

# 4 ICASETM-21

**International Conference on  
Applied Sciences, Engineering,  
Technology and Management**

**Hybrid Conference**

**29<sup>th</sup> - 30<sup>th</sup> December, 2021**

**Dubai, UAE**



**Organized By**

**Institute For Engineering Research and Publication (IFERP), India**

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4<sup>th</sup> International Conference on  
Applied Sciences, Engineering, Technology and  
Management  
(ICASETM -2021)

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IFERP-Explore

## **Editorial:**

We cordially invite you to attend the **4<sup>th</sup> International Conference on Applied Sciences, Engineering, Technology and Management (ICASET M-21)** on **29<sup>th</sup>–30<sup>th</sup> December, 2021**. The main objective of **ICASET M-21** is to provide a platform for researchers, students, academicians as well as industrial professionals from all over the world to present their research results and development activities in relevant fields of Applied Sciences, Engineering, Technology and Management. This conference will provide opportunities for the delegates to exchange new ideas and experience face to face, to establish business or research relationship and to find global partners for future collaboration.

These proceedings collect the up-to-date, comprehensive and worldwide state-of-art knowledge on cutting edge development of academia as well as industries. All accepted papers were subjected to strict peer-reviewing by a panel of expert referees. The papers have been selected for these proceedings because of their quality and the relevance to the conference. We hope these proceedings will not only provide the readers a broad overview of the latest research results but also will provide the readers a valuable summary and reference in these fields.

The conference is supported by many universities, research institutes and colleges. Many professors played an important role in the successful holding of the conference, so we would like to take this opportunity to express our sincere gratitude and highest respects to them. They have worked very hard in reviewing papers and making valuable suggestions for the authors to improve their work. We also would like to express our gratitude to the external reviewers, for providing extra help in their review process, and to the authors for contributing their research result to the conference.

Since October 2021, the Organizing Committees have received more than 80 manuscript papers, and the papers cover all the aspects in Applied Sciences, Engineering, Technology and Management. Finally, after review, about 42 papers were included to the proceedings of **ICASET M -21**.

We would like to extend our appreciation to all participants in the conference for their great contribution to the success of **ICASET M -21**. We would like to thank the keynote and individual speakers and all participating authors for their hard work and time. We also sincerely appreciate the work by the technical program committee and all reviewers, whose contributions made this conference possible. We would like to extend our thanks to all the referees for their constructive comments on all papers; especially, we would like to thank to organizing committee for their hard work.



## Acknowledgement

IFERP is hosting the 4<sup>th</sup> **International Conference on Applied Sciences, Engineering, Technology and Management- 2021** this year in the month of December. The main objective of **Applied Sciences, Engineering, Technology and Management** is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The session will serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and be known as a thoughtful leader.

I express my gratitude to all my colleagues, staffs, professors, reviewers and members of organizing committee for their hearty and dedicated support to make this conference successful.



**Rudra Bhanu Satpathy**

Chief Executive Officer

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**Keynote Speakers**





**PROF. ALAIN AIMÉ NDEDI**

Chairman: International Council for Family Business  
Cameroon, Central Africa

**BIOGRAPHY**

Professor Alain Ndedi book was featured among the best books in intrapreneurship of all times. (<https://bookauthority.org/books/best-intrapreneurship-books>) is author of more than 40 books. World Bank and USAID consultant, and president of lancedafrique.org and Fondation Lance d'Afrique Burundi, Dr Alain A. Ndedi is currently teaching in various tertiary institutions across Africa. Professor Ndedi is Founding Director of the Think Tank CABAC, and Past President of YENEPAD. Author of more than 100 peer reviewed articles in accredited journals.

As a scholar, he has supervised more than 50 PhD and 50 Master students. He wrote case studies on Amazon acquiring MGM, WhatsApp founders, Jan Koum and Brian Acton, Yahoo founding members Larry Page and Sergei Brin, Volkswagen unethical behaviour on gaz emissions levels, BlackBerry and Nokia failure to innovate, Komatsu versus Caterpillar, Jeff Bezos at Amazon.com with the 2000 company strategic intent 'Grow first and make money latter' and Maponya Mall in Soweto.

Professor Ndedi was the Dean at the School of Business and Public Policy at the Saint Monica University, and the chief editor of the Journal of the Academy of Business & Public Policy. In South Africa, at the South African Broadcasting Corporation (SABC), Dr Ndedi attendance at the Monetary Policy Committee Conference of the South Africa Reserve Bank (SARB), gave him a broad understanding of Central Bank Monetary Policies and mechanisms and wrote numerous papers and books on the management of Central Banks and corporate good governance.

At PIGIER Business School, he is teaching methodology of research. At Université Internationale des Sciences Appliquées du Développement (UISAD), I am teaching: Management of Ethics in the workplace, Quality Management in organisations, Entrepreneurship and Organisational Behaviour and Corporate Social responsibility

At the University of Johannesburg, he taught entrepreneurship, intrapreneurship, and strategic management. At Hope Africa University, he taught organisational behaviour and corporate ethics at MBA level. At the International Leadership University, Professor Alain Ndedi taught strategic management, Business Ethics and Corporate Social Responsibility to MBA students. He was researcher at Wits University at the Centre for Entrepreneurship. He is head of the board of trustees of the International Council for Family Business; a platform assisting family business owners to efficiently hand over the company to future generations.



**DR SHAHID YAMIN**

Executive Chairman and Co-Founder  
Global Opportunities Commercialisation Pty Ltd (GOC)  
Greater Melbourne Area, Australia

**BIOGRAPHY**

Dr Shahid Yamin is the Chairman and Director of Global Opportunities Commercialisation. He Has 40 years of diverse experience in business concept development through creative and innovative fusion of technology. He is a leader in product development, market validation and development. He is an expert in opportunities validation and disruption of markets to create higher economic and social value for the society through effective commercialisation.

He has a firm belief that sustainable businesses in the 21st century needs to foster on optimising profits by adopting innovative and unique business models that provides high economic, social and community values for the geographic territory in which the business operate

He has helped clients to create, develop and execute successful start-up businesses in South East Asia, South Asia, Europe, Middle East and MENA regions. He has been advisor to government and industry bodies in the Middle East and MENA regions to stimulate entrepreneurial growth and development within their societies. He has created, developed, and implemented centres for innovation and entrepreneurship capacity building.

He has led the development of scale for successful start-up business by designing innovative strategies that fosters on sustainable growth by creating and implementing unique business models that has the potential to have global reach.

Through his association with global universities he has lead the development of entrepreneurial capacity by training developing young executives to become dynamic business thinkers in creativity, innovation and entrepreneurship enabling them to create sustainable businesses across geographic territories.

His extensive experience with large diverse corporations such as BHP, Hoechst, UNIDO, Stone Manganese Marine resulted in the success of the above initiatives. Today, executives trained by Dr Yamin are successfully leading global business.



**DR. SEYED MOHAMMADREZA GHADIRI**

Dean, School of Transportation and Logistics  
Malaysia University of Science and Technology  
Petaling Jaya, Selangor, Malaysia

**BIOGRAPHY**

Dr. Seyed Mohammadreza Ghadiri is the Dean of School of Transportation and Logistics, and he is the former head of postgraduate programs at Malaysia University of Science and Technology. Furthermore, he is the authorized Trainer/Instructor for courses leading to the FIATA Diploma in freight forwarding by FIATA Advisory Body Vocational Training, Switzerland. In September 2020 he was appointed as the dean of the school of logistics at Swiss Institute of Management & Innovation (SIMI), Switzerland. He has been invited as a guest Professor and Keynote speaker of many international events in different countries such as Spain, Poland, China, India, Iran, Vietnam, Myanmar, and Nigeria to deliver his speech, teach the students and train the lecturers and supervise the PhD researchers.



**DR.KIRAN NAIR**

Director - MBA Program & Associate Professor of Management  
Abu Dhabi School of Management (ADSM, UAE)

**BIOGRAPHY**

I am an International Marketing Professional with over nineteen years of experience in Marketing, Management, Human Resource Management, and Supply Chain Logistics Management. My track record shows my expertise and mastery in industry experience in the field of Marketing and Management. Throughout my professional life, I spared no effort in maintaining excellence that helps achieve a company's strategic goals. I have availed myself every opportunity that comes my way to pursue excellence and work on bottom lines by honing my dependable management and interpersonal skills.

From planning and mentoring to becoming an international Faculty, I take pleasure in welcoming challenges that put me on trial and help me to learn something new. My experience in Sales and Marketing has nourished my human skills so much that when I am a part of a team, I produce an interactive workforce with active networking that boosts productivity.

My current profession as a Director and an Associate Professor of Management has allowed me to hold multiple responsibilities and a multi-disciplinarian network. I consider myself proficient in managing and supervising a department that aligns with the University's vision statement. I know how to develop course material, review project reports, and carry out extensive research work and develop individualized academic action plans. I coordinate with strategic department heads and report to the Dean of Management.

Talking about my dynamic track record, as a Country Leader at Imation India Pvt Ltd, and keeping projects on track, I have also focused on ensuring operational efficiency and developing strategic plans. I acted as a Business Development Manager at Imation Middle East Dubai. I was able to generate much revenue through my product and Inventory Management and apply strategies to avoid risks.

I have certifications in Motivating Individuals, Brand Management, Retail Management, and Sustainable Business Strategy. I look forward to connecting with you here. Skills: Marketing, Business Management, Project Planning, and Execution, Teamwork, Marketing, Research & Strategy, Leading Organizational Development, Innovation, Training and Mentoring, and Conflict Management



**PROFESSOR ASMA SALMAN, PH.D**

Blockchain Developer, ChFP, VCD, CFM

Professor of Finance, College of Business Administration

The American University in the Emirates (AUE)

Dubai, United Arab Emirates.

**BIOGRAPHY**

Professor Asma Salman is a Blockchain Developer and a Professor of Finance at the American University in the Emirates, UAE. An Honorary Global Advisor at Global Academy of Finance & Management USA, she completed her MBA in Finance & Accounting and earned a PhD in Finance from an AACSB member, AMBA accredited, School of Management at Harbin Institute of Technology, China. Her research credentials include a one-year residency at the Brunel Business School at Brunel University, UK. Prof. Salman also served as the Dubai Cohort supervisor for DBA students under the Nottingham Business School, UK for 7 years and is currently a PhD supervisor at the University of Northampton, UK where she is affiliated as a visiting fellow. She also served on the Board of Etihad Airlines during 2019-2020. One of her recent articles on “Bitcoin and Blockchain” gained wide visibility and is an active speaker on Fintech, Blockchain and Crypto events around the GCC. She holds various professional certifications including; Chartered Fintech Professional (USA), Certified Financial Manager (USA), Women in Leadership & Management in Higher Education, (UK), and Taxation GCC VAT Compliance, (UK). She recently won an award for “Blockchain Trainer of the Year” by Berkeley Middle East. Others include, Women Leadership Impact Award by H.E First Lady of Armenia, Research Excellence Award and the Global Inspirational Women Leadership Award by H.H Sheikh Juma Bin Maktoum Juma Al Maktoum.



**DR. CHRISTOPHER ABRAHAM PH.D, FCIM**

CEO & Head Dubai Campus & Sr.VP at S P Jain School of Global Management,  
TEDx & International Conference Keynote Speaker  
United Arab Emirates

**BIOGRAPHY**

Dr. Christopher Abraham has three Post Graduate qualifications in HRM, Business Administration (Marketing), Labor & Administrative Law and is a PhD in Business Administration (Design Thinking& Innovation). He is a Certified Design Thinker from IDEO/Stanford and is a Fellow of the Chartered Institute of Marketing (FCIM), UK. He has thirty-four years' experience in management consulting, marketing, and management education in India, Singapore and the UAE.

Currently he is the CEO & Head - Dubai campus and Sr. Vice President (Institutional Development) at the S P Jain School of Global Management, a Forbes Top 10, Economist & FT Top 100 ranked Business School, with campuses in Dubai, Singapore, Mumbai and Sydney

Prof. Abraham has been a visiting Professor at many leading universities in Australia, USA, Canada, Singapore and UK. Earlier in Dubai, he headed the Executive MBA Program of XLRI, Jamshedpur, one of Asia's top business schools.

His areas of competence are Innovation, Design Thinking, Behavioural Design, Neuroscience of Decision Making, Future of Education, Science of Happiness, Leadership, Marketing & Strategy.

A much sought after 3 x TEDx and international keynote speaker, he has successfully presented in numerous global forums and has also conducted many consulting and executive development assignments for global organizations, including The World Bank, The Executive Council (Govt. of Dubai), Emirates Airlines, SEWA (Government of Sharjah), Aramex, DHL, P & G, LG, AW Rostamani (Nissan Auto) etc

# ICASETM - 2021

## 4<sup>th</sup> International Conference on Applied Sciences, Engineering, Technology and Management

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**ICASETM-21**

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**Applied Sciences, Engineering, Technology  
and Management**

**Dubai**

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# **ABSTRACTS**

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**ICASETM -21**

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# Towards Software Energy Efficiency: Proposal of a First Data Structure for Contextualized Evaluation of Computer Program Energy Consumption

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## **Abstract**

One of the major challenges in the field of information and communication technologies ICTs around the world is their huge consumption of energy This is partially because software, whose execution requires the device on which it is running to consume energy is mainly evaluated regarding its contribution from an economic point of view as well as on its help to increase productivity However recent studies have shown that software and computer programs also have significant negative impacts on the energy consumption induced by personal computers, servers and smartphones as well as environmental impacts Generally speaking, ICTs represent more than 13 of global electricity consumption and more than 2 of global CO 2 emissions It is also concerning that these figures are steadily growing.

# Scour by Submerged Inclined Jet in Cohesionless Sediment

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## **Abstract**

The Scour of beds of gravel, sand, weak rock is of significant importance in the field of hydraulic engineering and in Coastal Engineering. To control and predict excessive scour near hydraulic structures, it is important to study scour profile. The main objective of the present study is to determine the response of stratified sand and gravel bed under submerged circular inclined impinging water jets. The laboratory experiments were performed in a circular steel tank of diameter 1.25 m and depth 1.25 m and height of 0.70 m at three jet velocities of 5.98 m/s, 6.39m/s, 6.78m/s were used with different angle of jet from horizontal at 36deg, 45deg, 55deg, 65deg, 75deg in inclined position. It is found that more than 70% of scouring takes place in the first 30 minute of total duration of experiments in both non-stratified cohesionless sediments and stratified cohesionless sediments, the maximum dynamic scour depth increases but the difference in maximum dynamic depth of scour decreases with increase in the value of time. Dynamic scour depth is always greater than static depth.

# Design of Antennas with Small Dimensions for Medical Implant Applications in the Millimeter-Range

**Baneen ALARKAEES**

ALTINBAS University, stanbul, Turkey

## **Abstract**

In this paper, two microstrip patch antennas at (31.5 and 60 GHz) are designed and optimized for medical applications. The crow search algorithm (CSA) is used to optimize the antenna parameters. Our main idea in this paper was to improve microstrip antenna parameters considering many limitations such as antenna dimensions, specific absorption rate, etc. The insulator ranged from 1 to 3. In addition, the area between 300 and 1500 square millimeters is considered. The simulation results of the proposed method show that the design and optimization of the antenna parameters in the millimeter wave band reduces the physical size of the antennas. Therefore, these antennas will be a good choice for medical applications.

# GIS & Remote Sensing in Medi waste logistics: a case study of Vikarabad town Telangana state, India

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## **Abstract**

With the outbreak of COVID 19 everyone has got some kind of awareness of disposing medical waste without contamination. In the contemporary world, ensuring the sanitary-epidemiological and ecological well-being of people is one of the priority directions in the field of human health care. Of all types of wastes, clinical waste engenders a particularly physiological reaction and poses challenges to waste managers, in logistics, economics, handling, storage, transport and eventual treatment. Hospitals in Vikarabad town, Telangana, India are taken in to consideration and logistics for medi waste disposal is proposed by Locating centralized treatment plants and designing optimum travel routes for waste collection from nearby healthcare facilities, Generation of Land use Land cover map of 1km buffer to identify sensitive zone and Environmental Influence of a waste management plant on its surroundings.

# Green Synthesis of Silver Nanoparticles from *Boesenbergia rotunda* Rhizome Aqueous Extract against Ethanol-Induced Gastric Ulcer in Rats

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## Abstract

Synthesis of silver nanoparticles using aqueous rhizome extract of *Boesenbergia rotunda* exhibition extensive range of bioactivities and was traditionally used for the medication of numerous disorders. However, the effect of synthesized silver nanoparticles on gastric ulcer in rodents has not yet been reported. The goal of our training is to assess the gastroprotective influence of synthesized silver nanoparticles on absolute ethanol-induced acute gastric mucosal lacerations in rats. A novel method has been shadowed to synthesize nano silver particle, X-ray diffraction, UV–Vis's spectroscopy and transition electron microscope techniques have been successfully used to characterize the synthesized nanoparticles. Thirty Sprague Dawley rats were arbitrarily divided into 5 clusters: normal control, ulcer control, reference collection, and two experimental assemblies. The normal and ulcer control collections were orally fed with 10% Tween 80. Positive control collection was fed by mouth with 20mg/kg omeprazole. The experimental sets were fed orally (175 and 350 ppm/p.o) Silver nanoparticle, respectively. After 60 minutes the normal cluster was fed with 10% Tween 80, groups 2-5 were orally administered with absolute alcohol. After another hour altogether rodents were sacrificed. The ulcer control cluster showed severe superficial gastric mucosal damages with decreased gastric mucus discharge and pH of gastric content. Silver nanoparticle enhanced adversative influences of alcohol-induced gastric damage as established by lessening ulcer index and inspiring % of ulcer inhibition. Meaningfully condensed ethanol-induced gastric abrasions; as mark by upsurge mucus and pH of gastric content, reduced ulcer area, abridged or absence of edema and inflammatory cells infiltration of subcutaneous layer. In stomach mucosal homogenate, synthesized silver nanoparticle presented important rise in superoxide dismutase (SOD), catalase (CAT) activities, Prostaglandin E2 (PGE2) and substantial decreased f malondialdehyde (MDA) level. Silver nanoparticles prevent gastric oxidative stress via inhibiting lipid peroxidation. In addition, silver nanoparticle increases the strength of periodic acid Schiff stained (PAS) of gastric epithelium and produced up-regulation of Hsp70 protein, and down-regulation of Bax protein of stomach epithelium. The current study highlight that silver nanoparticle approved gastroprotective influences which could be accredited to its antioxidant, upsurge mucus secretion, rise endogenous enzymes (SOD, CAT, PGE2) and decreased MDA level, and up-regulation of HSP-70 protein and down-regulation of Bax protein.

## Keywords

Silver Nanoparticles, Thioacetamide, Gastroprotective, *Boesenbergia rotunda*, Histopathology.

# Corncoobs Biochar to Minimize Contamination of Endosulfan Residues in Rice Products toward Healthy Food

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## Abstract

Endosulfan is one of the organochlorine insecticides which persistent, bioaccumulative, and toxic and used for agriculture protection in cotton crops, vegetables, also food crops including rice. Endosulfan was used widely in order to reach high productivity during green revolution in 2001. Unfortunately, residue of endosulfan can be carried over into the rice; so it has potential to disrupt human health. This research objectives are finding the effect and optimal dose of corncob biochar to reduce endosulfan residue in rice product by changing composition between corncob and organic manure in laboratory. We used corncob biochar because it has high absorbance to iod compare to other agricultural waste such as husk, oil palm bunches or coconut shell. Corncob biochar also known as good breeding media for microbas. First step, we took organic manure and three replications of contaminated paddies soil from plandi, jombang district, east java, indonesia. Second step is conducting seven pot experiment in Indonesian Agricultural Environment Research Institute (IAERI) Laboratory from May-October 2015 with different composition between corncob and organic manure. The result showed that corncob biochar-organic manure can reduce  $\alpha$ -endosulfan (probability= 0.0002) and endosulfan sulphate (probability=0.0265) significantly from amount of initial residue in rice;  $\alpha$ -endosulfan residue decrease for about 67-90% and endosulfan sulphate residue lessen to 68-84% with optimal dose of corncob biochar-manureare ratio 1:4. Application of corncob biochar-manure with 1:4 ratio can increase rice product to 4.3% (corncob biochar-chicken manure) and 9.7% (corncob biochar-cow manure) respectively. Therefore, corncob biochar-organic manure technology can improve the quantity and quality of rice product in paddy soil contaminated of endosulfan that is safer for human to consume.

## Keywords

corncorb biochar;  $\alpha$ -endosulfan; endosulfan sulphate; healthy food.

# A Review for Phase Change Materials and Concurrent Techniques for Thermal Energy Storage

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## **Abstract**

Phase change materials, organic or inorganic, have a potential usage in thermal energy storage systems. Storing heat by slight temperature differences has applicational advantages. However, there are a lot of material options, each having advantages and disadvantages. Additionally, frames for handling the phase change materials can have an impact on thermal storage performance. For instance, porous frames enhance heat conduction into the materials. Nano particle concentrations are being investigated for the purpose of better heat conduction and stability. In this work, recent literature has been surveyed and a general state of phase change materials and related thermal storage systems has been tried to be compiled.

## **Keywords**

Heat Storage, PCM, Sustainability

# Polymer Incorporated With Transition Metals Composite for Enhanced Electrochemical Performance

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## Abstract

Preparation of 2D transition material with conducting polymer obtained different morphology structure such as Nanowire, nanorods, nanotubes, nanoflowers and nanosheets, and nanofibers, MoS<sub>2</sub>-PANI nanocomposite involving monolayer and multi-layer structure, this material hold by Vanderwaals force and bonding between covalent bond. Ideally MoS<sub>2</sub>-PANI flakes morphology obtained through facial hydrothermal method, protonated conducting polymer acts as a binding agent the hybrid nanocomposite which enhance the electrochemical properties and also this nanocomposite influence the application such as supercapacitor, lithium ion battery, Hydrogen evolution and gas sensor as well as Biosensors.

MoS<sub>2</sub>-PANI flakes nanocomposite mainly depend on the concentration and pH of the solution this is main key factor for synthesis of nanorod flakes structure, morphology structure studied through FESEM, HR-TEM and STEM, band structure and functional group of MoS<sub>2</sub>, MoS<sub>2</sub>-PANI characteristics band peaks at 1455 cm<sup>-1</sup> and 1575 cm<sup>-1</sup> are attributed with the C=C quinonoid(Q) and Benzenoid(B) units, those peaks corresponding at 1136 cm<sup>-1</sup> and 890 cm<sup>-1</sup> are assigned to C-H in Q and B rings, functional groups confirms via FTIR, and cyclic voltammetry reveals the large surface area of the sample and capacitance. The EIS plot shows the lower frequency zone to higher frequency zone here electrochemical diffusion process electrode contact between electrolyte and varies the charge transfer resistance. XPS wide survey spectrum confirms the presence of Molybdenum, Nitrogen carbon and Sulphur, the binding energy for Mo 3d<sub>5/2</sub> and Mo 3d<sub>3/2</sub> peaks at 228 and 231 eV S2p spectrum located at 161 and 162 eV indicates the S2p<sub>3/2</sub>, S2p<sub>1/2</sub>. These values confirms the presence of MoS<sub>2</sub> Nano sheets embedded on surface of PANI.

## Keywords

Conducting polymer, binding agent, morphology, frequency, electrolyte, facial hydrothermal, flakes.

# Multi-Dimensional Analysis of Software Documentation Based on User Feedback and Perspective

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## **Abstract**

Developing Software documentation has been around for several decades. From legacy systems to new-age technologies, documentation plays a key role in making the product usable and sustainable. One of the important aspects of maintaining software documentation is editing it based on periodic product updates and changes. Over the past two years, I have been writing and maintaining documentation for one such novel product. The whole idea of this product is to build a community around it and the team believed that the best way to do it is to make it a hundred percent user friendly with end-to-end documentation: Documenting every feature and functionality in its simplest form thus making it self-understanding.

That's when the idea of drawing user-feedback came to light - users including developers, testers, community members, and the end-clients. This presentation will focus on the different dimensions, such as readability, size of documents, content vocabulary and so on, that were analyzed and tracked to improve the effectiveness of the entire documentation kit. With real-time data, this method has consistently improved the quality of documents and has been well received by the community as well. As a team, we plan to innovate and implement new methods based on user feedback to continuously improve the software documentation.

# An Experimental Study on the Effect of Mineral Nanofillers with Platelet and Spherical Morphologies on Creep Resistance of High-Density Polyethylene

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## **Abstract**

The study aims to investigate the morphology effect of mineral nano-reinforcements, which have platelet and spherical, on the short-term creep behavior of high-density polyethylene (HDPE)-based nanocomposites. The nanoclay and nano-CaCO<sub>3</sub> reinforced HDPE nanocomposite granules were prepared by the melt-mixing method using a compounder system and then were molded as plates using an injection molding. The creep behavior of 1 wt.% nanoclay and 1 wt.% nano-CaCO<sub>3</sub> reinforced HDPE was measured through a Z250 model tensile testing machine supplied by ZwickRoell Testing Systems. The unreinforced and reinforced HDPE nanocomposites were investigated at room temperature ( $23 \pm 1^\circ\text{C}$ ) and strain rate of  $1\text{E-}4$  1/s under 8 MPa stress levels. Based on this study's aim, the nano-reinforcement loading rate, creep time, strain rate, applied stress, and ambient temperature were kept constant and focused on the morphology difference of nano-reinforcements. Consequently, it was found that the creep resistance of the HDPE has increased with the addition of both mineral nano-reinforcements. Besides, it was detected that the platelet-structured nanoclay increased the creep resistance of HDPE more than spherical-structured nano-CaCO<sub>3</sub>.

## **Keywords**

Creep, HDPE, nanoclay, nano-CaCO<sub>3</sub>, morphology effect

# Evaluation of Restoration Time of an Electrical Power System

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## Abstract

The restoration time of an electrical power system following a blackout is a crucial matter in the operation of such systems. This proposed paper presents a case study for minimizing the restoration time of a power system which is controlled and operated by the Jordanian National Electric Power Company (NEPCO). The adopted algorithm depends on dividing the power system into zones, such that each zone has its own Black Start System (BSS). This BSS is responsible for operating the auxiliaries of generating units, which in turn will trigger the operation of the main generators in the corresponding power station. The main objective of the adopted algorithm was to find the optimal number of zones by considering the location and size of BSS, in such a way to minimize the restoration time. The analysis was carried out by means of the simulation platform of Digsilent power factory. In the carried-out simulation, three cases of restoration were considered and evaluated respectively, one black start unit at the south region it takes 3 hours of restoration time, two black start units at the south and the middle regions they take 1.5 hours for each, three black start units at the south, the middle, and the north regions they take 1 hour.

## Keywords

Design Black Start, Black Start Units, Restoration Time, Blackout

# Vertical and Longitudinal Phytoplankton Distribution and Biodiversity in a Tropical Man-Made Lake, Malaysia

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## **Abstract**

Vertical and longitudinal phytoplankton distribution was conducted (February 2019 - January 2020). Transparency, pH & TSS were high at photic water but decreased gradually into aphotic except pH that was opposite. The chemical parameters were low at the surface and increased with deeper water. The physical parameters except pH were slightly lower during the wet season but conductivity and total phosphorous were slightly higher during the dry season. There were six phytoplankton groups which comprised Chlorophyta(37%), Pyrrhophyta(24%), Bacillariophyceae(20%), Cyanopyta(17%), Chrysophyta(1%) & Charophyta(1%). A total of 1,472 species were recorded from 57 genera. The mean values of phytoplankton (mg/L) in Riverine, Transitional and Lacustrine were 18.79, 13.46 & 24.68 and 2.88, 2.55 & 2.00 for photic & aphotic respectively. The ANOVA results showed significant difference between longitudinal (photic & aphotic) with regards to phytoplankton at  $P=0.05$ . This means that the higher phytoplankton density reported at photic shows more availability of nutrients and the water's stability and better health status of the Reservoir. Phytoplankton encountered in the water body reflect the average ecological condition, and therefore, can be used as an indicator of water quality.

## **Keywords**

zone, transparency, phosphorous, parameters and management.

# The Novel 3d-Hierarchical Helical Rod-Like Structured Porous Carbon Derived From Ganoderma Lucidem Spore for High-Performance Electrochemical Supercapacitor

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## Abstract

In this paper, we describe pure three-dimensional hierarchical honeycomb-like porous carbons (3D-HHPC) by carbonising and activating Ganoderma Lucidem spores (GLS) in a single step using a 4M KOH electrolyte active agent. A variety of techniques, including XRD, FTIR, and FESEM, were used to study the micromorphology, pore structure, and pore size distribution of the 3D-HHPC systems. The electrochemical performance of the oxygen doped 3D-HHPC/900 exhibits a Galvano charging-discharging mechanism (GCD) with a high specific capacitance (Csp) of 240.15 Fg<sup>-1</sup> at a current density (CD) of 2 Ag<sup>-1</sup>. The cyclic voltammetry (CV) curve has Csp range is 377.12 Fg<sup>-1</sup>, at a scan rate of 10 mV/s. More notably, even after 4000 repeated cycles, the manufactured SC device maintains exceptional performance, with a capacitance retention of 84.45% and a coulombic efficiency of 97.6%. The 3D-HHPC/900 electrode has an energy density (ED) of 92.38 Whkg<sup>-1</sup> and a power density (PD) of 1662.9 Wkg<sup>-1</sup>. Recent electrode advancements were validated by lighting blue LEDs for 1 to 1.5 min with a voltage decrease. This research introduces a new environmentally favourable, low-cost, and simple-to-use carbon source, as well as a cost-effective and technologically unique method for carbon supercapacitors in environmental applications.

## Keywords

Porous structure; KOH activation; Ganoderma Lucidem spore; Supercapacitor; Electrochemical;

# Top Technological Trends in Fintech and Their Impact on the Financial Sector

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## **Abstract**

Fintech describes the technologies that seek to enhance and automate the delivery of financial services in the finance industry. At its core, fintech is used to help the financial sector better manage its financial procedures and operations by leveraging the specialized algorithms and software used in smartphones and computers. With the constant rise in technological innovations every year, the fintech industry has become the fastest-growing industry in the world. During the coronavirus in 2020, the digital transformation went to new heights as people shifted towards easier options that meet their financial needs. Fintech apps have helped improve customers' access to financial services at their comfort, but their demand is not yet over and continues to increase, further welcoming new technology trends that help to shape the industry. With many people moving towards digital solutions to manage their financial needs, stiff competition among financial institutions is expected to increase. Furthermore, banks and other financial institutions are adopting new ways to improve their banking experience. As a result, they have had to jump on the latest fintech trend to help them sustain a competitive advantage. The paper addresses major fintech trends, including Artificial Intelligence, blockchain, and partnerships, their benefits, and their impact on the finance industry.

## **Keywords**

Fintech, Artificial Intelligence, Blockchain, Biometrics, Crypto market, Voice Banking

# Bending Moment Multiplication Factor for AASHTO Live Loads Adopted in Jordan for Three Unequal Spans with Two Lanes

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## Abstract

The main objective of this study is to calculate a fixed multiplication factor for AASHTO LRFD live loads that will be recommended to give the same results of bending moments, due to 1.8 AASHTO LFD live loads for three unequal continuous spans with variable bridge lengths of [10,20,10] [15,25,15] [20,30,20] [25,35,35] and [30,40,30] meters respectively.

This study is based on the analysis of [20] three-dimensional finite element models, with two lanes using CSiBridge 2015 software. All models were subjected to AASHTO LFD loading and AASHTO LRFD loadings. Results obtained are from combination loads and live loads show that all bridge responses values for two lanes increase with increase of span lengths, and these values for AASHTO LFD are higher than those for AASHTO LRFD.

For two lanes, all maximum factors were obtained in bridge length equal to 40m [10, 20, 10], the bending moments factors are 1.53 and 1.79, due to combination of loads and live loads respectively

# Effect of Selected Welding Methods on The Mechanical Properties of Low Carbon Steel Weldments

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## **Abstract**

Welding process is one of the joining methods of metals. It can be applied in the solid and fusion states. In the fusion state welding, the amount of the heat input highly affects the quality of the welding joint from the mechanical properties point of view. To study this effect, three different fusion welding techniques were used to weld low carbon steel samples: shield metal arc welding, MIG welding, and oxy acetylene welding. These weldments were subjected to different types of loadings to investigate their ability to withstand these loading conditions. The results showed that MIG weldments have the best mechanical properties among the other welding techniques if compared with the properties of the base metal.

## **Keywords**

SMAW, OAW, MIG welding, mechanical properties, low carbon steel.

# The Impact of BIM Authoring Tools on the Business Agility of the Architectural Profession

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## **Abstract**

This paper reports on the new prevailing findings from recent research undertaken in the Middle East / Jordan during 2019-2021, investigating the impact of innovative BIM authoring tools on workflow strategies in a selected sample of Engineering Firms in Jordan.

A simple random sampling population was used, in which approximately 10% (125 offices) of the total target research population of 1246 offices registered in the Engineering offices branch in Jordan engineer's association (Jordan Engineers Association, 2019) were selected (N= 1246, n= 125). The firms' profile ranged between high experienced firms and newly established ones covering architectural, structural, or MEP offices or a combination of disciplines in one office.

The research identified several negative effects of the non-integration of BIM on strategic agility and project delivery. It further revealed the requirement of large culture change and cost of integration as limiting factors to the use of BIM in Jordan. These offices resist new technologies thus lose out on BIM's ability to reduce project cost and project duration but also improve quality and increase productivity. This defeats a modern designer's purpose which is to create smart, sustainable buildings for the future.

This paper highlights the outstanding benefits of BIM in the construction industry as it regards financial, improved information sharing, safety, and sustainability, etc. Bringing to notice the world of difference firms miss from not using this tech.

## **Keywords**

BIM, Business Agility, BIM Authoring Tools, BIM Integration, BIM Profession, BIM Workflow Strategies.

# The Potential of UAV-based Imagery and Structure from Motion with RTK and PPK Solutions for Mapping Accidental Areas

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## **Abstract**

Combination of Unmanned Aerial Vehicle (UAV) - based aerial imagery and Structure – from – Motion (SfM) photogrammetry become a valuable tool that offers the capability of obtaining high-resolution images for a difficult and inaccessible area to be surveyed. This paper presents results obtained from different methods of georeferencing of UAV imagery using Real-Time Kinematic (RTK), and Post Processing Kinematic (PPK) for generation of Digital Terrain Model (DTM) and Orthomosaic for an area where the elevation difference is about 1100 m. A fixed-wing UAV equipped with a SODA camera were utilized for the corridor mode imagery. The study area were a corridor of (300 m) wide, and 22km length was covered by six flight missions in almost three hours. The Structure from Motion (SfM) technique was applied to create high-resolution 3D-models. The horizontal accuracy obtained from RTK and PPK solutions were (5.2) cm and (6.2) cm respectively; vertical accuracy were (13.2) cm and (14.9) cm for the RTK and PPK methods respectively. This study demonstrated that the RTK – based technique can provide accurate products than PPK method, despite the partially ground coverage by canopies. The results obtained may be considered adequate for mapping, of the area that can be used for other places because many such difficult and inaccessible regions are not yet surveyed in the region.

# Aspects of E-Waste Reverse Supply Chain: A Literature Review

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## **Abstract**

With the fast-growing electronic waste (e-waste) across globes and amplified community awareness on environmental and sustainability aspects, the manufacturers are reassessing their strategies towards reverse supply chain (RSC), mainly to take control of product returns and develop network design. This study aims to survey the literature and present paper to demonstrate improved understandings and emphasize future directions in the context of Oman e-waste RSC. For this article, 61 published papers between 2011 and 2021 in e-waste research supply chains were reviewed. The literature survey conferred success of e-waste RSC aspects largely depends on the product returns process and network design. Finally, the e-waste reverse logistics framework in the context of Oman is provided for future direction. The findings of this study will support the companies and government, as it allows for in-depth knowledge and understanding of RSC.

## **Keywords**

e-waste, reverse supply chain, RSC, product returns, network design.

# Real-Time Smart Vehicle Surveillance System

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## Abstract

Over the last decade, there has been a spike in criminal activity all around the globe. According to the Indian police department, vehicle theft is one of the least solved offenses, and almost 19% of all recorded cases are related to motor vehicle theft. To overcome these adversaries, we propose a real-time vehicle surveillance system, which detects and tracks the suspect vehicle using the CCTV video feed. The proposed system extracts various attributes of the vehicle such as Make, Model, Color, License plate number, and type of the license plate. Various image processing and deep learning algorithms are employed to meet the objectives of the proposed system. The extracted features can be used as evidence to report violations of law. Although the system uses more parameters, it is still able to make real time predictions with minimal latency and accuracy loss.

## Keywords

Artificial Intelligence, Computer vision, Real-time, Vehicle Surveillance.

# Chemo preventive evaluation of Green Synthesis of Silver Nanoparticles from aqueous extract *Morinda elliptica* stem against azoxymethin-induce aberrant crypt foci in rat's colon

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## Abstract

Synthesis of silver nanoparticles using aqueous stem extract of *Morinda elliptica* display widespread of bioactivities and was usually used for the medicine of many ailments. However, the influence of synthesized silver nanoparticles on prevention of aberrant crypt foci (ACF) induced by azoxymethane (AOM) in rodents has not yet been stated. The goal of our study is to evaluate the chemo preventive effect of synthesized silver nanoparticles on azoxymethane-induced aberrant crypt foci in rats. A new scheme has been followed to synthesize nano silver particle, X-ray diffraction, UV-Vis's spectroscopy and transition electron microscope practices have been efficaciously used to characterize the synthesized nanoparticles. Thirty Sprague Dawley rats were subjectively divided into 5 clusters: negative control group was injected subcutaneously with normal saline once a week for 2 weeks and fed 10% Tween 80 for 8 weeks, the cancer control cluster was subcutaneously inoculated with 15 mg/kg azoxymethane once per week for two successive weeks, the positive control collection was injected subcutaneously with 15 mg/kg azoxymethane once per week for two repeated weeks and 35 mg/kg 5-fluorouracil (injected intra-peritoneally) for 4 weeks, and the experimental clusters were first injected with 15 mg/kg azoxymethane once per week for two consecutive weeks and then fed 175 ppm/p.o or and 350 ppm/p.o silver nanoparticle, respectively once a day for 8 weeks. Administration of silver nanoparticle suppressed total colonic ACF formation when compared with cancer control collection. Analysis of colorectal specimens revealed that treatments with silver nanoparticle reduced the mean ACF scores in azoxymethane-treated rats. Important raises of superoxide dismutase (SOD), glutathione peroxidase (GP) and catalase (CAT) activities and reduction in level of malondialdehyde (MDA) were also detected. Histology, ACF presented strangely elongated and stratified cells, and depletion of the submucosal glands of cancer control cluster compared to silver nanoparticle fed collections Immunohistochemical staining confirmed down-regulation of PCNA and Bcl2 proteins and up-regulation of Bax protein in rats fed with silver nanoparticle compared to cancer control collection. Conclusion: The present study demonstrated that the silver nanoparticle has promising chemoprotective activities that are evidenced by significant decreases in the numbers of ACFs in azoxymethane-induced colon cancer.

## Keywords

The article discusses the diagnostics of pumping and turbine equipment as one of the key factors in ensuring high efficiency of operation of pumped

# UNC EAVIR System Engineering and Architecture Visual Information Relay System

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## **Abstract**

This study aimed to design and develop a Wi-Fi based information broadcast system for the College of Engineering and Architecture of the University of Nueva Caceres that facilitate systematic management of disseminating notices, advertisements and other important information to the intended community. It specifically identifies the process, requirements and problems in disseminating information; design and develop a Wi-Fi based information screen system suited for the College, and determine the effectiveness of the developed system. The developmental and descriptive research design was utilized since the researcher intended to develop a system that will facilitate a systematic management of information dissemination in the College of Engineering and Architecture. The Waterfall project management method that uses a sequential process on its core serves as the guide to develop the system.

The UNC EAVIR System is a digital notice board where data such as text, image, video, and audio files are transmitted through a laptop computer over a Wi-Fi network connection using a Raspberry Pi B+ SBC (Single Board Computer). Raspberry Pi B+ SBC with a modified Raspbian OS with PiSignage OSE player was utilized that processes and stores the received data and allows it to be displayed to a Wi-Fi device such as a TV, monitor or other similar devices. A workstation or a laptop computer, with a network connection is used as the main comptroller of the project. Phones running Android and iOS can also be used as an optional comptroller of the system, but are not encouraged. The system can also be controlled wirelessly with or without internet connection. After several tests were conducted, it was discovered that the data can be transmitted at any size except for the video file which should not exceed 100MB. It was also found out that the system is effective and economically better than manual posting. Thus, it can be a viable substitute or suppliant for the manual way of posting in schools and offices where sudden announcements can be easily displayed.

The system shows excellent results on its effectiveness having an average weighted mean of 4.42 which indicates it can be an alternative way to post announcements or advertisements in schools and offices Also because of its ease of use and controlling the data, the persons assigned in updating the board can do more. Moreover, the data transmission, uploading speed and its response time is excellent resulting for the display to be easily changed and updated.

## **Keywords**

Wi-Fi, Raspberry Pi B+, PiSignage OSE

# Green Synthesis of Silver Nanoparticles from aqueous extract of *Tinospora crispa* stems accelerate wound healing in rats

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## Abstract

Synthesis of silver nanoparticles using aqueous extract of *Tinospora crispa* stems exhibition wide variety of bioactivities and was conventionally used for the medication of abundant syndromes. Though, the effect of synthesized silver nanoparticles on wound healing in rats has not yet been described. The purpose of our research is to evaluate the role of silver nanoparticle in enhancing the rate of wound healing and closure on excision wounds in rats. A novel technique has been followed to synthesize nano silver particle, X-ray diffraction, UV-Vis's spectroscopy and transition electron microscope procedures have been effectively used to characterize the synthesized nanoparticles. Twenty-four Sprague Dawley rats were subjectively separated into 4 clusters: vehicle control, positive control, groups, and two experimental assemblies. The vehicle control group dressed topically by thin layer of Vaseline; positive control cluster dressed topically with thin layer of Intrasite gel. The experimental groups were dressed topically with 175 and 350 ppm silver nanoparticle, respectively. The wounds were dressed twice daily for two weeks and sacrificed on day fifteenth. Gross morphology, wound dressed with Intrasite gel or silver nanoparticle accelerate the rate of wound healing closer compared to vehicle control group. Histology and immunohistochemistry (expression of Bax and HSP 70 proteins) evaluation disclose that wound dressed with silver nanoparticle exhibited wound closure site contained slight quantity of scar and granulation tissue contained more collagen and less inflammatory cells compared to wounds dressed with vehicle. This finding was confirmed with Masson Trichrome staining. The endogenous antioxidant enzymes catalase (CAT), superoxide dismutase (SOD) was significantly increased in wound tissue homogenates dressed with silver nanoparticle clusters compared to vehicle control group. Though, lipid peroxidation (MDA), TGF- $\beta$  and TNF- $\alpha$  were significantly decreased in in wound tissue homogenate dressed with silver nanoparticle compared to vehicle cluster. In conclusion, silver nanoparticle suggestively improved cell proliferation and enhanced the rate of wound closure, with less scarring, improved fibroblast and collagen fibers and less inflammatory cells compared with the vehicle control cluster. Silver nanoparticle also increases endogenous enzymes and decline lipid peroxidation, TGF- $\beta$  and TNF- $\alpha$  in wound homogenate.

## Keywords

Wound Healing, Silver Nanoparticles, Endogenous Enzymes, Masson Trichrome.

# X-RAY Chest Images Classification with Convolutional Neural Networks Model Through Hyperband and Hyperparameter Approached

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## **Abstract**

It has been observed that particularly more than a million peoples hospitalized with pneumonia symptom and around thousand die from disease every year in the US. Pneumonia case is increasing significantly during Covid 19 pandemic since quarter 2020.

Currently the methodology for early identification of pneumonia is through chest x-rays imaging which playing crucial role in identifying/ early diagnose of the symptom. However, the identification process become challenging since require availability of expert radiologists (as reported by WHO).

With current pandemic, patient with lung case especially pneumonia or bacterial/ viral symptom has been increased and has impacted to delivery of early identification/ diagnostic. Analytic time consumed and accuracy become big challenge for expert radiologist as reference for further healthcare treatment.

This research paper is part of Final Capstone Project to introduce of building Deep Learning Model through Hyperband and Hyper-parameter approached with better performance in classifying normal and pneumonia category of chest x-ray image datasets.

## **Keywords**

Neural Network Model, CNN, Hyperband, Image Processing, Deep Learning

## Cancer & ITS Treatments

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### **Abstract**

One thing that makes cancer tough to fight is that its cell can dodge your immune system. Your body either doesn't see them as threats, or it simply can't work hard enough to fight them.

But some new immunotherapy drugs 'mark' these cells so that they're easier to find. These medicines can also make your body defence stronger so they can attack tumors.

This type of treatments is already fighting some forms of cancer. Many more drugs are in this type of treatment is already fighting some forms of cancer. Many more drugs are in the works.

The FDA has approved a form of gene therapy called CAR T-cell therapy. It uses some of your own immune cells.

Right now, the drug called TISAGENLEUCCEL[KYMRIAHA] is approved for treatment of children and young adults up to age 25 with B-cell acute lymphoblastic leukemia who haven't gotten better with other treatments. But scientists are working on a version of CAR

Tisagenleucal and axicabtagene[YESCARTA] are both approved for treatment of certain types of B-cell lymphoma that has not improved with other treatments. The FDA recently approved a new treatment called BREXUCABTAGENE AUTOLEUCCEL[Tecartus] for patients with mantle cell lymphoma that has not improved with other treatments or has come back after treatments.

# Agile Test Automation for Web Application by Using Testing Framework with Random Integration Algorithm in Machine Learning Approach to Predict Accuracy on Automated Test Results

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## **Abstract**

Testing is major component of any software engineering process meant to produce high quality application. Testing aims at finding errors in the tested object and giving confidence in its correct behavior by executing the tested object with input values. According to the daily use, Web applications take the first place in development and testing. Testing automation enables developers and testers to easily automate the entire process of testing in software development saving time and costs. Our proposed work will test a public website using “TestNG framework” which is a framework for automated testing and save the test results into a specified path in the format of ‘.csv’ or ‘.xls’ file. The output file has been analyzed by various machine learning algorithms such as Support Vector Machine Algorithm (SVM), Random Forest Algorithm and Random Integration Algorithm. The comparison between all different algorithms will be analyzed and the obtained results will be plotted into a graph.

## **Keywords**

Testing automation, Web applications, TestNG framework, SVM, Random Forest Algorithm, Random Integration Algorithm.

# Preparation of Graphene Oxide/Cobalt Oxide Nanocomposite Electrode Material for Electrochemical Sensor Application

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## Abstract

A sensitive electrochemical sensor has been fabricated based on graphene oxide/Cobalt oxide (GO/Co<sub>3</sub>O<sub>4</sub>) nanocomposites (NCs) synthesized by a facile hydrothermal method and the pure graphene oxide (GO) is prepared using Hummer's method. The developed sensor was used to determine the Glucose. The structural and morphological characterization were carried out using x-ray diffraction (XRD), Raman spectroscopy, UV-Vis absorption, Field Emission Scanning Electron Microscopy (FESEM), High-Resolution Transmission Electron Microscopy (HR-TEM). The variation in dielectric constant with the addition of Co<sub>3</sub>O<sub>4</sub> at different temperature and the frequency range 20 Hz to 1 MHz were accessed through impedance analysis. Further electrochemical sensor studies shows that GO/Co<sub>3</sub>O<sub>4</sub> NCs exhibited good Electrochemical activity for the oxidation of glucose in solution with phosphate buffer (PBS) at pH 7.2. For individual determined, the oxidation peak current was linearly increased with the concentration of glucose in the range of 3 μM to 15 μM, respectively. The detection limit of glucose was estimated to be 1.12 μM and 1.33 μM, respectively, with (S/N=3). The fabricated modified electrode exhibits display an excellent interface ability species and metal ions with good stability and reproducibility. Result shows that that the developed sensor has a potential to determine the target analytes in real samples with satisfactory efficiency.

## Keywords

Graphene oxide; Cobalt oxide nanocomposite; Amperometric; Glucose sensor

# A Stretch of Unpaired Purines in the Leader Region of Simian Immunodeficiency Virus (SIV) Genomic RNA is Critical for its Packaging into Virions

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## Abstract

Simian immunodeficiency virus (SIV) is an important lentivirus used as a non-human primate model to study HIV replication, and pathogenesis of human AIDS, as well as a potential vector for human gene therapy. This study investigated the role of single-stranded purines (ssPurines) as potential genomic RNA (gRNA) packaging determinants in SIV replication. Similar ssPurines have been implicated as important motifs for gRNA packaging in many retroviruses like, HIV-1, MPMV, and MMTV by serving as Gag binding sites during virion assembly. In examining the secondary structure of the SIV 5' leader region, as recently deduced using SHAPE methodology, we identified four specific stretches of ssPurines (I-IV) in the region that harbors major packaging determinants of SIV. The significance of these ssPurine motifs were investigated by mutational analysis coupled with a biologically relevant single round of replication assay. These analyses revealed that while ssPurine II was essential, the others (ssPurines I, III, & IV) did not significantly contribute to SIV gRNA packaging. Any mutation in the ssPurine II, such as its deletion or substitution, or other mutations that caused base pairing of ssPurine II loop resulted in near abrogation of RNA packaging, further substantiating the crucial role of ssPurine II and its looped conformation in SIV gRNA packaging. Structure prediction analysis of these mutants further corroborated the biological results and further revealed that the unpaired nature of ssPurine II is critical for its function during SIV RNA packaging perhaps by enabling it to function as a specific binding site for SIV Gag.

## Keywords

Retroviruses; Simian immunodeficiency virus (SIV); RNA Packaging; Single-stranded purines (ssPurines); RNA secondary structure

# Building a Deposit-Refund Scheme for Closed Loop Recycling of Water Bottles in UAE

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## **Abstract**

In the UAE, water bottles are highly used by the population, with usage reaching up to 250 Liters per person annually. These bottles, made of polyethylene terephthalate (PET), are often disposed of in the landfills. This paper proposes building a waste disposal system for closed-loop recycling of 0.5L PET water bottles in the UAE. Water bottles are collected by a Reverse Vending Machine (RVM) and recycled to produce the PET bottles, where the proposed system will reward the consumers with 0.04 AED per deposit of consumed water bottle. Additionally, this research calculates the cost of 100% vPET and 60% rPET bottles based on the UAE population, data obtained from local water bottle companies, and other researches. The results showed that adopting such a DRS will reduce the landfill buildup, reduce the wastes, protect the environment, improve the manufacturing processes of water bottles and has great positive impact on the local economy.

## **Keywords**

Deposit Refund System (DRS), Closed Loop Recycling, Polyethylene Terephthalate (PET), Environment.

# Assigning Decision Makers' Weights using TOPSIS Method in Spatial Multicriteria Group Decision Support System

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## **Abstract**

Weights of decision makers (DMs) play an important role in multiple attribute group decision-making problems, and how to attribute these weights is an exciting research topic. The latter problems constitute real organizational architectures where the decision is characterized by several criteria and involves different decision-makers (DMs) with different perspectives. In this paper, a weighting module is integrated into a web-based intelligent multi-criteria group decision support system. The latter module is responsible for weights assignement to DMs. It is based on a multi-criteria method called "Technique of Order Preference Similarity to the Ideal Solution" (TOPSIS). The main idea is to obtain a ranking of decision-makers (from best to worst) according to various alternatives, and then use the Softmax function to determine their weights based on the TOPSIS ranking values. The new module was tested on a real case study in territorial planning. The obtained results demonstrate the impact of the weighting procedure on the final decision in the decisional process, as the final decision was influenced by the weight values assigned to DMs (importance degree). Future work will improve the weighting module to handle additional types of data, such as linguistic or fuzzy numbers

# Novel Techniques for Software Reliability Prediction

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## **Abstract**

With the rapid advancement in computer technology and quick development of computer applications, the scale of the software system has enhanced and the function has become more complicated issues. Hence, the requirement of software quality is in great demand. In general terms, the probability failure free operation is termed as software reliability for a particular duration of time in a particular environment is one of the major qualities metric. Over the past decades, software has become an important solution for every purpose from elementary basic education to scientific studies and other research. Necessity and dependency for computer increases the software failures. The increase in number of computer users" also leads to the difficulties in maintaining the software requirements. To avoid these problems software reliability essential to adapt at the time of development of software so that they can get solution for software reliability that can address these issues. Software testing is the important issue to be considered in quality control used while doing the software development.

## **Keywords**

Software Reliability, software testing, Software requirements.

# MOCF: A Multi-Objective Clustering Framework using an Improved Particle Swarm Optimization Algorithm

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## Abstract

Traditional clustering algorithms such as K-Means perform clustering based on a single objective. However, in many real world applications, there is need for considering multiple objective functions simultaneously. Moreover, classical clustering algorithms suffer from disadvantages such as centroid selection, local optimal and convergence. In order to overcome these drawbacks, Particle Swarm Optimization (PSO) based clustering approaches came into existing. PSO is inspired by animals and their social behaviour particularly bird flocking and fish school schooling. Moreover, PSO is found suitable for multi-objective clustering as their usage of population to approximate whole pareto set with a single algorithm run. In this paper, an improved PSO based framework known as Multi-Objective Clustering Framework (MOCF) is proposed. An algorithm called Particle Swarm Optimization based Multi-Objective Clustering (PSO-MOC) is proposed. It improves clustering efficiency to a greater extent. Multiple real world datasets are used to evaluate the performance of the proposed framework. A prototype application is built using Python data science platform to know the performance of the proposed algorithm. The empirical results revealed that multi-objective clustering has shown better performance over its single-objective counterparts. And PSO based algorithm outperformed the existing non PSO based multi-objective clustering algorithms.

## Keywords

Clustering, multi-objective clustering, PSO, multi-objective clustering framework

# The Enduring Tension Between The Family Owners And The Atomistic Absentee Owners in Canada: How The Capital Market Regulations Allow for the Abusive Expropriation of Minority Shareholders And The Polarization and Entrenchment of the Large Shareholders?

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## **Abstract**

It is evidenced in the past literature in different countries except for the US and in this research that the ownership structure in Canada is concentrated in the hands of mainly the two largest owners, who are most usually wealthy families. They used pyramidal structure, cross-holdings, and multiple voting rights as the most practical ways to attain their goals and to entrench themselves. Other mechanisms used are not yet well studied, such as the benefits they get from the internal capital market they create in their conglomerates. The minority holders cannot afford financially and logistically to create a sustainable coalition to tackle the pressure exerted by the block-holders on the decision-making like dividend distribution. The question that arises is how the capital market regulations don't contain this situation to protect the minority shareholders and monitor capital markets' efficiency for a more robust economy. Is it a question of politics such as lobbying? Further research should address this issue.

## **Keywords**

Large shareholders, minority owners, expropriation

# Comparative Analysis of Ownership Characteristics between Acquiring and Target Companies during Mergers & Acquisitions in the United States

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## **Abstract**

From the data base about 3968 companies of America, we have defined two types of samples that are acquiring companies and the target companies during the total operation between acquisitions and mergers. Moreover, the results have allowed us for defining both the types of organization under several aspects like control structure, size, and ownership structure. However, we have found out that the total target having the ownership that is concentrated about 32% and in several cases in which the owner of the family is involved. However, it is marked out than within 22% cases the total cases belong to the member who is the main head for the direction. Moreover, we have also noticed the total existence of the pyramid structure within the ownership structure and the institutional investor comes in the second phase as the ultimate owners. However, for the acquires, we have noticed the structure less ownership that is concentrated for the targets. Moreover, in most of the cases the main owner is the family within the place or in the institute of finance within the second place. On the other hand, the percentage of the families as the main owners is not higher for the acquires as it is for the targets and the opposite is happening when we are considering the total financial institutions as the ultimate owners. We have also noticed the total existence of the total structure of pyramid within the ownership of the acquirer. Moreover, the test of the mean difference is shown that the acquires are significantly less and larger concentrated than the targets. Finally, we have founded the positive significant relationship between the probabilities that is acquired, and the total ownership is concentrated within the firms.

## **Keywords**

mergers, acquisitions, ownership structure, pyramid structure of ownership, family control

## Characterization of *Acinetobacter baumannii* isolated from medical personnel lab coats and scrubs

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### Abstract

*Acinetobacter baumannii* is a notorious pathogen that is implicated in causing severe nosocomial infections. The pathogen seems to be transmitted within hospital environments and touched surfaces, in addition to personnel attires. In this project, 188 lab coats and scrubs from doctors, nurses and medical students were swabbed from three different locations; mid-sleeve, collar and waist. Upon testing the swabs for *A. baumannii*, 35 isolates were identified using CHROMagar Acinetobacter and confirmed by multiplex PCR assay. The isolates were tested for their resistance to commonly used antibiotics using the disc diffusion and MIC methods. Among the isolates, nine were considered extensively drug resistant (XDR), eight isolates were multi-drug resistant (MDR), while the rest of the isolates were non-MDR. Nevertheless, all isolates were sensitive for colistin, polymyxin B and tigecycline. The carbapenem-resistance genes, blaOXA-51 and blaOXA-23, were detected in 100% and 43% of isolates, respectively. Testing the capability of the isolates for biofilm formation is ongoing. Our findings suggest that lab coats should be cleaned and sterilized more frequently to eliminate the possibility of harboring and transmitting *A. baumannii* to patients.

# Opinion on Employability Skill Set: Perspective in Oman Job market

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## **Abstract**

Currently, employers finding suitable candidates with the right skills and competencies for their organizations is a complicated process. Employers want graduates with a variety of well-honed life skills. Just getting the job done is not enough employees will need to be able to work unsupervised and be team players, demonstrate creativity and develop innovative ideas. However, in the job market, stakeholders have a different opinion on the skill set required in the job market; hence, this study aimed to know the idea on graduate employability skills amongst top management, HEIs, students, and employees in Oman. This study will help higher education institutions (HEIs) in Oman to assess academic program performance and restructure course outcomes for the expectation of the labor market in the Arab region. This study result will help develop higher education institutions' strategies to fill the gap of graduate skill deficiencies and to suit the required skills in the industry.

This paper has reviewed and synthesized various theoretical aspects from various sources and applied the Henry Garrett ranking technique to know the opinion of prioritized skills for employability by different stakeholders in the study area. This study will support identifying various stakeholders' perceptions and finding resolution techniques to meet the requirements in the labor market. The significant finding from the survey analysis is that top management required skills sets are enthusiasm, motivation, and independent study skill, and faculty understanding of necessary skills for the graduated in the labor market is enthusiasm, motivation, commitment, planning and organizing skill, students opinion that required skills in the global market are independent study skills, commitment, planning, and organizing skills but employees in the organization feel that enthusiasm, motivation, self-management and time management required in the job market. This research motivates students to understand the skills deficiencies from the employers' perspectives and enhance their competency skill gap. This study will provide the future path for HEIs and the government to enrich the quality of teaching and learning aspects as per the modern digital world.

# Design and Development of Hybrid Solar-Wind Energy Storage System for Storage capacity

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## **Abstract**

This research paper introduces a hybrid energy storage system using both wind energy and solar energy so that it can remarkably increase the energy storage capacity and the output power of the system. The proposed system is mainly used for storage purposes and the renewable energy sources are used instead of non-renewable energy source. Hybrid systems are considered an efficient research area in energy storage systems owing to their excellent output efficiency and better and excellent charge generation in case of any environmental conditions. It uses the conventional charging controller to charge the battery when wind and extreme solar irradiation conditions occur. The proposed project has started with MATLAB software simulation of the wind storage system and the solar energy storage system. After the Matlab Simulation, the prototype working model has been designed in an efficient manner with all the necessary components in both initial level prototype model and the final level prototype model. Then the working model is developed with the final model design. The results of the generated power from this hybrid energy storage system has been tested and verified by connecting the necessary details.

## **Keywords**

Hybrid Energy Storage Systems, PV Cell, Wind Turbine, Charge Controller.

# Advances in Industrial Capital Budgeting Practice: An overview of Responses and Discussions in Oman

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## Abstract

Capital allocation is regarded as one of the most critical decisions facing organisations across the globe, and there are varieties of tools and techniques for managers to make the appropriate investment decision. To obtain an overview of the recent developments in capital budgeting practice, and as part of a larger project, this global expert report leverages the increased use of research webinar methodology of the Covid-19 pandemic age to present the synthesis of expert oral presentations in Oman regarding emerging developments in capital investment techniques with an emphasis on four pillars; namely, the traditional capital investment methods such as the payback period (PB) and the net present value (NPV), the application of financial and non-financial considerations, the use of more advanced approaches such as real options, and how all these factors are linked to organisation's strategic performance. A critical analysis of the expert presentations shows mixed capital investment practices in various organisations but with a preference for the payback period method, revealing some elements of the practice-theory gap, given the theoretical emphasis on the time value of money associated with the discounted cash flow (DCF) methods. It was concluded that one model is insufficient to gauge the viability of a capital investment proposal. The analysis calls for distinguishing discrete uncertainty from continuous uncertainty in valuation practice and deploying more robust approaches to risk management and measurement of related environmental and social sustainability factors.

## Keywords

Sustainable capital allocation, Manufacturing sector, Oman, Risk management, Real options

# Readiness on the Utilization of Information and Communication Technology in Industrial Relations Disputes in Indonesia

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## Abstract

The existing industrial relations disputes in Indonesia are complex and wider than the objects of industrial relations disputes in accordance with Law number 2 of 2004. As a functional law of labor law must be on the basis of caution in the process of settling industrial relations disputes. The purpose of this study is to examine Indonesia's readiness in the use of information and communication technology in the process of resolving industrial relations disputes. This legal research is normative juridical using a conceptual and statute approach. The results of the study indicated that the readiness on the utilization of information and communication technology as an effort to resolve industrial relations disputes in Indonesia must be examined from the point of view of the legal system using the implementation of Friedman's theory. Readiness of legal substance, namely the unpreparedness of material and formal law that regulates artificial intelligence as an effort to resolve industrial relations disputes in Indonesia.

Readiness of the structure, namely the unpreparedness of institutions and human resources who were capable in creating and implementing Artificial intelligence within the resolution process of flexible industrial relations dispute in the 4.0 revolution era towards society 5.0. The future structure should accommodate the implementation of the functional nature of labor law. The readiness of legal culture was far from reality considering that legal culture in Indonesia is non written classical in nature. The rapid strategy of changing the education system in the utilization of Artificial intelligence must be implemented immediately. The recommendation given is that the State must be present in the effort to construct a legal substance that combines the two interests of productivity and worker welfare both in material and formal law. The state must improve the adaptive justice system in the form of facilities and infrastructure using Artificial intelligence. Readiness to reform the education system that combines local wisdom so that the strategy of accelerating an adaptive legal culture to the industrial revolution 4.0 will be achieved.

## Keywords

industrial relations disputes, artificial intelligence, justice system

# The Utilization of Artificial Intelligence as Legal Evidence in Court in the Justice System in Indonesia

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## **Abstract**

The development on the utilization of information and communication technology in the world society is growing rapidly along with the industrial revolution 4.0. The purpose of this study is to examine readiness of Indonesia in utilizing Artificial intelligence as a form of information and communication technology as legal evidence in court. This legal research uses a conceptual approach and legislation. The results of the study showed that although Indonesia has already a law on electronic technology information and electronic evidence as a deed which is one of the strongest evidence in civil procedural law, but in the trial practice it still cannot be used optimally due to the readiness of the legal or justice system) in Indonesia which has not fully supported the utilization of Artificial intelligence. The recommendation given are that the government needs to prepare regulatory substances related to the utilization of Artificial intelligence in information and communication technology in judicial practice. Secondly, they have to reform the structure of institutions and bureaucratic systems to be more open. Lastly, they have to construct a means of realizing a good legal culture to face the industrial revolution 4.0.

## **Keywords**

Artificial intelligence, evidence, revolution 4.0., justice system

# Impact of Fine Brick Waste Aggregate Addition on Workability and Compressive Strength of Self-Compacting Mortar

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## Abstract

The objective of this research is to investigate whether or not a recycled material such as brick waste (BW) can be used in the concrete mixture as a self-compacting mortar. The possibility of substituting the sand by the brick waste is examined in depth and the brick waste was used as fine aggregate in different proportions varying from 5% to 25% by weight. A series of experimental work was conducted in order to determine the impact of the brick waste on the workability and the compressive strength of the self-compacting mortar. The workability of the concrete was determined by the marsh-cone test as well as by the rheometer test (for fresh mortar). Further the mechanical characteristics of self-compacting mortar, the compressive strength and tensile strength (for hardened mortar) in bending were investigated and all tests were performed for 7, 28 and 90 days. The results show that brick waste increased the cohesion of the mortars due to its viscosity property. It was observed that the mortar prepared with BW has a low flowability compared to regular mortar. It was noticed that replacement of sand by the waste brick has produced a slight reduction in compressive strength.

## Keywords

brick waste, mortar, workability, compressive strength, tensile strength, flexural strength

# Legal Protection for Workers Who Have Been Terminated Due To a Change in the Status of Their Employment Relationship

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## **Abstract**

Work relations are expected to take place properly. Unfortunately, termination of employment happens sometimes. This study aims to determine the form of legal protection and legal remedies from workers who have been terminated due to change in their employment status. This research is a normative juridical with a statutory approach. The result of this study was the change in the employment status could only be done if there is agreement from both parties to re-contract. The absence of a re-contract agreement is a tort. The injured employee can make a tort against the contract which results in termination of the legal relationship. The conclusion stated that termination of employment without a contracting from a change in the employment status is tort and workers can claim the compensation for tort

## **Keywords**

legal protection, employment status, tort.

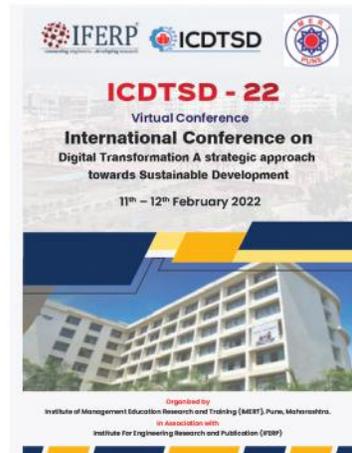


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