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الكلية الحديثة للبحارة والعلوم  
MODERN COLLEGE  
OF BUSINESS & SCIENCE

**CONFERENCE PAPER ABSTRACTS**

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## Session 1

### **Proposal of a Framework for reducing Carbon footprint in the campus and preventive measures to reduce the emission**

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**Abstract.** Many industries and enterprises are attempting to take on the challenge of reducing the effect of greenhouse gases (CO<sub>2</sub>) on climate change in an effort to address challenges related to global warming. Businesses all throughout the world must take the lead in minimizing their carbon footprint. In order to lessen the effects of global warming, this study suggests a new IT-based carbon sustainability framework that offers a complete plan to cut the emissions of greenhouse gases (CO<sub>2</sub>) from data centers. By utilizing new technologies to make better use of servers that have already been installed, the proposed IT sustainability framework lowers the overall cost of ownership in data centers. It also suggests metrics to periodically assess the effectiveness of data centers in terms of energy consumption and CO<sub>2</sub> emissions. The suggested framework also highlights the development of a sustainability strategy for data center managers to implement energy-saving and CO<sub>2</sub> emission techniques to enable them to increase productivity and aid businesses in gaining a competitive edge. These initiatives help data center managers become more aware of the importance of implementing metrics.

**Keywords:** carbon emissions; carbon sustainability framework; Green data centre; greenhouse gases; environmental sustainability; metrics

# Decentralized Finance System for Oman Investment Authority to Oversee Assets and Funds

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**Abstract.** As the dairy industry grows increasingly more diverse and complex, it needs a much more reliable and efficient supply chain management infrastructure. Blockchain addresses these challenges by providing a traceable and trustworthy network, which helps in boosting consumer confidence while also assuring the smooth flow of the supply chain. This paper focuses on how blockchain can be implemented in the dairy industry and how it can benefit the supply chain.

**Keywords:** Blockchain Technology, Dairy Supply Chain; Ethereum; Block-chain in supply chain.

## **Impact of Blockchain Technology on Operations and Supply Chain Management Performance**

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**Abstract.** This paper emphasizes exploring the relationships between blockchain technology and operations, and supply chain management, and the impacts of blockchain on the performance of operations, logistics and supply chain management. The study revealed that blockchain has been widely applied in the logistics and supply chain of various industries resulting in better operations and performances. The study also found that usage of blockchain technology in daily business operations can provide operations and supply chain managers with several advantages starting from increased response times, safe and secured data, proper visibility across nodes, transparent transactions, and supply chain members' trust. This paper also contributes to value in the literature by summarizing recent blockchain advancements and analyzing their prospective applications in the supply chain and operations management field.

**Keywords:** Blockchain, Operations Management, Supply Chain Management, Supply Chain Traceability, IoT.

## Design and Execution of Secure Smart Home Environments on Visual Simulation Tool

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**Abstract.** The advent of smart technologies is going to be a paradigm shift and game changer in resolving current universal issues such as climate change, cybersecurity, health care, mental health, insecure home, food, water, and energy. Evolving smart home systems has been a prodigious and challenging task for engineers, architects, and technologists in real estate owing to the overhead and excess cost of execution and rigorous testing time and process of different types of sensors, smart home appliances, and other sophisticated electronic and electric devices used to transform a real smart environment encompassed with comfort and security.

In this paper, we have proposed an amalgam of heterogeneous features of a smart home using a cisco packet tracer simulator encompassed with IoT devices to offer numerous network components that epitomize a factual network configuration and implementation of a diverse prevalent smart home simulation system with an integration of secure message exchange using RSA based Digital signature algorithm and spanning tree protocol (SPT) of VLAN to converge a smart home environment. The proposed layouts of homes on cisco's visual simulator tool called packet tracer are equipped with adequate smart home solutions with a tremendous set of functions to provide ease and comfort, safety, efficacy, and efficiency of digital security in the homes using electronic smart digital devices of the Internet of Things(IoT).

**Keywords:** Smart home, Packet tracer tool, Internet of Things, Sensors, IoT simulation, SPT.

## Session 2

### Intrusion Detection by XGBoost Model Tuned by Improved Multi-verse Optimizer

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**Abstract.** Artificial intelligence and internet of things (IoT) fields have contributed to the flourishing of the industry 4.0 concept. The main benefits include the improvements in terms of device communication, productivity, and efficiency. Nevertheless, there is a downside concerning the security of these systems. The amount of devices and their diversity prove a security risk. Due to this intrusion detection systems are paramount. This paper proposes a novel framework exploiting extreme gradient boosting machine learning model which is optimized by a modified version of the multi-verse optimizer metaheuristic. The UNSW-NBintrusion dataset was used for experimental purposes on which the other cutting-edge techniques were tested and compared. The results provide the proof of improvement as the proposed method outperformed all other overall metaheuristic performances. Furthermore, the units for truthfulness and polarity for the case have been established as a standard evaluation system. True and false positives exist alongside the same negative counterparts. The results provided by these metrics have been visualized and used for further comparison proving the superiority of the performance of the proposed solution.

**Keywords:** intrusion detection, swarm intelligence, XGBoost, optimization, multi-verse optimizer algorithm.

## **Moth-Flame Optimization and Ant Nesting Algorithm: A Systematic Evaluation**

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**Abstract.** The Moth-Flame Optimization algorithm (MFO) is a widely applied meta-heuristic algorithm. Nevertheless, the Ant Nesting Algorithm (ANA) is another recent powerful algorithm. In this paper, both algorithms are theoretically and practically studied and applied to a simple optimization problem, which has a simple objective function. All steps of the algorithms are implemented and discussed with providing results. A simple comparison between both algorithms is conducted, and it is concluded that convergence within cycles of implementation shows that ANA is fast converged but it might get stuck in local optima.

**Keywords:** Metaheuristics, Moth-Flame Optimization, Ant Nesting Algorithm

## Multi-criteria decision-making on operational risk in banks

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**Abstract.** The frequency of application of different methods of multi-criteria decision-making, in business and financial problems, is justified by the diversity and complexity of business decisions. The methods enable analysts and decision-makers to assess accurately when making a decision. This research aims to present the contribution of multi-valued relationship methods in assessing operational risks in banks operating in Serbia. The article shows that the multicriteria approach used in the initial phase of identifying operational risk increases the potential of bank management for further risk management, particularly in operational risk management (ORM). The research also included a comparative analysis of the results obtained by various MCDM methods, which were more concerned with business risk analysis. An example of a decision-making problem on operational risk management is presented showing how the problem of decision-making on operational risk management is structured by using the BWM method. The use of the BWM method proved to be highly acceptable for decision makers in banks, compared to other models. In all MCDM models, external factors and human resources are first in the ranking. The results unequivocally indicated significant influence of external factors on banking operations – these are the consequences of the COVID-19 pandemic, part-time work, hacker attacks, economic policy and adjustment of the economy to epidemiological restrictions. The approach is simple and provides an effective method that can be successful in solving other decision-making problems.

**Keywords:** Bank Risk Management, MCDM, BWM method.

## Job Insecurity and Psychological Well-Being in the Times of COVID-19

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**Abstract.** COVID-19 has emerged and wedged the economy worldwide. It is known for its altered categories of hindrances. The inequity of the international economy is currently being fondled. COVID-19 traverses with the fundamental disparity disaster that was before now disintegrating the world and generating a stage of annoyance besides with the encounters impersonated by technology. The coronavirus has put world economies at risk, with production and jobs plummeting by the days. COVID-19 paraphernalia will be comprehensive, assertive to huge population into joblessness, underemployment, poverty, and suggests processes for a significant, synchronized, and instant reaction. Underemployment is also predictable to upsurge on big scales, as the financial concerns of the COVID-19 interpret into decline in work, wages, and salaries. The domain of efforts is being overwhelmingly exaggerated by the world-wide disease pandemic. In accumulation to the hazards to community wellbeing, the financial and communal diversion intimidates the lasting incomes and happiness of masses. COVID-19 will leave its footprints for short-, medium- and long-term periods. The Coronavirus pandemic is accepted to disturb trade and businesses across the globe. Persons with high job security can have great psychological well-being report sense accomplished, content, self-confident, and gratified. PLS-SEM is applied to measure the initial influence of Job insecurity on the elements of psychological well-being during COVID-19.

**Keywords:** Job insecurity, psychological wellbeing, COVID-19

## Session 3

### **Biometrically Authenticated Boot Loading System from USB Drive by Exploiting the Fingerprint and Finger Vein ★**

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**Abstract.** Commonly, a USB flash drive is utilized for storing, transferring and backing up data like personal files, software, media files, etc. But users might not have much knowledge about its other hidden characteristics. It could also act as a replacement of CD/hard disk/ DVD media as OSs handler resources and as a plug and play portable system. However, security is a major concern for external boot system and to fix this issue, numerous solutions were proposed and implemented. Out of all the existing security provisioning schemes, biometric based security solutions are always reliable and hassle free to process. The USB drives now available with fingerprint protection and to come out of the box, this article secures the USB drives with the combination of fingerprint and finger vein. On successful authentication, the user can boot OS from USB. The performance of the work is analysed in terms of FAR, FRR, accuracy and time consumption rates

**Keywords:** Biometrics · OS · USB drive · security

## **The Past, Present and The Future of Artificial Intelligence: An innovative transition to a contemporary world**

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**Abstract.** The 21st century reminds the dawn of the 4th industrial revolution (IR) which has brought new frontiers of technology utilization to industries. Industry 4.0 chiefly relays from the 3rd revolution taking further the application of computer and automation domain to the current century. Industry 4.0 already has shown remarkable success due to the multifaceted specialisms in digitalization and artificial intelligence (AI). However, in face of rapidly changing technology, the growth of industrialization depends significantly on the progressive involvement of artificial intelligence applications in wide areas of industrial products and processes. AI technology potential contribution to the global economy is \$15.7 trillion currently with 2% contribution from the middle east region. The manufacturing sector investment and funding on project gained in USA and China through AI enabled technologies by automotive and IT sectors leading GDP by 115% accounting to \$77.5 billion in 2021. The factors driving the industry 4.0 mainly are competitiveness & innovation, cost reduction and performance improvement which led the use of AI technology applications to industrial sector. AI enabled applications are explored in automotive, consumer products, industrial manufacturing, telecommunication sectors to enhance product quality, design in the process. Despite the benefits offered by the AI applications to industries, the barriers for effective adoption of industry 4.0 ideology to all sectors is time taking process.

**Keywords:** Technology, organisation, manufacturing, industry, sector, application, tools.

## **Blockchain based Supply Chain for Dairy products using Ethereum**

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As the dairy industry grows increasingly more diverse and complex, it needs a much more reliable and efficient supply chain management infrastructure. Blockchain addresses these challenges by providing a traceable and trustworthy network, which helps in boosting consumer confidence while also assuring the smooth flow of the supply chain. This paper focuses on how blockchain can be implemented in the dairy industry and how it can benefit the supply chain.

**Keywords:** Blockchain Technology, Dairy Supply Chain; Ethereum; Block-chain in supply chain.

## **Fintech in Oman - Challenges and Opportunities**

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**Abstract .** The rapid emergence and evolution of financial technology (fintech) are expected to impact Oman's financial sector significantly. This study aims to identify the country's FinTech ecosystem's various characteristics and the potential opportunities and challenges it can provide. Some innovations identified in Oman's financial startup ecosystem include online banking, peer-to-peer lending, and transfer and payment services. Several changes have occurred in the financial technology ecosystem in Oman over the past five years. For instance, some banks in the country have started to adopt a more cautious approach when developing new technology. However, the country's financial startup community is also launching initiatives to improve the current processes. The government's efforts mainly focus on developing regulations and laws related to financial technology. Customers are becoming more demanding of new products and services by making them more convenient. This study compares Oman's financial technology ecosystem with Gulf Cooperation Council (GCC). It also identifies the potential opportunities that it can provide.

**Keywords:** Fintech, Fintech ecosystem, Sandbox, infrastructure, Oman.

## Session 4

### The XGBoost Approach Tuned by TLB Metaheuristics for Fraud Detection

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**Abstract.** The recent pandemic had a major impact on online transactions. With this trend, credit card fraud increased. For the solution to this problem the authors explore existing solutions and propose an optimized solution. The solution is based on an extreme gradient boosting algorithm (XGBoost) and a teaching-learning-based-optimization algorithm. The dataset optimizes the hyperparameters of the XGBoost which is utilized as the main driver for the solution. The evaluation was performed among other similar techniques that have solved this problem successfully in the past. Standard performance metrics were applied which are accuracy, recall, precision, Matthews correlation coefficient, and area under the curve. The result of this research presents a dominant solution that was proposed and successfully outperformed all other compared solutions overall.

**Keywords:** fraud detection, swarm intelligence, metaheuristics, optimization, teaching-learning-based-optimization algorithm.

## **Blockchain in the Education Sector – A Real-time Application in the Computer Science Department at MCBS Oman**

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**Abstract.** Blockchain is an important aspect of information security. This paper focuses on the various aspects of the blockchain ledger in the education sector and how each of these can be applied in the Computer Science Department at MCBS Oman. Right from the stage the students get enrolled to the course, allotting teachers to the respective courses, allocate classrooms/labs for the courses, sharing of course materials including syllabus, course materials(handouts/work-sheets/PowerPoints), assessments(formative and summative),evaluation(individual student -wise assessments at different stages of the course ,results and certificates-publishing, access and distribution, every stage of course delivery requires different levels of access and transparency. This paper will throw some light on the hidden patterns in terms of blockchain which when unveiled and adapted at individual nodes, upon considering the department, the advancements will have a productive leap and land at a space for development, productivity and time saving.

**Keywords:** MOOC, Nodes, Hash, Blockchain V.3, TPAK, MIT, educational stakeholders, digital certificates, Blockerts, Etherlearn, Smart Contract, CAPTCHA, PoW, DdoS.

# A SURVEY ON DEEP LEARNING MODELS FOR LUNG DISEASE CLASSIFICATION FROM CT IMAGES

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**Abstract:** The World Health Organization (WHO) is precisely that thousands of citizens are affected by different lungs illness and causes many thousand deaths. Additionally, it estimates to 2030, lungs illness is one of the major reasons for mortality. As manual investigation of these illnesses consumes more period and attempt, there is a need for a medical scan analysis for early and accurate prediction of lungs illness with the highest classification accuracy. To simplify the lungs illness classification, many deep learning algorithms have been developed that automatically predicts and classifies pulmonary Computerized Tomography (CT) image as healthy and illnesses. Therefore, automated categorization of pulmonary illness in CT scans is recently essential for clinical analysis. This article reviews deep learning models to categorize different lung illnesses using CT scan. In addition to this, a general overview based on advantages and disadvantages is presented. Moreover, the potential suggestions are provided depending on the shortcomings addressed in such models to improve the precision of the classification of lung illness.

**Keyword:** Lung disease, CT images, Deep learning, Classification, Computer-aided diagnosis.

## Forecasting Bitcoin price by tuned long short term memory model

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**Abstract.** The interest for cryptocurrencies is high and hence this work focuses on providing a practical real-world application of the swarm metaheuristics and long short term memory model (LSTM). The goal is price forecasting which is interesting due to the high volatility of the cryptocurrencies. The authors apply LSTM for the solution of the problem which has been proven to reap results with this type of problem. The LSTM is further optimized by a swarm metaheuristic - arithmetic optimization algorithm (AOA). The solution was tested alongside familiar high-performing competitors with the use of standard metrics mean absolute error (MAE), mean squared error (MSE), mean absolute percent-age error (MAPE), and root mean squared error (RMSE). These metrics have been used for comparison between the solutions, upon which the proposed solution obtained overall best performance that testi#es to the improvement of the solution.

**Keywords.** cryptocurrency, prediction, arithmetic optimization algorithm, long short term memory model, optimization

## Session 5

### Machine Learning regression models for road accident injury and mortality predictions in Oman

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**Abstract.** Road accidents are one of the primary concerns of any developed countries because of its constant increase in recent years. Due to traffic incidents, many individuals have lost loved ones. Consequently, a system that has the potential to predict accidents is needed, so that necessary strategy can be planned to reduce these accidents. The research identifies key outcomes of accidents or establishes a connection between accidents in Oman and analyses the different outcomes of accidents. This study explores various algorithms for predicting the outcomes of accidents that can assist in analyzing outcomes of accidents in terms of mortality and injuries. The most accurate model for predicting outcomes of accidents will be determined through a comparison of different machine learning algorithms. Regression is a method for determining how independent features or variables relate to a dependent feature or result. It is a technique for machine learning predictive modeling, where an algorithm is used to forecast outcomes. Regression technique usage for forecasting or predictive model makes it as a common technique in machine learning-powered predictive analytics. The research predicts the result of accidents using various regression techniques and select the best technique for deriving accurate predictions.

**Keywords:** Algorithms, Prediction, Regression, Machine learning, Forecasting

## Developing an Integrated Interactive Smart Content using Artificial Intelligence Algorithms

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**Abstract.** Basic education system and technology innovations have triggered enhancement of elearning framework to a newer dimensions. (Department of Education and Training, 2016) Research in education showcased that how new methods of teaching and learning, including student performance evaluations can be incorporated with in the defined e-learning framework Eric Kunnen (2015). E-learning systems are further enhanced using various education technology platforms, tools, techniques and learning management systems. It is also possible to incorporate student performance evaluation features within the eLearning platform by integrating sharable content object reference model (SCORM) framework Ignacio (Gutiérrez et. Al, 2016). In order to analyze student's performance, it is necessary to track, monitor and evaluate student participations during the time of learning processes. During learning, any interaction is established with the contents by the students are captured, then such contents can be termed as smart contents. The integration of these interactive contents within the learning management system can derive new set of capabilities, where along with content analysis, learning resource analysis, learner's analysis and student performance monitoring and analysis are also possible. The proposed research identifies and evaluates interactive smart contents development platforms, tools, techniques and how these smart content can be shared among learners. The research also explores various methods for integrating these smart contents under learning management systems. The future scope of research also identifies theatrical approaches on developing artificial intelligence and machine learning models to understand learning patterns, learning resource patterns and student performances.

**Keywords:** Learning Management System, Artificial Intelligence, Primary Education, Smart City, Smart Content Management System.

## Feature Selection and Optimization Based Deep Learning for Rainfall Prediction

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**Abstract:** Rainfall hugely impacts every aspect of human life, such as transportation, agriculture, water management and so on. It also is a grave cause for several natural calamities, like landslide, floods, and drought, which pose serious threat to the wellbeing of individuals. These concerns have necessitated the need for devising effective technique to predict rainfall, which enable in undertaking effective preventive measures. Several works have focused on developing efficient rainfall forecasting techniques; however, the uncertain nature of rainfall and the lack of rainfall data limit their effectiveness. This paper proposes an efficient rainfall prediction strategy using optimized Deep Learning (DL) approach. Here, prediction is carried out using a Deep Long Short Term Memory (Deep LSTM) network based on the time series data of the rainfall. Further, the prediction efficiency is enhanced by the utilization of the CircleInspired Optimization Algorithm (CIOA) for the weight optimization of the Deep LSTM. Furthermore, the effectiveness of the developed CIOA-Deep LSTM is examined based on parameters, like Relative Absolute Error (RAE), Mean Square Error (MSE), and Root MSE (RMSE). Experimental results show that the devised CIOA-Deep LSTM reveals enhanced performance by attaining a minimal value of RAE at 0.023 MSE of 0.151, and RMSE of 0.389.

**Keywords:** Rainfall prediction, time-series data, Deep Learning, Technical indicators, optimization.

## **Transformational leadership and innovative behavior: The mediating effect of intrinsic motivation and job autonomy**

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**Abstract.** The purpose of this study is to investigate the effects of transformational leadership on employee innovation through intrinsic motivation, and job autonomy applied in the telecommunication sector . The research applied a quantitative exploratory method and a direct effect analysis based on Hayes method with SPSS software. All data were collected from questionnaires to the saturated sample consisting of 133 employees from the telecommunication sector in Oman. The findings indicate that Transformational leadership (TLR) is a strong predictor of employee creativity and innovation. The discussion provided in this paper strengthens the knowledge on the leadership theories and provide another perspective to understand the factors of employees' creativity and innovation.

**Keywords:** Transformational leadership, Innovative behavior, motivation, job autonomy.

## Session 6

### A Systematic Study of Krill Herd and FOX Algorithms

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**Abstract.** In 2012, Amir Hossein Gandomi and Amir Hossein Alavi presented the Krill Herd algorithm (KH), a revolutionary biologically inspired method for addressing optimization tasks. On the other hand, another new and powerful metaheuristic algorithm called FOX was proposed by Hardi Mohammed and Tarik Rashid in 2022, to address engineering difficulties, such as pressure vessel design and electrical power generating tasks, for example, economic load dispatch. The Dragonfly optimization algorithm (DA), Particle Swarm Optimization algorithm (PSO), Fitness Dependent Optimizer algorithm (FDO), Grey Wolf Optimization algorithm (GWO), Whale optimization algorithm (WOA), Chimp optimization algorithm (ChOA), Butterfly optimization algorithm (BOA), and the Genetic Algorithm (GA) are also evaluated against the FOX algorithm. This paper demonstrates how the KH and Fox Algorithms are implemented, and it uses them as a model in a case study to maximize a fitness function. As a consequence, the KH and FOX algorithms successfully enhanced the original population and found the best option. The KH and FOX algorithms may be confusing to readers of these algorithms.

**Keywords:** Metaheuristic, Krill Herd, FOX Algorithm, Optimization.

## A Tutorial on Child Drawing Development Optimization

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**Abstract.** In 2021, a novel metaheuristic algorithm inspired by the child's learning behavior and cognitive development employs the golden ratio. The golden ratio was first presented by the renowned scientist Fibonacci. The ratio of two consecutive numbers in the Fibonacci sequence is alike, and it is named the golden ratio, which is predominant in nature, architecture, design, and art. CDDO implements the golden ratio and mimics cognitive learning and the child's drawing development stages starting from the scribbling stage to the advanced pattern-based stage. This aids children with developing, refining their intelligence, and cooperatively achieving shared goals. CDDO is developed for single objective optimization problems, and it is also compared to Particle Swarm Optimization (PSO), Differential Evolution (DE), Whale Optimization Algorithm (WOA), Gravitational search algorithm (GSA), and Fast Evolutionary Programming (FEP), CDDO demonstrated its ability to handle complex optimization problems. This paper presents and explains the CDDO and uses them as models in a case study to minimize a fitness function. The initial population has been successfully fully improved as a result, and the best solution has been obtained by the CDDO.

**Keywords:** Metaheuristic, Optimization Algorithm, Child Drawing Development Optimization Algorithm.

## Artificial Neural Network tuning by improved sine cosine algorithm for HealthCare 4.0

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**Abstract.** This paper explores clasification of datasets for Healthcare 4.0 using artificial neural networks which are tuned by improved sine cosine algorithm (SCA). Healthcare 4.0 themes include internet of things (IoT), industrial IoT (IIoT), cognitive computing, artificial intelligence, cloud computing, fog computing, edge computing, and other industry 4.0 procedures. Health issues identification are critical since prompt treatment improves the quality of life for individuals affected. One of the most difficult challenges for artificial intelligence (AI) is selecting control parameters that are appropriate for the situation at hand. This paper presents a metaheuristics-based method for training the artificial neural network, by utilizing the SCA.

**Keywords:** Healthcare 4.0, Sine Cosine Algorithm, Artificial intelligence, Optimization, Metaheuristics.

## **The Effect of Emotional Intelligence and Psychological Security on Digital Learning Readiness**

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**Abstract.** This study aims to examine the factors affecting students' digital learning readiness, including emotional intelligence and students perceived psychological security as a mediator. The conceptual model has been drawn per the findings of previous studies. This study used quantitative data collected from one hundred thirty students via random sampling. Based on this empirical investigation, the student's digital readiness is significantly related to their emotional intelligence when dealing with digital learning. Moreover, this research highlights the critical mediating role of perceived psychological security in the relationship between emotional intelligence and digital learning readiness. This study will assist scholars, Higher Educational Institutions (HEIs), decision-makers, and practitioners in understanding and dealing with the learning mode changes from different perspectives, including the quality of the learning program and students' psychological health.

**Keywords:** Digital Readiness, Emotional Intelligence, Psychological Security, Learning, Oman.

## Session 7

### **The Determinants of Bank Selection Criteria Among Students of Higher Learning and Their Implications for the Islamic Banking Industry in Oman**

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**Abstract.** The overall goal of this study is to investigate the most important determinants of bank selection criteria among higher education students and their implications for the Islamic banking industry in Oman. To achieve this objective, this study used a quantitative research method in which questionnaires were distributed to 350 students via an online weblink. The data was analyzed using descriptive statistics and one-way multivariate analysis of variance (MANOVA). The findings revealed that the most important factors that students consider when choosing a bank are the adoption of advanced banking technologies such as internet and mobile banking, greater access to bank ATM facilities, delivering superior quality services, and reasonable prices for banking products and services. While the values of Islamic banks and peer and family influence are the least important factors. The one-way MANOVA results show no differences in male and female perspectives on bank selection criteria. Nevertheless, women respondents, place a higher value on convenience of services and adoption of advanced banking technologies than men. Students, in fact, place a greater emphasis on banking technologies and high-quality services. As a result, we recommend that Islamic banks adopt advanced digital banking capabilities that leverage the Internet, mobile devices, and social media integrations to make financial transactions more automated, user-friendly, and convenient, thereby increasing customer satisfaction. This will attract a high-tech-savvy youth population, increasing the customer base, and efficiency of Islamic banks.

**Keywords:** Determinants, Banks selection Criteria, students of Higher Education, Implication, Islamic banking Industry, Oman.

## Blockchain in Securing the Data Integrity of College

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**Abstract .** Blockchain is the most popular concepts that every IT person interested in. What is Blockchain? It's a cryptocurrency that provides a collection of financial services to the public, also it is considered as a system of information that is recorded in a unique way that makes it complex to be modified, infected by malwares, or even hacked [1]. There are some types of blockchain like public , private, consortium, and hybrid. Public blockchain is a blockchain that has a lower distributed ledger system, so anyone who connects to the internet could login on a blockchain platform, and the user who logged in on a blockchain platform will be an authorized user. Authorized users in the public blockchain are free to access recent and old records. Private blockchain is a blockchain that has a permission operative in a closed network, so only authorized people from a closed network organization will be able to access to that network due to the restricted permission given only to the staff. Consortium blockchain is a block-chain that considered as a semi decentralized blockchain because more than one company or organization can manage a blockchain network. Hybrid blockchain is a set collection of the private and public blockchain, so the features of private and public blockchain are used in the hybrid blockchain. On this research paper, I will go through the blockchain and cover how to secure the data integrity of a college using blockchain security.

**Keywords:** Blockchain Definition, Blockchain types, data Integrity.

# Blockchain-Based IoT Security and Data Privacy Protection System

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**Abstract.** The rise of the Internet of Things (IoT) has made it a vital part of every field. Its wide range of features has allowed it to be used in many sectors. Since the IoT is used worldwide, the security and privacy components must be preserved. The potential of this technology is already being used in applications and has the potential to grow exponentially in multiple domains. As the researchers look into its different capabilities, a collective agreement has been formed to ensure that the technology is fully utilized. Thus, the Internet of Things (IoT) needs a flexible network architecture that supports security and privacy requirements. On the other hand, blockchain technology has been regarded as a revolutionary innovation that promises to deliver desirable properties such as decentralization, integrity, and autonomous control. The blockchain platforms considered for IoT applications are expected to be suitable for different use cases. Integrating blockchain and IoT technology could solve some of the most critical issues. This article aims together information about security issues affecting the Internet of Things (IoT) and analyze the solutions to address these issues. Also, evaluate blockchain integration with IoT by reviewing real-life blockchain platforms to analyze their effectiveness toward IoT security and privacy.

**Keywords:** Internet of Things · Blockchain · Security · Data Privacy.

# Effectiveness of Wireshark Tool for Detecting Attacks and Vulnerabilities in Network Traffic

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**Abstract.** Due to the popularity of using the technology, network security plays a crucial role recently which supports to establish strong systems that work against cyberattacks. Furthermore, the term "network vulnerabilities" refers to the flaws in the network which attackers exploit to break security and steal critical data. To discover the weaknesses of the network, the attackers use the mechanism of open port scanning to reach the systems and data, therefore the administrator should configure the network correctly and close any open ports. Monitoring network traffic is very important, so the developer focus to design analyzing tools that employ to inspect transmitted packets over the network to trace anomalous activities. Wireshark is one of the most well-known packets analyzing tool that is used to monitor the packets as well as used for examining the protocols. Moreover, the type of attack can be determined from the statistic report generated by Wireshark tool. For instance, if the attacker sends syn packets to a target device, Wireshark will show the detail of syn packets. Practically, when tcp syn requests are flooded to any device, there will be a huge impact on the device's resources like consuming the bandwidth which affects system performance at the end. This paper presents a penetration test to lunch syn flood attack by sending a huge number of syn packets from Kali Linux machine to three targeted machines which are Windows 8.1, Windows 10 and Metasploitable. The test includes three scenarios, the first one focus on flooding syn packets by using the real source ip address of the attacker machine while the second scenario relays on sending syn packets by utilizing a spoof source ip address. The final scenario depends on using a random source ip address to flood syn packets. The Wireshark tool will be run in Kali machine to capture the packets and generate detailed reports. The results of captured data will be recorded to make analysis and list the capabilities of this tool.

**Keywords:** Wireshark tool . Syn flood attack . Vmware . Hping3.

## Session 8

### Impact of Covid-19 on cryptocurrencies extreme returns-volumes relationship \*

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**Abstract.** We explore the potential dependence between extreme return and volumes among different cryptocurrencies, using several different statistical models. Extreme return-volume dependence in Bitcoin, Ethereum, Ripple and Litecoin has been examined by copula methodology. We have used Clayton, Gumbel and SJC copulas. We use EGARCH model for return series and GARCH model for volume series. For Bitcoin, by including the Covid-19 crisis, we have found that high volumes are not significantly dependent with high returns. Further, it has been found that (ETH, XRP and LTC) may attract pessimistic investors due to insignificance of right tail dependence. For, Ethereum we have found evidence of low trading during the Covid-19 crisis due to significance of lower tail dependence coefficients. For, Litecoin extremely low volumes are more likely to coexist with extremely low and high returns before Covid-19 crisis. For, Bitcoin when include period of Covid-19 crisis, we found that trading increases for lower return which support the heterogeneous investors with short sale constraint.

**Keywords:** Cryptocurrencies, EGARCH-Copula, returns-volumes, Upper tail dependence, negative returns.

## **Online learning adoption in the gulf region: Mediating role of age and experience in using MS teams**

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**Abstract.** This study intends to offer an analyses of MS teams from the perspective of learners, through Technology Acceptance Model, a proven model for the acceptance of technology, and explores the moderating role of Age and Experience in the adoption of the same. The data collected from 106 respondents from four gulf nations i.e., Oman, United Arab Emirates (UAE), Bahrain and Kingdom of Saudi Arabia (KSA). The respondents were part of 400+ participants from 22 countries who participated in the one-week international webinar organised by University of Buraimi and Modern College of Business and Science, that was conducted online via MS teams. The Age range of the respondents was 18 to 58 years, along with experience ranging from 0 to 30 years. The study reveals that despite the user friendliness, the participants had high level of new technology anxiety for using MS teams. Age and Experience were found to be playing an insignificant role in the acceptance of technology in context of MS teams.

**Keywords:** Age, Experience, MS Teams, TAM, Webinar.

## Person Identification by Models Trained using Left and Right Ear Images Independently

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**Abstract.** The application of Deep Learning Techniques in biometrics has grown significantly during the last decade. The use of deep learning models in ear biometrics is restricted due to the lack of large ear datasets. Researchers employ transfer learning based on several pretrained models to overcome the limitations. For the unconstrained AWE ear dataset, traditional Machine Learning (ML) techniques and hand-crafted features fall short of providing a good recognition accuracy. This paper evaluates the influence of separating left and right ears and the effect of occlusion on the recognition accuracy in AWE dataset. The left and right ear of a person need not be identical. A study by separating the left and right ear into two different datasets is carried out with the pretrained ResNet50 based model. There is a remarkable increase in accuracy when the left and right ear images are independently considered. A new data augmentation technique, incorporating occlusion, is also proposed and experimented with the ResNet50 based model.

**Keywords:** Ear Recognition, Deep Learning, ResNet50, Occlusion.

## Session 9

### Healthcare Information Exchange using Blockchain and Machine Learning

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**Abstract.** In several industries, including healthcare, new technologies like blockchain and machine learning are being leveraged to generate innovative solutions. A blockchain network is used in the healthcare system, coupled with machine learning, to store and distribute patient data among hospitals, diagnostic labs, pharmaceutical companies, and clinicians. Applications based on Blockchain, and Machine Learning can precisely identify grave errors, including ones that could be fatal in the healthcare and medical industries. The efficiency, security, and transparency of sharing medical data can therefore be improved. Utilizing these two technologies allows medical institutions to gain knowledge and enhance patient data analysis. In this document, blockchain and Machine Learning were studied and their benefits to the process of the Healthcare Information Exchange Process. The benefits and characteristics of both the technologies and how they help with the process are discussed in a simple way. Blockchain works. Blockchain facilitates decentralized data protection in the healthcare industry and prevents specific risks while Decision-making, patient outcomes, and healthcare professional automation are all aided by Machine Learning in the interchange of healthcare information.

**Keywords:** Blockchain, Machine Learning, Healthcare Information Exchange, Chatbots, Hash, Nodes.

# **IoT-Enabled Smart Cities: A Review of Security Frameworks, Privacy, Risks and Key Technologies**

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**Abstract.** Smart cities are becoming increasingly popular worldwide as cities grow, technology evolves and improves daily. The internet of things devices is used in smart cities that are all interconnected to run critical systems that a city requires to function correctly. The Internet of Things controls traffic lights, security cameras, weather, infrastructure, meters, and other data collection devices to run the city. Because technological devices do not sleep, eat, or take breaks like humans, the systems can be relied on to operate continuously. Blockchain is a system of decentralized and immutable electronic ledgers or databases in which anyone can securely store and access public records while maintaining information integrity. Blockchain offers a method of communication, transactions, security, and governance that is transparent and available to all members of a town or society, which are several advantages of a smart city. This paper reviews how blockchain can aid in developing a smart city and proposes a security framework based on layers.

**Keywords:** Blockchain, Smart City, IoT.

## **SECURING QUANTUM COMMUNICATIONS – A review of trials of securing communications using algorithms in technologies**

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**Abstract.** This paper will address an overview of existing quantum communications by reviewing recent research in addition to highlighting possible obstacles that require additional exploration. The study begins with an industrial viewpoint, identifying the Latest technology relevant to quantum Protocols, systems, in addition, ion technologies for communication It then divides application areas into categories with short- in addition, medium-term ramifications, stressing the advantages in addition disadvantages of various strategies". "There is a disagreement regarding which way the scientific community is headed in addition in what direction". "However, in terms of European Union rules, we suggested a reconfigurable optical add-drop multiplexer to help the Quantum". "Flagship Initiative integrate community activities to optimize the effect of quantum communications all over society.

**KEYWORDS:** Quantum distribution, key transfer, quantum cryptography.

## The Use of Machine Learning in Digital Forensics: Review Paper

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**Abstract.** With the increase of cybercrimes in the current years, digital forensics has become an important matter to study in order to achieve a quality of evidence. Forensic investigators face difficulties with data collection and analysis to reconstruct events. Due to humans' immense interaction daily, machine learning allows investigators to perform more effective and efficient investigations using various algorithms. Machine learning is a subset of the artificial intelligence field. It is a scientific discipline focusing on developing computer models and algorithms that can perform specific tasks without programmings, such as dataset training and testing. Its potential to aid in the investigation, image processing, and dataset analytics of digital crimes has been identified. This paper reviews various machine learning techniques that examine and analyze digital evidence during the investigation process. Each ML algorithm works on a specific area of digital forensics based on the features. It overcomes challenges such as complexity, data volume, timelining, correlation, consistency, etc. Moreover, this study compares ML algorithms in terms of standard criteria.

**Keywords:** Digital Forensics · Machine learning Algorithms · Investigation · Digital Evidence.

## **Utilization of Artificial Intelligence in Project Management - Case Study Ministry of Education, Oman**

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**Abstract.** The fourth industrial revolution brings a lot of technologies where intelligence should be there to provide the goals needed. This paper uses existing articles available on google scholars and other search engines to investigate about the role of artificial intelligence within both public and private sectors such as education, health, and finance and how this technology the life of the people as well. Likewise, the domain of project management is very huge and lack to the skills of project management might result on the success of the organization. Furthermore, the project manager plays critical part such as supervision the project team, communicating with all stakeholders and managing the projects to be completed as planned. As a result, the project manager might not find the enough time to do all the administration tasks which lead to delay upon completion of the projects. Consequently, the paper will study the functionality of artificial intelligence in projects management at ministry of education, Oman.

**Keywords:** Project Management (PM), Artificial Intelligence (AI), Ministry of Education (MoE), Integration & Automation (IA), Chatbot Assistant (CA), Machine learning-based project management (MLPM), Autonomous Project Management (APM).

## Session 10

### **Society, Cost of Migrants and Digital Economy Impact on Unemployment of Omani Youth: An Empirical Investigation of the Moderate Role**

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**Abstract.** This study aims to shed light on unemployment in the Sultanate of Oman in the context of the global and national economic shift toward digital technology. In this study, the topic of youth unemployment was examined from various angles, such as social perception, the cost of migrants, and the effect of the digital economy on employment opportunities. The favourable impact of gender on the variables under investigation is also examined in this research. The study has applied the quantitative approach. The data was collected from Omani youths through the adopted questionnaire. A total of 312 responses were received for further analysis SPSS and Partial Least Squares (PLS) were used to analyse the data. This study demonstrated how social perception has a significant impact on Omani youth. Youth unemployment is also strongly impacted by the cost of migrant labour, and the digital economy is significantly influencing youth employment opportunities. On the other hand, the association between social perception and unemployment among Omani youth is considerably influenced by the mild effect of gender. This study contributes significantly to the current knowledge of the factors influencing unemployment in the Sultanate of Oman. The research models may also be used to establish new initiatives, develop programs, and establish policies on the labour market to reduce the unemployment rate among the youth of the Sultanate of Oman.

**Keywords:** Cost of migrant, Digital Economy, Social Perception, Unemployment, Oman.

## **Training a logistic regression machine learning model for spam email detection using the teaching-learning-based-optimization algorithm**

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**Abstract.** Spam and emails have always been intrinsically linked since the creation of the Advanced Research Projects Agency Network, otherwise known as (ARPANET). The latter witnessed, on May 3rd, 1978, the first known spam email to date. Today, spam emails negatively affect the users' productivity and private lives. A significant number of approaches emerged in the past two decades that deal with the spam detection problem, with limited success. Therefore, the current paper presents an intelligent and automated solution to spam email detection using a logistic regression model trained by a teaching-learning-based optimization algorithm. The proposed solution has been tested on two benchmark spam email datasets (CSDMC2010 and TurkishEmail), and evaluated against seven other contending cutting-edge metaheuristics utilized in the same experimental setup. The simulation outcomes without a doubt indicate the superior level of accuracy achieved by the proposed solution.

**Keywords:** Logistic regression. TLBO algorithm · Spam email detection.

## Media Law Challenges and Effects on Quality of Information – A Review

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**ABSTRACT.** Media law is known to protect the freedom of expression and the press. It is a branch of law that deals with the flow of information and the public's overall interest, where anything published and distributed falls under its rules and restrictions. Media law is especially significant because of how media affects and influences society. People learn about what is happening through the media and tend to form their own opinion of the matter in question, which may lead to more significant consequences such as mass social debates, social movements, and segregation. With such significance comes the need to oversee and regulate media and the quality and flow of information. Hence, media law and laws of printing and publishing came to exist. Media laws and regulations came into existence as media progressed and became the primary way information is disclosed and shared in today's business environment. The flow and quality of information are often associated with the medium by which they are distributed, their source, and the supervisory body of rules they are subjected to. Therefore, this article aims to analyze the extent to which the quality of information and media are affected by these variables. The paper will also dive into media laws and the quality of information, the supervision imposed on media on different platforms, and media laws across borders.

**Keywords:** Media; social media; censorship; ethics; and quality of information.

## Wheat crop disease prediction using convolutional neural network

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**Abstract.** Crop disease is the main reason for reducing production and negatively affecting the economy of the country. Wheat is the most commonly used crop, and its low production mostly incurs import pressure on the economy. Thus, improving the production and controlling the wheat disease will always help towards self-sufficient production. In this research, we develop a new CNN-based model that collected the data from the field. The CNN model has four fully connected layers. After detailed preprocessing, the experiments showed the model is more robust than the state-of-the-art technique by production results with 96.85% accurate results. The class-wise recall and recall are 92.22, 94.01, respectively.

**Keywords:** Crop Disease · Convolutional Neural Networks · Machine Learning · Internet of Things · Artificial Intelligence.

## **IMPACT OF TWITTER ON STOCK MARKET PERFORMANCE: EVIDENCE FROM ELON MUSK AND TESLA**

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**Abstract:** In the last decade, rising social media impact along with technological progress has given the potential for higher “democratization” of public voice. However, influential individuals, with hundreds of millions of followers got the possibility to shape public opinion and create herding behavior. Twitter activities, especially with financial markets-related content are gaining popularity as well. In that regard, the purpose of the paper is to analyze the correlation between Elon Musk’s Twitter activities and the stock price performance of Tesla company, by using different models of sentiment analysis. The rapid Automatic Keyword Extraction tool was used in Python. Correlation analysis was done for the 3-year time period (Oct 2019 – Oct 2022) in order to capture heightened volatility and various systematic risks, which resulted in even more tweeting activities. Results showed that there is a mid to high correlation between Elon Musk’s tweets and the share price of Tesla.

**Keywords:** Twitter, stock market, Elon Musk, Tesla, sentiment analysis.