm 0.05$ cm. |
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| 6 | 13 | 5.05 pm | The Development and Survivability of Strongyle Free-Living Stage Larvae in Different Environment and Types of Soils in Tropical Ambiance | NOR IDZANA BINTI AB MALEK<br><br>Fuziaton Baharudin (JKBSK UTM) <fuziaton@utm.my> | Strongyle is a harmful parasite in horses, and its infestation pose a threat to the host's health. In managing impactful parasite control program, understanding the environmental conduciveness of the shedded parasite's egg survive the full life cycle is crucial in tropical ambiance. Studies that describe these tendencies are limited to temperate countries' environments. Fresh feces droppings collected from horses were cultured in the laboratory using pasture on four types of common soils in Malaysia. The soil types are sphagnum, omnibus, saprolitic, and antisols placed in rectangular wood panels kept at different temperatures at $21\pm1°C$, $26\pm1°C$, $29\pm1°C$, and $32\pm1°C$ for 30 days. The Baermann technique was used to extract larvae from fecal samples. Larvae development and survivability were viewed under a microscope (x10). Sphagnum soil has a higher survival rate for larvae at a temperature of $21\pm1°C$ (p-value = 0.027). |

**Venue: ROOM 7**

**Chair: DR ZAHARAH JOHARI**
**Co Chair: Rudiyanto Philman Jong**

| No | ID | Time | Title | Presenter/Authors | Abstract |
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| 1 | 18 | 10.15 am | Evaluation of Emotional State and Memory Performance under Exposure of Different Music Genres Based on EEG Power Spectral Density and Mean Frequency Band | Syarifah Noor Syakiylla Sayed Daud<br><br>SYARIFAH NOOR SYAKIYLLA SAYED DAUD (UTM) <sya.syakiylla@gmail.com><br>Rubita Sudirman ( UTM ) <rubita@fke.utm.my> | Human mental and emotional states can be stimulated through various factors. Music engagement is among the stimulus that can affect and is easily practiced. However, confirming an efficient music genre is still unclear and needs further investigation. This work aims to investigate the relationship of music genre with mental and emotional state based on EEG features. Over 5000 samples of EEG signals were acquired from 30 participants during the experimental session via three affected P3, Pz, and P4 locations. The result indicated that the power spectral density (PSD) of the alpha band for classical music was the highest contributed by increasing calm state, reducing stress, and improving working memory. Classical music provides a better-recalled score compared to other music genres. It was noted that a strong relationship exists between stable mental states and improved working memory performance in classical music. |
| 2 | 30 | 10.40 am | Brain-state Recognitions via Directed Functional Connectivity of Motor Imagery EEG Signals | Siti Balqis Samdin<br><br>Jinyu Yang ( Suzhou Institute of Biomedical Engineering and Technology, Chinese Academy of Sciences ) | This paper considers the challenges in classifying the functional connectivity patterns of motor imagery using multichannel electroencephalography (EEG). It is a continuous battle to implement a recognition framework with a good combination of preprocessing, feature extractions, and classification algorithms. These three main components are important for ensuring high recognition accuracy and system computational stability. In this study, we present six different combination frameworks with dynamic directed functional connectivity as the main features modelled using a time-varying vector autoregressive (TV-VAR) model. The feature offers dynamic |

| | | | | | <jinyuyang@mail.ustc.edu.cn> Siti Balqis Samdin (UTM) <sitibalqissamdin@utm.my> | causality, time-evolving, and spatial relations information for motor imagery tasks. Priori, the EEG signal was pre-processed using principal component analysis (PCA), fast independent component analysis (FastICA), or a combination of both; to discriminate insignificant components. For classification, we applied static and dynamic classifier algorithms, which are support vector machine (SVM) and hidden Markov model (HMM). The combination of FastICA and HMM has the highest accuracy of 76.33%, with the lowest std. of ±4.95% proving the combination's stability. |
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| 3 | 39 | 11.05 am | Cardiac Health Assessment with ECG Signals Using 1D CNN Technology | Wan Azani Mustafa (Universiti Malaysia Perlis) <wanazani@unimap.edu.my> Heyam Alquran ( Yarmouk University ) <heyam.q@yu.edu.jo> | The electrocardiogram (ECG) is a powerful diagnostic tool for assessing heart function and detecting myocardial infarction and arrhythmias. The device records the electrical signals of the heart and is used for analyzing heartbeats and rhythms. Arrhythmia detection can be automated by analyzing aberrant heartbeats, which has become a popular study topic due to the time-consuming and error-prone manual inspection process. Deep learning (DL) may be a preferable option for quick and automatic classification with improved training. In order to classify cardiac arrhythmias, this study presents a unique deep learning architecture—more precisely, a one-dimensional convolutional neural network (1D-CNN). Real and noise-attenuated cardiac rhythms obtained from the MIT-BIH database were used to train and evaluate the model. Our model, which relies on raw signals, is fast, accurate, and simple, with an test accuracy of 92.6%. |
| 4 | 46 | 11.30 am | Brain functional connectivity during a mental arithmetic task measured by partial directed coherence | NORLAILI BINTI MAT SAFRI Norlaili Mat Safri <norlaili@utm.my> Noor Syazwana Sahar ( UTM ) <syazwana19@yahoo.com> | Researchers generally concentrate on executive function since it can both improve human capacities and identify cognitive impairments. A person's cognitive function can be assessed using a variety of executive function tests. Processes including inhibition, updating, and shifting are related to executive function. Mental math exercises are used as one of the updating tests. Arithmetic processing in the brain involves a network of regions. This study investigates the functional connectivity of the brain during an arithmetic problem using electroencephalogram (EEG) technology. The partial directed coherence (PDC) approach is employed since it can identify direct |

| | | | | Low Lie Xin ( UTM ) <norlaili@fke.utm.my> TAHA MAHMOUD ABBAS AL-NAIMI ( UTM ) <mataha3@graduate.utm.my> Nor Aini Zakaria (Universiti Teknologi Malaysia) <norainiz@utm.my> | interactions between more than two channels. The research utilizing EEG-based PDC showed that active destination regions for brain connections during arithmetic tasks are similar to those reported using other techniques. However, the posterior region is missing in the network of regions among the subjects involved in the study. |
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| 5 | 53 | 11.55 am | Determinants of Physical Frailty In Older Adults: Logistic Regression Analysis | Siti Mahmod (UTM) <sruzita@utm.my> Dhayaarschynee Sugumaran ( Universiti Kebangsaan Malaysia ) <a175149@siswa.ukm.edu.my> | The ageing process often brings about frailty, a condition marked by reduced resilience and increased vulnerability to health risks. The present study focused on investigating the influence of age, physical performance, and lung function on physical frailty among older adults. A cross-sectional study was conducted on 27 participants aged 60 years and above from 3 different centers, assessing their frailty status, physical performance, and lung function. The results indicated that older adults with mild physical impairment significantly influenced physical frailty, while age and lung function did not show significant associations. Interventions targeting physical activity to enhance balance, walking speed, and chair stand tests may be crucial in preventing or delaying frailty onset in older adults. The study give an insight on the importance of addressing mild physical impairment with adequate medical rehabilitation program to mitigate the risk of physical frailty in the elderly population. |

**Venue: ROOM 8**

**Chair: DR. MOHAMAD IKHWAN BIN JAMALUDIN**
**Co Chair: Nurin Tihani binti Nazemi**

| No | ID | Time | Title | Presenter/Author | Abstract |
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| 1 | 14 | 10.15 am | Protective coatings for zirconium-based alloys: improving their mechanical and biological properties | WUROOD ASAAD MIDAB<br><br>Wurood Midab (Training and Research Office, Research Energy Department, Ministry of Electricity, Baghdad, Iraq) <wrood.midab@student.uobabylon.edu.iq><br>Maysam Abbood Salman ( University of Babylon ) <maysam.salman@student.uobabylon.edu.iq> | Zirconium is widely utilized in biomedical implants because of its exceptional properties, including corrosion resistance, wear behavior, and biocompatibility. However, these implants might have certain unfavorable effects since they lack surface features. Therefore, it is essential to establish the surface properties required for zirconium implants. Particularly, (8YSZ) has demonstrated potential in controlling the biological and mechanical reactions to Zr. A zirconium 705 substrate was coated with nanoparticles using a plasma thermal spray technique. The layer was seen using XRD and a scanning microscope; the coated samples (8YSZ) had a harder and more wear-resistant layer than the uncoated samples. An enhancement to the biological characteristics. |
| 2 | 17 | 10.40 am | Decellularization of tissues and organs: Methods and assessments | NURSYAH FITRI BINTI MAHADI<br><br>NURSYAH FITRI MAHADI (UNIVERSITI TEKNOLOGI | The overwhelming need of organs and tissues and transplantation requires an alternative source, which is scaffold derived from decellularized extracellular matrix (dECM). The dECMs have their cellular and genetic components removed, while maintaining its structural integrity. This review discusses methods of decellularization ranging from physical, chemical, and biological techniques, with various underlying mechanisms. It also summarizes the diversity of |

| | | | | MALAYSIA (UTM)) <nursyahfitri@graduate.utm.my> Mohd Riduan Mohamad (Universiti Teknologi Malaysia) <mohd.riduan@utm.my> | tissues and organs that have been decellularized previously. It also mentions the physical methods such as high hydrostatic pressure (HHP) application is considered as a promising approach. Finally, it also appraises the assessment of dECM subsequent to decellularization, based on the risk of immunogenicity and mechanical properties. |
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| 3 | 20 | 11.05 am | Enzymatic Transglycosylation Reaction Of Polyphenol Glycoside And Its Functional Properties As Antioxidant And Antimutagen | DAYANG NORULFAIRUZ ABANG ZAIDEL (MJIIT, UTM Kuala Lumpur) <dnorulfairuz@utm.my> | This study aimed to assess the potential of Monascus purpureus as a source of crude enzymes with transglycosylation activity, using carotenoid constituents extracted from M. purpureus cell cultures as the acceptor. The mixture was then incubated with starch as the substrate to synthesize carotenoid glycosides via transglycosylation. The resulting carotenoid glycoside was purified using octa-dodecyl-functionalized silica gel column chromatography and analyzed with Thin Layer Chromatography (TLC) and High Performance Liquid Chromatography (HPLC). The antioxidant activity of the carotenoid glycoside, produced through enzymatic transglycosylation, was evaluated using the 2,2-Diphenyl-1-picrylhydrazyl (DPPH) radical scavenging method, and its antimutagenic activity was tested using a bioassay method. The carotenoid glycoside showed an Lethal Concentration 50% (EC50) of 109.59±4.15 µg/mL, indicating stronger antioxidant activity than the carotenoid aglycon, which had an EC50 of 137.18±5.05 µg/mL. It also demonstrated a higher percentage of inhibition against mutagens at 97.1%, compared to 71.6% for the carotenoid aglycon. The findings of this study indicated that microbial carotenoids demonstrated superior antimutagenic activity compared to commercial astaxanthin and β-carotene. |
| 4 | 23 | 11.30 am | Modification of 3D Printed Polylactic Acid Scaffold with | Ravathi Marathandi RAVATHI MARATHANDI | Bone tissue engineering (BTE) has advanced with 3D scaffolds that create complex, tissue-specific structures for regeneration. Polylactic acid (PLA), a common polymer in 3D printing, lacks bioactivity, biomineralization, and hydrophilicity limiting its effectiveness. To |

| | | | Chitosan and Polyvinyl Alcohol in Enhancing Bone Mineralization | (UNIVERSITI TEKNOLOGI MALAYSIA) <ravathi01@graduate.utm.my> HEMALATHA MARIAPEN ( Universiti Teknologi Malaysia ) <hemalatha@graduate.utm.my> Norhana Jusoh (Universiti Teknologi) <norhana@utm.my> Murfiqah Taufiqiah Mohd Amin ( Universiti Teknologi Malaysia ) <eyqamurfiqah@gmail.com> | address these issues, surface modifications using polyvinyl alcohol (PVA) and chitosan (CS), known for their excellent biological properties, were explored. PLA scaffolds were 3D printed and coated with PVA and CS using dip coating and freeze-drying techniques. Characterization of the coated PLA scaffolds using scanning electron microscopy (SEM), Fourier Transform Infrared Spectroscopy (FTIR), Energy Dispersive X-ray (EDX), and water contact angle (WCA) measurements showed that PLA/CS/PVA scaffolds had the highest hydrophilicity with a WCA of 48.43 ± 5.55°. SEM revealed a smooth, continuous film from the PVA coating with irregular patches from CS, while FTIR confirmed the successful incorporation of PLA/CS/PVA chemical bonding. EDX analysis showed calcium (Ca) and phosphate (P) ions, with a Ca/P ratio of 2.76, close to human bone, compared to 2.07 in pure PLA scaffolds. The dual-coated PLA/PVA/CS scaffolds demonstrate promising biomineralization for bone regeneration. |
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| 5 | 25 | 11.55 am | Surface modification of polycaprolactone/chitosan nanofibers with β-tricalcium phosphate in improving bone scaffold properties | Sharifah Raihanah Kamaruddin<br><br>SHARIFAH RAIHANAH KAMARUDDIN ( Universiti Teknologi Malaysia ) <sharifahraihanah@graduate.utm.my> SYAKIRAH ATHIRAH ABDULLA HAMID ( Universiti Teknologi Malaysia ) | Investigation on bone tissue engineering (BTE) have been extensively conducted with the main focus is towards mimicking bone extracellular matrix (ECM) that have osteoconductive properties to restore injured or diseased bones. Thus, electrospun nanofibers have become an ideal solution in fabricating the bone scaffold. Furthermore, incorporation of calcium phosphates is one of the key strategies for enhancing the bioactivity of nanofibers. However, as compared to hydroxyapatite (HA), the limited exploration of β-tricalcium phosphate (β-TCP) in nanofibers creates a substantial gap in understanding its specific impact on the bone scaffold properties. Therefore, this study investigated the formulation and charaterization of polycaprolactone (PCL) and chitosan electrospun nanofibers incorporated with β-TCP. Characterization analyses using scanning electron microscopy (SEM), Fourier-transform infrared |

| | | | | <syakirahathirah@graduate.utm.my> Norhana Jusoh (Universiti Teknologi) <norhana@utm.my> Adlisa Abdul Samad ( Universiti Teknologi Malaysia ) <lisaadlisa1@gmail.com> | spectroscopy (FTIR), and water contact angle (WCA) measurements revealed that PCL/Chitosan nanofibers with a 70:30 ratio have a more interconnected and porous structure compared to pure PCL, with the addition of β-TCP further enhancing this porous network morphology. WCA results indicated progressive hydrophilicity from pure PCL (110.6°) to PCL/Chitosan (84.4°) and PCL/Chitosan/β-TCP (64.9°). FTIR spectra confirmed the successful incorporation of chitosan and β-TCP into the PCL matrix, indicated by characteristic peaks for C-H, N-H, C=O, C-O-C, and $PO_4^{3-}$ groups. These findings suggested that the PCL/Chitosan/β-TCP nanofiber scaffold with its optimised physicochemical properties holds significant potential for applications in bone tissue engineering that have potential in replicating native bone properties and promoting bone tissue formation. |
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**Venue: ROOM 9**

**Chair: DR MOHD RIDUAN BIN MOHAMAD**
**Co-Chair : Siti Adawiyah Zulkefli**

| No | ID | Time | Title | Presenter/Authors | Abstract |
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| 1 | 33 | 10.15 am | Electrospun Quercetin-loaded Polycaprolactone for Drug Delivery Application | Asyikin Sasha Mohd Hanif<br><br>Khalida Fakhruddin (Universiti Teknologi Malaysia) <khalidafakhruddin92@gmail.com> Mohamad Ikhwan Jamaludin (Universiti | Quercetin is a type of flavonoid used as potential phytochemical in treating chronic diseases due to its anti-inflammatory, antioxidant and other therapeutic effects. It is commonly taken via oral and injection approaches. However, its curative efficacy is limited by its low aqueous solubility, extensive first pass metabolism and resultant low availability. In this study, an electrospun quercetin-loaded poly (ε-caprolactone) (PCL) nanofibrous was fabricated as a potential bioactive implantable drug. The prepared nanofibers were characterized by scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR), mechanical test, and thermogravimetric analysis (TGA). In vitro release of quercetin from the nanofibers was studied in a simulated |

| | | | | Teknologi Malaysia) <mohamad.ikhwan @utm.my> | physiological condition using ultraviolet-visible spectroscopy. The morphological and mechanical studies showed successful formation of nanofibers with bead-less, randomly interconnected uniform structure and porosity appropriate to be used as drug delivery vehicle. Quercetin release study indicated the highest amount of quercetin release within 180 min period, and sustained release until day-21. Overall, the fabricated nanofibers have provided desired properties for implantable drug delivery application. |
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| 2 | 35 | 10.40 am | A Comprehensive Review of 3D Printed Moulds for Temporary Knee Arthroplasty Spacers | Muhammad Farhanka Thariq<br><br>Muhammad Thariq (Universiti Teknologi Malaysia) <farhanka@graduat e.utm.my> Mohamad Ikhwan Jamaludin (Universiti Teknologi Malaysia) <mohamad.ikhwan @utm.my> | The increasing demand for total knee arthroplasty (TKA) is accompanied by a rise in subsequent revision total knee arthroplasty (rTKA) procedures, necessitating immediate, cost-effective, and personalized temporary knee spacers made from moulded bone cement. Although temporary knee spacer moulds are widely available, the potential of 3D printed moulds remains underexplored. 3D printing offers precise fabrication of custom anatomical spacers, ensuring better fit, stability, and reduced risk of failure compared to conventional methods. PLA polymer, chosen for its biocompatibility and low melting temperature, facilitates easy printing. This review synthesizes literature on knee anatomy, TKA, rTKA components, and the application of 3D printing for mould production, highlighting its potential in enhancing surgical outcomes through personalized spacer solutions. |
| 3 | 41 | 11.05 am | Physicochemical and drug release analysis of Rutin incorporated in Polyvinylpyrrolid one (PVP) / Hydroxypropyl Methylcellulose (HPMC) film | ILIYA QASRINA IDRIS<br><br> NURIZZATI MOHD DAUD (UTM) <nurizzati.md@ut m.my> | Administration of drug without a carrier might lead to a burst release effect which caused the drug to metabolize before it reaches the targeted site, thus reducing the effectiveness of the treatment. Polymer blending to form a thin film hydrogel can control the release of the drug, ensuring a more effective and sustained therapeutic effect. Polyvinylpyrrolidone (PVP) is utilized as a nonsurfactant suspending agent, film maker, emulsion stabilizers, binder and hair fixative. Hydroxypropyl Methylcellulose (HPMC) is easily hydrated by water, expanding well and can accelerate the release of drugs from its base. Therefore, different concentration of HPMC was mixed with PVP to form a thin film and rutin as a model drug, was incorporated into the |

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| | | | | | film. The combination of these polymers will create a synergistic effect that significantly enhance drug delivery system by controlling the drug release. Fourier Transform Infrared Spectroscopy (FTIR) shows that the peak at 1650 cm-1 which represents by carbonyl groups was decreased in addition of HPMC concentration, indicates the homogeneity between PVP and HPMC. Scanning electron microscope (SEM) image shows a smooth and homogenous surface texture, indicating that both polymers were mixed successfully. PVP/HPMC4 shows high water absorption capability and still maintain the hydrophilicity of surface which is 64°. Moreover, the sample have more controlled and gradual release after 7 days immersion in Phosphate Buffer Saline (PBS) and maintain its stability in 27 °C at pH level of 7. The antioxidant analysis shows the decreased percentage of radical scavenging activity (RSA) in increasing concentration of HPMC, which shows that HPMC manage to control the rutin release of the film. Thus, the potential of rutin-loaded PVP/HPMC films as effective matrices for transdermal or tablet-based drug delivery systems, offering ease of fabrication and improved drug release profiles. |
| 4 | 42 | 11.30 am | Dispersion and Stability Study of Functionalized Multiwalled Carbon Nanotubes and Zinc Oxide Nanoparticles in Various Dispersion Solvents | Rabbilu Dahiru<br><br>Muhammad Faiz Md Shakhih (Universiti Teknologi Malaysia) <mfaizms@utm.my><br>Rabbilu Runka Dahiru ( Federal University Dutsinma ) <rabbilurunka@gmail.com><br>Faizuan Abdullah ( Universiti | Functionalised multiwalled carbon nanotubes (fMWCNTs) and zinc oxide (ZnO) nanoparticles possess exceptional mechanical, electrical, and optical properties, making them ideal for applications in biosensor, polymer composites, electronics.. Achieving uniform and stable dispersions of these nanoparticles is important, as their strong tendency to agglomerate due to van der Waals interactions and high aspect ratios presents significant challenges. Finding the right dispersion solvent is essential to overcome these challenges and to maximize the nanoparticles' functional properties, ensuring they can be effectively utilized. This study investigates the dispersion and stability of fMWCNTs and ZnO nanoparticles in various solvents, including N,N-dimethylformamide (DMF), dimethyl sulfoxide (DMSO), ethanol, and deionized water. Magnetic stirring and ultrasonication were employed to disperse the nanoparticles, with electrostatic stability assessed via zeta potential measurements. Results showed that DMF provided excellent stability for fMWCNTs with zeta potential value 50.4 mV, while deionized water led to poor dispersion due to |

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| 5 | 43 | 11.55 am | Tannic Acid Loaded Conductive PVA/Gelatin/NaCl Hydrogel For Adhesive Wearable Applications | DiviyaDevi Paramasivam ( Universiti Teknologi Malaysia ) <diviyadevi@graduate.utm.my> Fathan Khansa Arby ( Universiti Teknologi Malaysia ) <arby20@graduate.utm.my> | The PVA, gelatin and sodium chloride (PVA/gelatin/NaCl)-based hydrogel exhibits optimal electrical conductivity, making it a promising candidate for wearable healthcare monitoring applications. However, they possess one of the crucial shortcomings, which is the lack of adhesive properties. This study aimed to enhance the adhesive properties by immersing the PVA/gelatin-based hydrogels with 0%, 10% and 20% NaCl in 1%, 3% and 5% of tannic acid (TA) solution for 24 h. The hydrogels' adhesive properties were evaluated by adhering to gloves-worn fingertips, onto a chicken's muscle, liver and bone, and on different materials, such as metal, plastic and rubber. The results revealed that the PVA/Gel/NaCl20/TA5 exhibited strong adhesion to |

weak electrostatic repulsion. For ZnO nanoparticles, DMSO demonstrated the highest stability with zeta potential value -37.7 mV, attributed to strong interactions with ZnO surfaces, whereas ethanol showed low stability with zeta potential value of -1.89 mV. Achieving good dispersion of nanoparticles is important for maximizing their functional properties and ensuring uniform performance especially in biosensor fabrication. Poor dispersion can lead to particle aggregation, negatively impacting the mechanical, electrical, and thermal properties of the nanocomposites.

| | | | | Raimi Dewan (Universiti Teknologi Malaysia) <raimi.dar@utm.my> NURIZZATI MOHD DAUD (UTM) <nurizzati.md@utm.my> | the fingertip, muscle, PET, metal and gloves compared to the samples with other concentration of NaCl and TA. Therefore, this hydrogel is well-suited for wearable health monitoring devices, where reliable attachment to both the components and biological tissues is critical. |