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**Big Data Analytics for Early Detection and Prevention of Age-Related Diseases in Elderly Healthcare**

*Daril, M.A.M., Qayuum, S., Abbas, A.F., Van, N..*

**Title:**

Artificial neural network modeling of mixed convection viscoelastic hybrid nanofluid across a circular cylinder with radiation effect: Case study

**Journal:**

Case Studies in Thermal Engineering, Volume 50, October 2023, Article number 103487

**Document Type:**

Article

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**Abstract:**

As a result of its use in the manufacturing and construction industries, research on the flow of nanofluid is rather well-known among academics and professionals in related fields. It is helpful for electrical equipment to utilize it for cooling reasons, which has shown promising results in terms of reducing energy use. As a result, the primary objective of this research is to inspect the impacts that radiation has on the mixed convection of Walters'-B hybridity nanofluid flow of stagnant point in a horizontal circular cylinder under the circumstances of a constant heat flux. It is considered a conventional fluid despite the presence of copper (Cu) and alumina (Al<sub>2</sub>O<sub>3</sub>) nanoparticles in the water (H<sub>2</sub>O) hybridity nanofluid. To make the solution to the resulting controlling system of equations more straightforward, the numerical approach of a neural network with a back-propagation algorithm (NN-BPA) is used. It follows by clarifying how various physical characteristics, such as blended convection, thermal radiation, and stagnant movement, affect temperature, skin friction, thermal transfer, velocity, and graphical profiles of those variables. The LMNN-BPA has the quickest processing algorithm and performs well in general, corresponding to the thorough analysis. Additionally, the mixed convective and viscoelastic properties exhibit both rising and dropping developments regarding skin friction and heat transmission.

**Title:**

A scoping review of topic modelling on online data

**Journal:**

Indonesian Journal of Electrical Engineering and Computer Science, Volume 31, Issue 3, September 2023, Pages 1633-1641

**Document Type:**

Article

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**Abstract:**

With the increasing prevalence of unstructured online data generated (e.g., social media, online forums), mining them is important since they provide a genuine viewpoint of the public. Due to this significant advantage, topic modelling has become more important than ever. Topic modelling is a natural language processing (NLP) technique that mainly reveals relevant topics hidden in text corpora. This paper aims to review recent research trends in topic modelling and state-of-the-art techniques used when dealing with online data. Preferred reporting items for systematic reviews and meta-analysis (PRISMA) methodology was used in this scoping review. This study was conducted on recent research works published from 2020 to 2022. We constructed 5 research questions for the interest of many researchers. 36 relevant papers revealed that more work on non-English languages is needed, common pre-processing techniques were applied to all datasets regardless of language e.g., stop word removal; latent dirichlet allocation (LDA) is the most used modelling technique and also one of the best performing; and the produced result is most evaluated using topic coherence. In conclusion, topic modelling has largely benefited from LDA, thus, it is interesting to see if this trend continues in the future across languages.

**Title:**

Linear and Non-Linear Predictive Models in Predicting Motor Assessment Scale of Stroke Patients Using Non-Motorized Rehabilitation Device

**Journal:**

International Journal of Integrated Engineering, Volume 15, Issue 4, 2023, Pages 237-247

**Document Type:**

Article

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**Abstract:**

Various predictive models, both linear and non-linear, such as Multiple Linear Regression (MLR), Partial Least Squares (PLS), and Artificial Neural Network (ANN), were frequently employed for predicting the clinical scores of stroke patients. Nonetheless, the effectiveness of these predictive models is somewhat impacted by how features are selected from the data to serve as inputs for the model. Hence, it's crucial to explore an ideal feature selection method to attain the most accurate prediction performance. This study primarily aims to evaluate the performance of two non-motorized three-degree-of-freedom devices, namely iRest and ReHAD using MLR, PLS and ANN predictive models and to examine the usefulness of including a hand grip function with the assessment device. The results reveal that ReHAD coupled with non-linear model (i.e. ANN) has a better prediction performance compared to iRest and at once proving that by including the hand grip function into the assessment device may increase the prediction accuracy in predicting Motor Assessment Scale (MAS) score of stroke subjects. Furthermore, these findings imply that there is a substantial association between kinematic variables and MAS scores, and as such the ANN model with a feature selection of twelve kinematic variables can predict stroke patients' MAS scores.

# 4

**Title:**

Development of an Automated Segregator for Solid Waste

**Journal:**

Advanced Structured Materials,

**Document Type:**

Book Chapter

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**Abstract:**

Recently, the Department of Solid Waste Management (SMW) in Malaysia faced a serious problem related to the waste generation. People are depending so much on material that ends up as waste. This situation has caused that the waste generation is considered as a major environmental issue worldwide. There are several ways taken but it seems that the problem is never settled down due to the fact that the waste generation is still rising. This project is conducted in order to design a waste classification system via development of an Arduino software with the combination of sensors. This system is fully programmed, controlled and monitored by using the Arduino software and the Blynk apps. In this system, sensors are used to scan the type of waste while the Arduino software received the data from the sensor. The Arduino is defined with the type of waste materials such as metal, glass, plastic and paper as the output variables. The system or called as bin is also installed with ESP8266 NodeMCU to monitor the waste inside the bin and to notify the person in charge if the bin is full. The system is strongly needed to attract and encourage people to collect, gather and recyclable things. Indirectly, this system helps to facilitate for people to separate or classify the solid waste. As a result, it can be concluded among the four types of waste, metal becomes the best with 5 successes while glass be the worst material with only three successes could be automatically segregated after 5 tests were done. Besides that, the outcome of this project can be explained into four parts which are the electronic circuit design, sensor behavior, monitoring system and error for classification.

**Title:**

The Development of Simulation to Improve the Production Process Efficiency

**Journal:**

Advanced Structured Materials, Volume 193, 2023, Pages 219-231

**Document Type:**

Book Chapter

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**Abstract:**

In order to improve the production process at a company (in this case Diamond Jubilee Sime Darby Plantation Sdn. Bhd) as well as to overcome the problem in their production, simulation can be a solution for this company to deal with their problem related to production process and overcoming them. A simulation can be and is used to identify their problem in the production process. This study aims to develop simulation to mimic their production process and overcome the problem using the ProModel Simulation software. These simulations can assist and help the company to identify their production process and guide them to maximize their production and reduce cost while using this simulation. An interview and site visit was conducted in this research to observe and identify the problem more efficiency. The study has shown that developing a simulation has many benefits and helps in the production process. However, none have yet been developed a simulation to overcome the problem in production process at Diamond Jubilee Sime Darby Plantation Sdn. Bhd. in this research, the objectives are to identify the production process in this company to brainstorm solutions to manufacturing processes issues and to apply the ProModel Simulation software in the production process. The research area will be at Diamond Jubilee Sime Darby Plantation Sdn. Bhd. for the site visit to observe their production process and interview with their mill manager to identify their problem. Further studies have also been proposed for future research. To conclude, the problem of their production process may be able to be solved by simulation that can replicate the actual production without spending on real world using this study.

**Title:**

Effect of Laser-Glazed Treatment on Thermal Cyclic Behavior of Plasma-Sprayed Lanthanum Zirconate/Yttria-Stabilized Zirconia Double Ceramic Layered on NiCoCrAlYTa-coated Inconel

**Journal:**

Journal of Thermal Spray Technology, Volume 32, Issue 8, December 2023, Pages 2603-2619

**Document Type:**

Article

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**Abstract:**

This paper investigates the thermal barrier coating (TBC) performance of La<sub>2</sub>Zr<sub>2</sub>O<sub>7</sub>/ZrO (2-8 wt.%) Y<sub>2</sub>O<sub>3</sub> coatings (LZ/YSZ TBCs) deposited using atmospheric plasma spray (APS) over high velocity oxy-fuel (HVOF) NiCoCrAlYTa coated on Inconel 625. On the outermost surface of the double-layered coating, a laser glazing method was used to treat the TBC systems. Specifically, a Nd:YAG pulsed laser was used to change the surface layer of plasma-sprayed La<sub>2</sub>Zr<sub>2</sub>O<sub>7</sub> top coatings. The study found that the laser glazing treatment resulted in a higher number of temperature cycles needed to generate 5-20% spallation of the top surface of coatings, with 100 cycles compared to 30 cycles in the as-sprayed coatings. This improvement in performance was attributed to the dense surface of the laser-glazed LZ topcoat, which led to a lower thermally grown oxide (TGO) layer growth rate and improved TBC lifetime. Furthermore, the strain adaptation through segmented cracks that were created by laser glazing may have contributed to the enhanced TBC performance.

**Title:**

Improving the warehouse operation by implementing lean warehousing

**Journal:**

AIP Conference Proceedings, Volume 2827, Issue 1, 12 September 2023, Article number 030004

**Document Type:**

Conference Paper

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**Abstract:**

The growing interest of customers towards online shopping have given a good impact to the e-commerce platform nowadays especially during this pandemic which have a strict limitation of movement among citizen in Malaysia. However, some issue regarding the courier services have arisen regarding the poor service quality that customers received recently and some issue related to warehouse operation arises in certain situation such as product delay, product defects, and short space for inventory placement which create lower productivity and service performance. In order to overcome this situation, this study identified the implementation of lean warehousing in improving service productivity performance in courier company. This research will be focusing on the courier services company that available in Malaysia Delivery Express X is selected as it is one of the courier services that frequently used by customers as a platform to delivers their parcels. This research been conducted using qualitative method which the data been collected by interviewing the respondent and the data gathered is analyzed using Arena Simulation Software. The finding shows what is the best alternative used to improve the service productivity performance of courier service. From this research, the courier service industry can make use of the finding for future purposes and future researcher can explore more about the lean warehousing in courier service industry. Its shows the reduction of time from the research is 8.2% improvement.

**Title:**

Data-Driven Insights in Higher Education: Exploring the Synergy of Big Data Analytics and Mobile Applications

**Journal:**

International Journal of Interactive Mobile Technologies, Volume 17, Issue 20, 2023, Pages 21-37

**Document Type:**

Article

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**Abstract:**

This study explores the potential for transformation that may be achieved via the use of big data analytics and mobile apps in the context of higher education, specifically emphasizing the role of data-driven decision-making. Within the contemporary educational landscape, characterized by the increasing impact of digital technology and mobile devices, institutions of higher education are actively investigating innovative strategies. That enhances effectiveness, customizes learning experiences to suit individual students, and develops overall student accomplishments. The main objective of this research is to examine the effects of incorporating big data analytics and mobile applications into the decision-making capacities of higher education establishments. The PRISMA Statement was used to guide the selection and exclusion of records using the RStudio Biblioshiny approach for data analysis. A comprehensive review of the existing scholarly works, identification of groupings, and study of citation trends within the field. The results and findings illustrate the inherent importance of “big data,” “cloud computing,” “mobile computing,” and “higher education” in the field of research, underscoring their crucial role in data-driven decision-making. Furthermore, the study underscores the significant impact of contemporary technology on administrative processes, personalized learning, and scholastic attainment. This research provides a great addition to the academic field by presenting insightful findings on the substantial influence of big data analytics and mobile applications on the evolution of higher education. This study emphasizes the need to adopt data-driven insights to successfully navigate the ever-changing landscape of higher education.

**Title:**

Microbial fuel cell in industrial wastewater: treatment processes and resource recovery

**Journal:**

Resource Recovery in Industrial Waste Waters, 1 January 2023, Pages 353-363

**Document Type:**

Book Chapter

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**Abstract:**

Wastewater treatment is a high-cost, energy-intensive procedure due to the vast volumes of water that must be treated, which are mostly created by human activities and various businesses. Because of their higher treatment efficiency and added value, biological wastewater treatments have become a viable alternative to conventional technologies. Microbial fuel cells (MFCs) have emerged as a potential approach to simultaneously remove chemical oxygen demand and generate power as one of the most promising biological therapies. As a result, the benefits and drawbacks of current MFC methods for various types of wastewater are outlined. The technological challenges that MFCs face are discussed, as well as the financial viability of employing MFCs to treat wastewater.

**Title:**

Fracture Mechanism Analysis Of Bone Scaffold Under Tensile Load: The Effect Of Porosity

**Journal:**

Journal of Engineering Science and Technology, Volume 18, Issue 5, 2023, Pages 2254-2268

**Document Type:**

Article

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**Scopus preview:**

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85176599962&partnerID=40&md5=34e981b261578cca9902cf64fbb8ff62>

**Abstract:**

Using bone scaffolds in tissue engineering is an important alternative to regenerate loose bone and promote cell adhesion. The main element of the bone scaffold is porosity. However, this porosity affects the structure's strength and leads to fracture when exposed to simulated mechanical load. Thus, this study aimed to investigate the effect of porosity on the strength of bone scaffold structures based on the fracture mechanism. The study used experimental and Finite Element Analysis (FEA) methods to analyse the effect of porosity between 0% to 70%. Three samples with 0%, 50%, and 60% porosity were then used to validate the FEA model. The study showed that the maximum tensile force decreases exponentially as porosity increases. The experiment revealed an 81% and 64% reduction in maximum tensile force for 0% and 30% porosity, respectively. The FEA results also demonstrated a similar pattern, with an 81% and 68% reduction in maximum tensile force for 0% and 30% porosity, respectively. The average difference between each porosity in the experiment was 38%, while the FEA results showed a 37% difference. The study found that the maximum tensile stress experienced by the bone scaffold decreases as the porosity increases, with a 55% average difference between the experimental and FEA results. The study's findings suggest that porosity significantly affects the strength of bone scaffold structures. Therefore, proper consideration is necessary while designing a bone scaffold to ensure it is mechanically suited and compatible with cell attachment for tissue engineering. Although the stress experienced by the structure was similar to that experienced by the material properties of PLA under strain, the study highlights the importance of understanding the effect of porosity on bone scaffold strength for efficient tissue engineering.

**Title:**

Innovative strategies for Lassa fever epidemic control: a groundbreaking study

**Journal:**

AIMS Mathematics, Volume 8, Issue 12, 2023, Pages 30790-30812

**Document Type:**

Article

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**Abstract:**

This study aims to develop a mathematical model for analyzing Lassa fever transmission dynamics and proposing effective control measures. The stability of the Lassa fever-free equilibrium point is examined and the model's accuracy is assessed using real-world data. Additionally, the parameter values and the basic reproduction number are estimated. A sensitivity analysis is also conducted, which identifies the key drivers influencing transmission dynamics. Moreover, the impact of model parameters on basic reproduction numbers is investigated. Multiple control methodologies including use of Ribavirin, implementing mobile health technology and incorporating natural predators are devised and analyzed using optimal control theory to curtail virus transmission.

**Title:**

Fracture Characteristics Of Pla Synthetic Bone Scaffolds With Different Specimen Porosities

**Journal:**

Journal of Engineering Science and Technology, Volume 18, Issue 5, 2023, Pages 2493-2506

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**Abstract:**

Estimation of the fracture characteristics of the bone scaffold is an important aspect to consider in designing the porous structure while complying with its biocompatibility. The basic consideration of the related items, such as the bone scaffold design, material selection, and fabrication process, is necessary to estimate the bone scaffold's characteristics accurately. This present study was conducted to investigate the effects of porosity on the synthetic bone scaffold's strength and fracture mechanics. The specimens were made from polylactic acid (PLA) using an additive manufacturing process. Five specimens with different porosities (0% to 60%) were prepared for the test. Porosity was manipulated by adjusting the pore size during the printing process. The compact tensile test was performed using a tensile testing machine at a controlled rate of 1 mm/min. Various fracture parameters were determined based on force-displacement curves. 30% porosity was found to be the highest critical stress intensity factor, KIC of  $0.846 \pm 0.069$  MPa $\cdot$ m<sup>1/2</sup>, tip opening displacement,  $0.99 \pm 0.19$  mm, and total fracture energy  $2.12 \pm 0.34$  kJ/m<sup>2</sup> after 0 % specimen. For each increment in the porosity, on average 53% reduction of mechanical properties happened. In conclusion, optimising printing settings and material properties with the proper pore design enhances the fracture resistance of printed bone scaffolds, which helps develop effective and reliable bone scaffold structures.

**Title:**

Cybersecurity Challenges and Solutions in the Fintech Mobile App Ecosystem

**Journal:**

International Journal of Interactive Mobile Technologies, Volume 17, Issue 22, 2023, Pages 100-116

**Document Type:**

Article

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**Abstract:**

The rapid growth of the fintech industry, driven by the proliferation of mobile applications, has revolutionized financial services, providing unprecedented convenience to users. However, this innovation comes with inherent cybersecurity challenges that demand rigorous attention. This study delves into the complex and ever-evolving landscape of cybersecurity within the fintech mobile app ecosystem, aiming to identify challenges and present viable solutions. Cybersecurity threats in the fintech mobile app ecosystem encompass a broad spectrum, including data breaches, malware attacks, phishing schemes, and identity theft. As fintech apps handle sensitive financial data and transactions, they are prime targets for malicious actors seeking financial gain. To address these threats, this research examines current cybersecurity strategies and emerging technologies, such as advanced encryption, biometric authentication, and AI-driven anomaly detection. Furthermore, regulatory frameworks and industry standards play a crucial role in shaping cybersecurity practices within fintech. This study assesses the impact of compliance requirements on fintech companies and their ability to protect user data. Real-world case studies and incident analyses provide valuable insights into the consequences of cybersecurity breaches in this sector. Ultimately, this research aims to contribute to a comprehensive understanding of the multifaceted cybersecurity challenges faced by the fintech mobile app ecosystem and offers practical recommendations for fintech firms, regulators, and cybersecurity professionals to enhance security measures. Strengthening the security foundation is paramount to sustaining user trust, fostering continued innovation, and securing the future of mobile fintech.

**Title:**

Big Data Analytics for Early Detection and Prevention of Age-Related Diseases in Elderly Healthcare

**Journal:**

International journal of online and biomedical engineering, Volume 19, Issue 16, 2023, Pages 20-37

**Document Type:**

Article

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**Abstract:**

The exponential growth of the elderly population poses considerable obstacles to healthcare systems on a global scale, hence requiring the implementation of inventive strategies to identify and mitigate age-related illnesses at an early stage. The primary objective of this study is to explore the use of big data analytics to improve healthcare practices. Specifically, the emphasis is on identifying possible risk factors and developing proactive treatments for senior citizens. The research technique used in this study is based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) declaration of 2020. This approach is utilised to ensure a thorough and transparent review of the relevant literature. Moreover, the use of Rstudio software is prevalent in the field of data processing, statistical analysis, and visualisation. By conducting a comprehensive examination of academic databases and medical literature, this study undertakes an analysis of a collection of pertinent papers to explore the significance of big data analytics in the early diagnosis and prevention of diseases in senior populations. The studies that have been chosen include a wide range of healthcare fields, such as cardiology, neurology, cancer, and geriatrics. This selection aims to provide a thorough comprehension of existing practises and identify any possible areas that may need more attention. The results of this study emphasise the significant impact that big data analytics may have on healthcare for the elderly. Using extensive and varied datasets, sophisticated analytical methodologies such as machine learning algorithms and data mining allow the detection of nuanced patterns and correlations that might function as precursors for age-related ailments.