

# ICSCEE 2021

THE 2<sup>ND</sup> INTERNATIONAL CONFERENCE ON  
SMART COMPUTING AND ELECTRONIC ENTERPRISE



Virtual Conference  
15-16 June 2021

## ICSCEE 2021

**2021 2nd International Conference on  
Smart Computing and Electronic Enterprise  
(ICSCEE)**

*Ubiquitous, Adaptive, and Sustainable Computing Solutions  
for New Normal*

**15-16 June 2021  
Virtual Conference**

**Hosted by  
Faculty of Computer and Information Technology  
Al-Madinah International University  
Malaysia**



**Collaboration with Information Retrieval and Knowledge  
Management Society (PECAMP)**



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# ICSCEE 2021

## THE 2<sup>ND</sup> INTERNATIONAL CONFERENCE ON SMART COMPUTING AND ELECTRONIC ENTERPRISE



### Conference Overview

Smart computing is an important multi-disciplinary area where advanced computational methods and technologies to create systems, applications, and new services that meet the needs of society. With electronic enterprise, road maps to a well-planned evolution of enterprise complexity with business and system strategies are integrated through standardized and synchronized architectures of IT components. This provides a method of how to analyze, design, and manages the applications of new applications and services, as well as improving the efficiency, reliability, and sustainability of the existing ones in a complex, evolving enterprise. The current trend in big data is a field that involves analyze and deal with large data sets that are complex to be solved using current software. Thus, the Second International Conference on Smart Computing and Electronic Enterprise (ICSCEE 2021) aims to attract researchers who are actively engaged both in theoretical and practical aspects of smart computing and electronic enterprise-related research. The ICSCEE 2021 will be conducted virtually. Previous papers from ICSCEE 2018 are indexed in IEEE Xplore. IEEE reserves the right to exclude a paper from distribution after the conference (that is, removal from IEEE Xplore) if the paper is not presented at the conference.

Researchers are invited to contribute to the conference by submitting articles in the following areas but are not limited to the following topics.

1. Smart Computing - Future Smart Computing Paradigms and Models, Algorithms of Smart Environments, Cloud and Grid Computing, Smart Networking Models, Smart Device Hardware, Cyber Hacking, Digital Forensics, Sensor Network Application and Security, GIS Applications, Optical Communications, Signal, Image and Video Processing, Decision Support Systems, Artificial Intelligence Techniques, Models, Algorithms, and Applications, Social Engineering, Cyber Threat Intelligence, Intelligent Heterogeneous Architecture, Smart Human-Computer Interaction, Software Agents and Internet Computing, Software Engineering.
2. Big Data - Techniques, Models, Algorithms, and Applications for Big Data, Databases and Information Systems Integration, Big Data Visualization, Big Data Analysis.
3. Electronic Enterprise - Electronic Information Systems, Electronic Enterprise Models and Applications, Enterprise Knowledge Engineering and Management, Enterprise Architecture, Electrical Circuits and Devices, Microelectronics and Computer Technology, Communications and Information Processing, Electrical Engineering Communications, Signal Processing, Measurements Technology, Material Engineering, Microwave and Electronic System Engineering, Microelectronics and Optoelectronics, Systems and Control Engineering, Bioelectronics, Power Electronics and Energy Systems, Optical Communications.

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### Al-Madinah International University (MEDIU)

Al-Madinah International University (MEDIU) is fully recognized as a university by the Ministry of Higher Education, operating under Malaysia's Private Higher Education of 1996 act. It runs as a non-profit organization that provides dual learning mode; conventional (on-campus) and distance learning (on-line) through learning techniques of advanced technological systems. MEDIU offers a variety level of studies namely foundation, undergraduate and postgraduate studies in line with the current labor market needs. The students come from more than 90 nationalities from all over the world. MEDIU has entered its 13th year of establishment in 2021 and has shown encouraging growth with a total of 6 academic faculties and has gained 80 fully accredited academic programs from the Malaysian Qualifications Agency (MQA) indicating the quality assurance and standards in higher education. The faculties and centers in MEDIU are as follow.

#### **Faculties**

- Faculty of Islamic Sciences
- Faculty of Computer and Information Technology
- Faculty of Finance & Administrative Sciences
- Faculty of Languages
- Faculty of Education
- Faculty of Engineering

#### **Centers**

- Centre of Preparatory Studies & Languages
- Center of Postgraduate Studies

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## Faculty of Computer and Information Technology



Faculty of Computer and Information Technology (FCIT) establishment is designed to train qualified generation in the various disciplines of computer and information technology sectors and thus assist to contribute in the development of a new and modern information system where life now require expertise in information technology in almost every field of human activities.

The faculty provides research and scientific studies in various disciplines of information technology and exchange of experience with a strong network of companies and research expertise. In addition, the university provides conducive learning environment to students majoring in this faculty. The faculty offer academic programs in both levels of undergraduate and postgraduate are as follow.

### **Undergraduate**

- Bachelor of Information Technology (Hons)
- Bachelor of Information Technology in System Development and Administration (Hons)
- Bachelor of Information Technology in Management Information Systems (Hons)
- Bachelor of Computer Science (Hons)
- Bachelor of Computer Science (Hons) in Computer Networking
- Diploma in Information Technology

### **Postgraduate**

- PhD in Information and Communication Technology
- Master of Science in Information and Communication Technology
- Master in ICT E-Enterprise

### Message from MEDIU's Chief Executive Officer



Assoc. Prof. Dr. Fadlan Mohd  
Othman

الحمد لله رب العالمين وأفضل الصلاة وأتم التسليم على نبينا محمد المبعوث رحمة  
للعالمين، وأشهد أن لا إله إلا الله وحده لا شريك له، وأشهد أن محمداً عبده ورسوله،  
أما بعد:

Firstly, we ask الله The Almighty to protect all of us from all  
illnesses and to lift this Covid-19 pandemic from us, آمين

My colleague Prof Dr Zainab Abu Bakar, General Chair of the  
conference, honourable speakers, organizing committee, ladies  
and gentlemen, brothers and sisters,

السلام عليكم ورحمة الله وبركاته

It is my pleasure and great honor on behalf of Al-Madinah International University (MEDIU) to  
welcome all of you to the 2nd International Conference on Smart Computing and Electronic  
Enterprise (ICSCEE 2021).

I am happy that you are able to join our colleagues in the university in this international conference  
to participate in extensive presentations and discussions in the areas that would certainly add value  
to the society. I am, therefore, very pleased that the Faculty of Computer & Information  
Technology has taken this step to lead and encourage qualified academia and industries in Smart  
Computing, Big Data and Electronic Enterprise to share their research to address the demands of  
the communities and industries. Hopefully we will be able to sustain this effort in response to  
challenges that would evolve over the next several years to affect positively the quality of life of  
present and future generations.

I would like to also take this opportunity to express my sincerest appreciation and gratitude to our  
Chairman, His Excellency Prof Dr Sa'd bin Nasser Al-Shithry, and all members of the Board of  
Governance at Al-Madinah International University for their continuous dedication and support in  
our conferences, seminars and all academic activities.

On that note, all praise be to الله سبحانه وتعالى for facilitating and giving us توفيق in organizing this  
conference and we pray that He grants His blessings for this conference and gives the best of  
rewards to all contributors to the success of this conference.

Thank you, والسلام عليكم ورحمة الله وبركاته

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## Message from Conference Chair

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
السَّلَامُ عَلَيْكُمْ وَرَحْمَةُ اللَّهِ وَبَرَكَاتُهُ



Prof. Dr. Zainab  
Abu Bakar FASc

First, I would like to extend a warm welcome to all our honorable guest, keynote speakers and participations of 2nd International Conference on Smart Computing and Electronic Enterprise (ICSCEE 2021) hosted by Faculty of Computer and Information Technology, Al-Madinah International University with the theme “Ubiquitous, Adaptive, and Sustainable Computing Solutions for New Normal”.

ICSCEE 2021 aims to provide a platform for researchers to exchange ideas and information on current studies, challenges, research results, system developments, and practical experiences in both in theoretical and practical aspects of Smart Computing, Big Data and Electronic Enterprise related research and to disseminate quality research papers in area of Smart Computing and Electronic Enterprise that meet the needs of society.

إن شاء الله all accepted and presented papers will published in IEEE explore. We received a submission from various countries which include Malaysia, Saudi Arabia, India, Jordan, Kuwait, Turkey, United Arab Emirates, Indonesia, Philippines, Thailand, Palestine, Somalia, Iraq, Japan, Pakistan, Egypt, Yemen, Libya, Netherlands

ICSCEE 2021 has accepted 43 papers out of 68 submissions, an acceptance rate of 63%. Our special thanks go to Advisors, General Co-Chairs, International Advisors, Secretariat Co-Chairs, Publication Co-Chairs, Finance Co-Chairs, Publicity/Website Chairs and Committee, Conference Management Chair, Technical Program Co-Chairs and Committee, Smart Computing Track Chair, Big Data Track Chair, Electronic Enterprise Track Chair and reviewers.

We would like to thank Information Retrieval and Knowledge Management Society (PECAMP) for sharing keynotes and workshop speakers from 2021 Fifth International Conference on Information Retrieval and Knowledge Management (CAMP'21).

May الله سبحانه وتعالى reward you for your contribution.

والسلام عليكم ورحمة الله وبركاته

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### Message from Dean of FCIT



Assoc. Prof. Dr. Najeeb  
Abbas Al-Sammarraie

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
وَالصَّلَاةِ وَالسَّلَامِ عَلَى سَيِّدِنَا مُحَمَّدٍ وَعَلَى آلِهِ وَصَحْبِهِ أَجْمَعِينَ

Your Honorable, the Patron of the conference, the Chief Executive Officer of Al-Madinah International University, Assoc. Prof. Dr. Fadlan bin Muhammad Othman, Deputy CEO, Associate Professor Dr. Tayeb Mebrouki, Deputy CEO, Assoc. Prof. Dr. Dokouri Abdoul Samadou, Prof. Dr. Zainab, the Conference Chair, distinguished guests of honor, keynote speakers, my colleagues the deans of faculties of Al-Madinah International University, my colleagues Mediu's teaching staff and administrative staff, all researchers, and all honorable guests,

السَّلَامُ عَلَيْكُمْ وَرَحْمَةُ اللَّهِ وَبَرَكَاتُهُ

It is my pleasure and great honor on behalf of FCIT to welcome you to 2nd International Conference on Smart Computing and Electronic Enterprise (ICSCEE 2021). Allah Almighty says: (وَقُلْ اَعْمَلُوا فَسَيَرَى اللَّهُ عَمَلَكُمْ وَرَسُولُهُ وَالْمُؤْمِنُونَ) صدق الله العظيم“ which means: “And say, do [as you will], for Allah will see your deeds, and [so will] His Messenger and the believers.”

Happiness overwhelms us as we meet and continue together in the path of knowledge and science, the path that every hard-working researcher strives to achieve. We meet you virtual due to the Pandemic, Covid-19 which creates confusion all over the world. However, the participants of ICSCEE 2021, the cycle of knowledge will challenge it. Our faculty holds this second international scientific conference with the theme Ubiquitous, Adaptive, and Sustainable Computing Solutions for New Normal. The conference inspires the creativity and contributions that bears several pillars. The first is keeping pace with scientific and cognitive development in the field of computing according to modern standards in par with various sciences.

FCIT sustains and keeps up the contemporary developments with several activities which constitute in their totality a big bulk of knowledge for the pillars of the learning process: the students, researchers, and lecturers, and then the community service. One of these activities is the establishment of scientific and international forums so that we serve the reality of our communities according to the global standards.

# ICSCEE 2021

THE 2<sup>ND</sup> INTERNATIONAL CONFERENCE ON  
SMART COMPUTING AND ELECTRONIC ENTERPRISE



## Keynote Speakers

### Keynote Session 1

***Prof. Dr. Athman Bouguettaya***

University of Sydney  
Australia



**Title: From IoT Data to Services**

#### **Abstract**

The Internet of Things (IoT) is fast becoming a reality with a range of everyday “things” becoming sensor-equipped and internet connected. Ultimately, everything that we see and don’t see will be connected to the Internet. These Web-enabled “things” will be continuously streaming data whose size and volume will dwarf anything we have witnessed so far. This is called Big Data. It is here to stay and in a big way. It is coming from all sorts of sensors, including instruments conducting deep space exploration from earth or satellites, sensorized high-energy physics, social media, smart phones, genomics machines, etc. The cloud has been instrumental in supporting the storage and processing of the ever increasing amount of data generated by these sensors. “Domesticating” IoT data, i.e., making it useful, however, has been a major challenge. Service computing is the next major evolution of computing that aims at transforming massive data into artefacts that are acted upon and made “useful”, i.e., turned into services. In this talk, we will first overview the big shift produced by human and physical sensors. We will then motivate the need for a uniform service management to service IoT data. We will then describe our latest research that focuses on servicing IoT-based sensor clouds using transport as an application.

## Keynote Session 2

*Associate Prof. Dr. Shadi Saleh Basurra*  
School of Computing and Digital Technology  
Birmingham City University  
UK



**Title: Computational Methods for Optimisation of Retrofitting Systems**

### **Abstract**

The UK government has identified 6 million houses built with inefficient solid walls that require improvement; the government has tried to tackle this issue by creating policy initiatives to retrofit domestic housing. Typically, these schemes start with an assessment phase to determine whether - or not - the building will materialise its potential savings, and if the cost going towards the improvements will be paid back within a predefined time span. Given the large scale of any scheme related to increasing energy efficiency, in both existing and new built buildings, and the capacity required to undertake energy efficiency assessments it is inevitable to employ non-professionals to perform those assessments. These energy assessors currently use the Standard Assessment Procedure (SAP). This is a methodology recommended by the UK government to assess and compare the energy and environmental performance of dwellings. However, SAP uses average monthly energy calculations, and does not consider walls' heat loss rate, it offers poor advice that can negatively affect buildings' energy performance and carbon emissions for many years to come. Our talk will focus on proposed computational methods toward zero-Carbon retrofit systems, and we will try to answer the following questions:

- How to scale up the use of building simulation to a wider audience?
- Using machine learning, how to reduce the performance gap between the actual building and buildings model
- The use of multi-objective optimisation via the use of genetic algorithms (GAs) to find the best retrofit packages for a particular house.
- What is the impact of occupants' behaviours on building energy analysis?



# ICSCEE 2021

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## Keynote Session 3

*Dr. Omprakash Kaiwartya*

School of Science and Technology  
Nottingham Trent University (NTU)  
United Kingdom



**Title: E-Mobility Centric Internet of Connected Vehicles**

### **Abstract**

Electro Mobility (E-Mobility) is going to be a significant technological solution for the next generation of transport infrastructure. Various alternative E-Mobility solutions including Electric Vehicles, Drones, E-Bikes, Cargo-Bikes, and Metro Trains will revolutionize future transport and travel towards Net Carbon Zero Mobility. The E-mobility oriented wireless communication and its application in connected vehicle environments is the focus of my research. In Electric Vehicles centric research, my focus is on the development of simulation models for future infrastructure planning and management including charging station planning for smart cities road networks, and recommendation models of charging stations for EV drivers. In Connected Vehicles centric research, my research focuses on modeling geo-enabling technologies for vehicular communication including vehicle localization improvement for GPS enabled solutions, vehicle location verification, and security, enabling edge and fog computing for the vehicular environment. In drone centric research, my focus is on service-centric drone use case development and green computing technologies as energy optimization in sensor-enabled environments. In this talk, I will background information on E-Mobility, and present my existing research achievements on E-mobility and vision for future research on E-Mobility.

# ICSCEE 2021

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## Keynote Session 4

***Prof Dato' Dr Mohd Hafiz Yusoff***  
School of Computing & Informatics  
Albukhary International University  
Malaysia

**Title: AI Geospatial and It's Future**



### **Abstract**

Geospatial technologies is a term used to describe the range of modern tools contributing to the geographic mapping and analysis of the Earth and human societies. These technologies have been evolving in some form since the first maps were drawn in prehistoric times.

In this session, the speaker will share a little experience about the development and usability of this technology. The speaker will also explain their collaboration with other local companies in connection with the Albukhary group of companies to solve many real industrial issues using this technology and the potential of this technology for the future.

## Keynote Session 5

***Prof. Dr. Shahrul Azman Mohd Noah***

Faculty of Information Science and Technology  
Universiti Kebangsaan Malaysia



**Title: Ameliorating Data Sparsity in Collaborative Recommender Systems**

### **Abstract**

Recommender systems have great importance recently in academia, commercial activities and industry. They are widely used in various domains such as shopping (Amazon), music (Pandora), movies (Netflix), and travel (TripAdvisor). Recommender systems are intelligent applications build to predict the rating or preference that a user would give to an item. It also has the effect of guiding users in a personalized way to interesting or useful items in a large space of possible options. The basic models of recommender systems work with two kinds of data: the user-item interactions, such as ratings or buying behaviour; and attributes about the users and items such as users' profile and textual content of items. Methods that use the former are referred as collaborative filtering methods, whereas methods that use the latter are referred as content-based recommender methods. Another basic type of recommendation currently adopted by systems named knowledge-based recommender systems use explicitly specified user requirements whereby external knowledge bases and constrains are used to create the recommendation. Some recommender systems combine the strengths of various types of recommendation methods to create hybrid systems. Collaborative filtering methods perform well when there is sufficient rating information. However, their effectiveness deteriorates when there is not enough rating information available, which is a well-known problem in recommender system called data sparsity. In this talk, I will present few research approaches to overcome the data sparsity problems. Special emphasis, however, will be given on the exploitation of textual reviews to ameliorate such problems.

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## Keynote Session 6

*Prof. Dr. Albert Zijlstra*

University of Manchester  
United Kingdom

**Title: Data in Astronomy**



### **Abstract**

Modern astronomy produces large amounts of data. In the past, the output of an observation through a telescope would be a drawing with a note on location and brightness. Later, photographic plates took the place of the drawings. Nowadays, CCDs provide high resolution digital images of large areas on the sky. One telescope may produce 100 GB of data per night. Astronomy operates on an ‘open sky’ basis where the data is archived and accessible by astronomers across the world. The data is archived in a standardized format, accessible, searchable and readable. The various archives have reached PB sizes. The next generation of telescopes will produce even larger data rates. This talk will discuss the role of data archives in astronomy, the types of data that are being produced, and the tools that are commonly used to visualize the data.

## Workshop Speaker

*Dr. Saidah Saad*

Faculty of Information Science and Technology  
Universiti Kebangsaan Malaysia



### **Title of Workshop: The Fundamental of Semantic Technology**

This workshop will introduce participant on the basis of semantic concepts, semantic technology where it provide easier ways to find, share, reuse and combine information. Semantic Technologies define and link data on the Web by using the internet language to enrich the knowledge, self-describing interrelated of data in a machine-readable form. Participant are exposed to the various internet languages needed in semantic technology such as RDF, RDFs, OWL, SPARQL, SWRL and SQWRL.

RDF is the format Semantic Technology uses to store data on the Semantic Web or in a semantic graph database. SPARQL is the semantic query language specifically designed to query data across various systems and databases, and to retrieve and process data stored in RDF format. OWL is the computational logic-based language that is designed to show the data schema and that represents rich and complex knowledge about hierarchies of things and the relations between them. It is complementary to RDF and allows for formalizing a data schema/ontology in a given domain, separately from the data.

The Semantic Web Rule Language (SWRL) is a proposed language for the Semantic Web that can be used to express rules as well as logic, combining OWL DL or OWL Lite with a subset of the Rule Markup Language. Whereas the Semantic Query-Enhanced Web Rule Language (SQWRL) is SWRL-based query language that provides SQL-like operators for extracting information from OWL ontologies. An ontology is part of the W3C standards stack for the Semantic Web where it is a formal description of knowledge as a set of concepts within a domain and the relationships that hold between them. To enable such a description, we need to formally specify components such as individuals (instances of objects), classes, attributes and relations as well as restrictions, rules and axioms. As a result, ontologies do not only introduce a sharable and reusable knowledge representation but can also add new knowledge about the domain. Participant are also given practical use of opensource software, Protégé to develop web semantic application for specific domain.

## Conference Schedule Day 1: 15th June 2021 (Tuesday)

Time	Activities	
09:30 – 10:30	<b>Keynote Session 1</b>  <b>Title: From IoT Data to Services</b>  <b>Speaker: Prof. Dr. Athman Bouguettaya</b> (University of Sydney, Australia)  <b>Moderator: Emeritus Prof. Dato' Dr. Tengku Mohd Tengku Sembok</b> (Universiti Pertahanan Nasional Malaysia)	<b>Meeting ID: 959 7686 7047</b> <b>Passcode: 428454</b>  <a href="https://zoom.us/j/95976867047?pwd=QUtSY0p4MHdlTEt2eWZyN29CQzJCdz09">https://zoom.us/j/95976867047?pwd=QUtSY0p4MHdlTEt2eWZyN29CQzJCdz09</a>
10:30 – 14:00	<b>Break Time</b>	
14:00	<b>Conference Welcome by Emcee Mr Sameer Bamansoor</b>  <b>Holy Quran and Doa Recitation</b>  <b>Welcoming Speech</b> <ul style="list-style-type: none"> <li>• Dean of FCIT</li> <li>• Conference Chair</li> </ul> <b>Opening Speech by CEO</b>	<b>Meeting ID: 816 5830 5481</b> <b>Passcode: 825686</b>  <a href="https://us02web.zoom.us/j/81658305481?pwd=SFN2K0JRWkRSUEpjdGMvemtMcnVBdz09">https://us02web.zoom.us/j/81658305481?pwd=SFN2K0JRWkRSUEpjdGMvemtMcnVBdz09</a>
14:30	<b>Keynote Session 2</b>  <b>Title: Computational methods for optimisation of retrofitting systems</b>  <b>Speaker: Associate Prof. Dr. Shadi Saleh Basurra</b> School of Computing and Digital Technology Birmingham City University – UK	
15:00	<b>Keynote Session 3</b>  <b>Title: E-Mobility centric Internet of Connected Vehicles</b>  <b>Speaker: Dr. Omprakash Kaiwartya</b> Senior Lecturer, School of Science & Technology Staff Group(s) Computing and Technology	
15:30	<b>Keynote Session 4</b>  <b>Title: AI Geospatial and It's future</b>  <b>Speaker: Prof Dato' Dr Mohd Hafiz Yusoff</b> Registrar, Albukhary International University, Malaysia Professor, School of Computing & Informatics, Albukhary International University	
16:00 – 18:30	<b>Parallel Technical Sessions (1)</b>	<b>Dr. Yazeed</b>
16:00 – 18:30	<b>Parallel Technical Sessions (2)</b>	<b>Mr. Ahmad Diab</b>
18:30	<b>End of Sessions</b>	

## Conference Schedule Day 2: 16th June 2021 (Wednesday)

Time	Activities	Link
10:00 – 11:00	<p><b>Keynote Session 5</b></p> <p><b>Title: Ameliorating Data Sparsity in Collaborative Recommender Systems</b></p> <p><b>Speaker: Prof. Dr. Shahrul Azman Mohd Noah</b> (Universiti Kebangsaan Malaysia)</p> <p><b>Moderator: Prof. Dr. Fatimah Dato Ahmad</b> (Universiti Pertahanan Nasional Malaysia)</p>	<p>Meeting ID: 977 5226 0699 Passcode: 471546</p> <p><a href="https://zoom.us/j/97752260699?pwd=bTNzc0hoQ0lUd0FSYy9CZGg4NG1PdZ09">https://zoom.us/j/97752260699?pwd=bTNzc0hoQ0lUd0FSYy9CZGg4NG1PdZ09</a></p>
11:00 - 14:00	<b>Break Time</b>	
14:00 – 16:00	<p><b>Workshop Session</b></p> <p><b>Title: Fundamental of Semantic Technology</b></p> <p><b>Speaker: Dr. Saidah Saad</b> (Universiti Kebangsaan Malaysia, Malaysia)</p> <p><b>Moderator: Dr. Fakhru Hazman Yusoff</b> (Universiti Teknologi MARA)</p>	<p>Meeting ID: 991 2243 4350 Passcode: 807737</p> <p><a href="https://zoom.us/j/99122434350?pwd=TzRIekxSTDdMZmFxZ2VzbUxpd0l1QT09">https://zoom.us/j/99122434350?pwd=TzRIekxSTDdMZmFxZ2VzbUxpd0l1QT09</a></p>
16:00 – 17:00	<p><b>Keynote Session 6</b></p> <p><b>Title: Data in Astronomy</b></p> <p><b>Speaker: Prof. Dr. Albert Zijlstra</b> (University of Manchester, UK)</p> <p><b>Moderator: Assoc. Prof. Dr. Dayang Nurfatimah Awang Iskandar</b> (Universiti Malaysia Sarawak)</p>	<p>Meeting ID: 970 6078 0720 Passcode: 186508</p> <p><a href="https://zoom.us/j/97060780720?pwd=eU5ibGtDS0JpdHFMb1Fsc2pYc0VFZz09">https://zoom.us/j/97060780720?pwd=eU5ibGtDS0JpdHFMb1Fsc2pYc0VFZz09</a></p>
17:00 – 19.00	<b>Parallel Technical Sessions (3)</b>	<b>Dr. Yazeed</b>
17:00 – 19.00	<b>Parallel Technical Sessions (4)</b>	<b>Mr. Ahmad</b>
19:00	<b>Best Paper Award and Closing Ceremony</b>	<p>Meeting ID: 891 4858 5758 Passcode: 827869</p> <p><a href="https://us02web.zoom.us/j/89148585758?pwd=TUZCN1I1cDdPQ1ZUZ0ZTRm1DWkNNDz09">https://us02web.zoom.us/j/89148585758?pwd=TUZCN1I1cDdPQ1ZUZ0ZTRm1DWkNNDz09</a></p>
19:15	<b>End of Sessions</b>	

## Parallel Session 1 Schedule

<b>Day 1: 15<sup>th</sup> June 2021</b> (Tuesday) <b>Time: 16:00 – 18:30</b>		<b>Meeting ID: 881 0628 1279</b> Passcode: 353865 <a href="https://us02web.zoom.us/j/88106281279?pwd=OVpXSm9YYzNVZTFDRkhKdDdIRjhUUT09">https://us02web.zoom.us/j/88106281279?pwd=OVpXSm9YYzNVZTFDRkhKdDdIRjhUUT09</a>	
<b>Smart Computing Track</b>			
<b>Session Chair: Asst. Prof. Dr. Yazeed Alsayed Ali Al Moayed / Dr. Fakhru Hazman Yusoff</b>			
#	Paper ID	Paper Title	Authors
1	1570680257	Adaptive Latent Fingerprint Image Segmentation and Matching Using Chan-Vese Technique Based on EDTV Model	Shadi M S Hilles; Abdilahi Liban; Abdullah Altrad; Othman Miaikil; Yousef El-Ebiary; Mohanad M Hilles
2	1570680404	Latent Fingerprint Enhancement and Segmentation Technique Based on Hybrid Edge Adaptive DTV Model	Shadi M S Hilles; Abdilahi Liban; Othman Miaikil; Abdullah Altrad; Yousef El-Ebiary; Jennifer Contreras; Mohanad M Hilles
3	1570715992	An Affordable Monitoring System for Room's Temperature and Humidity (ms_rth)	Ban Salman Shukur
4	1570717551	Performance Analysis of Intrusion Detection Systems for Smartphone Security Enhancements	Mahmoud Al-khasawneh; Imran Ahmad; Atif Syed Shah
5	1570717557	Review of Weapon Detection Techniques Within the Scope of Street-Crimes	Mahmoud Al-khasawneh; Atif Syed Shah; Irfan Uddin
6	1570717558	Street-Crimes Modelled Arms Recognition Technique (SMART): Using VGG	Mahmoud Al-khasawneh; Atif Syed Shah; Irfan Uddin
7	1570725251	An Adaptive Automated Arabic Essay Scoring Model Using the Semantic of Arabic WordNet	Mohammad Alobed; Abdullah Altrad; Zainab Abu Bakar FASc
8	1570726567	Essay Question Generator Based on Bloom's Taxonomy for Assessing Automated Essay Scoring System	Jennifer O. Contreras; Shadi M S Hilles; Zainab Abu Bakar FASc
9	1570732130	Classification Analysis of COVID19 Patient Data at Government Hospital of Banyumas Using Machine Learning	Imam Tahyudin



## Parallel Session 2 Schedule

<b>Day 1: 15th June 2021</b> (Tuesday) Time: 16:00 – 18:30		<b>Meeting ID: 954 2974 1813</b> <b>Passcode: 533590</b> <a href="https://zoom.us/j/95429741813?pwd=eWsxOzk2YnBiRmhpU29lYmhFWWI0UT09">https://zoom.us/j/95429741813?pwd=eWsxOzk2YnBiRmhpU29lYmhFWWI0UT09</a>	
<b>Electronic Enterprise Track</b>			
<b>Session Chair: Assoc. Prof. Dr. Yousef Abu Baker El-Ebiary /Asst. Prof. Dr. Zakarya Mohsen Muthanna</b>			
#	Paper ID	Paper Title	Authors
1	1570716944	The Benefit and Impact of E-Commerce in Tourism Enterprises	P. Ravindran Pathmanathan, Khairi Aseh, Waheeb Abu-Ulbeh, Samer Bamansoor, Omar (Mohammed Ali) Abdullah Al-Qudah, Yazeed Al Moaiad, M Hafiz Yusoff, Bishwajeet Pande, Yousef A. Baker El-Ebiary
2	1570716945	The Future of E-Commerce in the Publishing Industry	Khairi Aseh, P. Ravindran Pathmanathan, Waheeb Abu-Ulbeh, M Hafiz Yusoff, Omar (Mohammed Ali) Abdullah Al-Qudah, Nurul Adilah Abdul Latiff, Yazeed Al Moaiad, Yousef A. Baker El-Ebiary
3	1570714226	Blockchain as a Decentralized Communication Tool for Sustainable Development	Yousef A. Baker El-Ebiary, Abdullah Altrad, Rajina R. Mohamed, Amer Hatamleh, Khalid Thaher Amayreh, P. Ravindran Pathmanathan, Khairi Aseh, Shadi Hilles
4	1570714228	Track Home Maintenance Business Centers with GPS Technology in the IR 4.0 Era	Yousef A. Baker El-Ebiary, P. Ravindran Pathmanathan, Rajina R. Mohamed, Syarilla Iryani Ahmad Saany, Julaily Aida Jusoh, Hasni Binti Hassan, Ahmad Nazari Mohd Rose, Khairi Aseh, Yazeed Al Moaiad
5	1570714232	Exploitation of a Technique in Arranging an Islamic Funeral	Syarilla Iryani Ahmad Saany, Khairi Aseh, P. Ravindran Pathmanathan, Julaily Aida Jusoh, Engku Ahmad Zaki Bin Engku Alwi, Ahmad Nazari Mohd Rose, Yasser Mohamed Abdelrahman Tarshany, Yousef A. Baker El-Ebiary
6	1570714235	Track Student Attendance at a Time of the COVID-19 Pandemic Using Location-Finding Technology	Julaily Aida Jusoh, Abdullah Altrad, Rajina R. Mohamed, Ahmad Nazari Mohd Rose, Syarilla Iryani Ahmad Saany, P. Ravindran Pathmanathan, Yousef A. Baker El-Ebiary, Khairi Aseh
7	1570714252	E-Government and E-Commerce Issues in Malaysia	Yousef A. Baker El-Ebiary, Nahg Abdulmajid Alawi, Mahmoud Al-Kofahi, Anas Ghassan Kanaan, Amer Hatamleh, Khairi Aseh, P. Ravindran Pathmanathan, Samer Bamansoor
8	1570714255	Determinants of Customer Purchase Intention Using Zalora Mobile Commerce Application	Samer Bamansoor, Yousef A. Baker El-Ebiary, Mahmoud Al-Kofahi, P. Ravindran Pathmanathan, Khairi Aseh, Yasser Mohamed Abdelrahman Tarshany, Bishwajeet Pande, Yazeed Al Moaiad
9	1570714260	Efficient Online Shopping Platforms in Southeast Asia	Samer Bamansoor, P. Ravindran Pathmanathan, Khairi Aseh, Bishwajeet, Yazeed Al Moaiad, Fakhruul Hazman Yusoff, Nurul Adilah Abdul Latiff, Yousef A. Baker El-Ebiary
10	1570714270	Evaluation of Chinese Electronic Enterprise from Business and Customers Perspectives	Yousef A. Baker El-Ebiary, P. Ravindran Pathmanathan, Khairi Aseh, Zainab Binti Abu Bakar FASc, Fakhruul Hazman Yusoff, Bishwajeet Pande, Yazeed Al Moaiad, Samer Bamansoor
11	1570714277	Amazon in Business to Customers and Overcoming Obstacles	Abdullah Altrad, Yousef mohamed endara, Mazen Mohammed Farea, P. Ravindran Pathmanathan, Khairi Aseh, Nurul Adilah Abdul Latiff, Yazeed Al Moaiad, Yousef A. Baker El-Ebiary
12	1570716938	Mobile Commerce and its Apps - Opportunities and Threats in Malaysia	Yousef A. Baker El-Ebiary, Bishwajeet Pande, P. Ravindran Pathmanathan, Khairi Aseh, Waheeb Abu-Ulbeh, Samer Bamansoor, Yazeed Al Moaiad, M Hafiz Yusoff
13	1570716940	Enterprise Problems and Proposed Solutions Using the Concept of E-Commerce	Mohaizi Bin Mohamad, Nahg Abdulmajid Alawi, Zakarya Mohsen Al-hodiani, Anas Ghassan Kanaan, Khalid Thaher Amayreh, P. Ravindran Pathmanathan, Khairi Aseh, Yazeed Al Moaiad, Yousef A. Baker El-Ebiary

## Parallel Session 3 Schedule

<b>Day 2: 16th June 2021</b> (Wednesday) <b>Time: 17:00 – 19:00</b>		<b>Meeting ID: 881 0628 1279</b> <a href="https://us02web.zoom.us/j/88106281279?pwd=OVpXSm9YYzNVZTFDRkhKdDdiRjhUUT09">https://us02web.zoom.us/j/88106281279?pwd=OVpXSm9YYzNVZTFDRkhKdDdiRjhUUT09</a>	<b>Passcode: 353865</b>
<b>Smart Computing Track</b>			
<b>Session Chair: Asst. Prof. Dr. Mahmoud Ahmad Salem Al-Khasawneh / Assoc. Prof. Dr. Ahmed Al-Masoodi</b>			
#	Paper ID	Paper Title	Authors
1	1570727489	Comparative Analysis of Network Forensic Tools and Network Forensics Processes	Mahmoud Al-khasawneh; Amer AbuAli; Ibrahim Alfadli; Arafat Mohammed; Omair Ameerbakhsh; Fahad Ghabban
2	1570727490	Common Investigation Process Model for Internet of Things Forensics	Mahmoud Al-khasawneh; Muhammed Ahmed Saleh; Siti Hajar Othman; Arafat Mohammed
3	1570732672	Simple Fabrication of Bismuth Telluride Used as Saturable Absorber for Generating Microsecond Pulse Fiber Laser	Ahmed Al-Masoodi; Abubakar Abdullahi; Abtisam Al-Masoodi; Sulaiman Wadi Harun, Nader Abdulrahman
4	1570732822	Review of Blockchain Application in Education Data Management	Vikri Aulia; Setiadi Yazid
5	1570733718	A Comparative Study of Cybersecurity Awareness on Phishing Among Employees from Different Departments in an Organization	Therdpong Daengsi; Phisit Pornpongtechavanich; Nathaporn Utakrit; Pongpisit Wuttidittachotti
6	1570734015	E-Puck Mobile Robot Obstacles Avoidance Controller by Using Fuzzy Logic Approach	Yahya Muhammad Adam; Nohaidda Binti Sariff; Nasir Ahmed Algeelani
7	1570727484	Digital Forensics Domain and Metamodeling Development Approaches	Mahmoud Al-khasawneh; Omair Ameerbakhsh; Amer AbuAli; Arafat Mohammed; Ibrahim Alfadli; Fahad Ghabban
8	1570727487	CIPM: Common Identification Process Model for Database Forensics Field	Mahmoud Al-khasawneh; Ibrahim Alfadli; Amer AbuAli; Arafat Mohammed; Omair Ameerbakhsh; Fahad Ghabban
9	1570727482	A Systematic Analysis for Botnet Detection Using Genetic Algorithm	Mahmoud Al-khasawneh; Hassan Sukhni
10	1570706874	Comparison Between Rule-Based Expert Support System and Machine Learning Expert Support System in KM	Louis Dwysevrey Ompusunggu; Dana Indra Sensuse; Rahmatul Mahdalina; Andi Wahbi

## Parallel Session 4 Schedule

<b>Day 2: 16<sup>th</sup> June 2021</b> (Wednesday) <b>Time: 17:00 – 19:00</b>		<b>Meeting ID: 938 5897 9519</b> <b>Passcode: 807335</b> <a href="https://zoom.us/j/93858979519?pwd=VjJHQkdjOGRoS0p4d2ljWWEvY2dnZz09">https://zoom.us/j/93858979519?pwd=VjJHQkdjOGRoS0p4d2ljWWEvY2dnZz09</a>	
<b>Smart Computing / Electronic Enterprise / Big Data Tracks</b>			
<b>Session Chair: Assoc. Prof. Dr. Najeeb Abbas Al-Sammarraie / Mr. Samer Ali Omar Bamansoor</b>			
#	Paper ID	Paper Title	Authors
1	1570707356	Management of Electrical Lighting System Using Programmable Logic Controllers	Amin Al Ka'bi
2	1570724762	Digital Adoption in New Normal Emergency Remote Teaching and Learning: Exploring Assorted Trials in Malaysia HEIs	Popoola Hamed; Bakare Kazeem Kayode; Othman A.M Miaikil; Ayman Mamdouh
3	1570726095	A Proposed Multi-Criteria System to Elect Employees for Overtime Working Hours Private Banking Sector in Iraq as a Case Study	Ban Salman Shukur
4	1570732092	The Moderating Effect of Compatibility Factor in the Usage of E Government Services Among Malaysian Citizens	Mohammad Mahmoud Alzubi; Al-Harath Ateik; Bader Ismaeel
5	1570732177	The Moderating Effects of Demographic Factors: The Usage of M-Learning Services Among Jordanian Students	Lana al Aesa
6	1570732526	Light Dependent Resistor Sensor Used for Optimal Power Consumption for Indoor Lighting System	Ahmed Al-Masoodi; Mohamed Hamad Elfaki, Nader Abdulrahman, Nohaidda Sariff
7	1570732644	Does Project Risk Management Matter for the Success of Information Technology Projects in Egypt	Enas A Elokby; Nahg AbdulMajid Alawi; Ahmed Taha Abdelhameed Abdelgayed; Zakarya Mohsen Al-hodiany
8	1570733339	Performance Evaluation of Multiple-Beam Free Space Optics in Tropical Rainy Weather	Samir Al-Gailani; Nor Shahida Mohd Shah; Ali Ahmed Ali Salem; Nasir Ahmed Algeelani; Mohammed Abdulhakim Bantahar
9	1570733396	Factors Affecting the Behavioural Intention to Use Electronic Banking Services Among Users in Yemen Using an Extension of the Unified Theory of Acceptance and Use of Technology	Munif Ahmed Saif Al-Muhrami; Nahg AbdulMajid Alawi; Abd Al-Aziz Al-Refaei; Mohammad Mahmoud Alzubi
10	1570733619	Arduino Based Underground Cable Fault Distance Locator: Hardware Design	Nasir Ahmed Algeelani; Tijjani Aminu; Samir Al-Gailani; Ali Ahmed Ali Salem
11	1570720313	Factors Influencing Students' Intention to Use Mobile Learning A Study at Yemen Higher Education Institutions	Shuhd Saleh Basurra; Samer Bamansoor

## Abstract

### *Smart Computing Track*

#### **Adaptive Latent Fingerprint Image Segmentation and Matching using Chan-Vese Technique Based on EDTV Model**

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**Abstract**— Biometrics such as face, fingerprint, iris, voice and palm prints are the most widely used, and as well the fingerprints are one of the most frequently used biometrics to identify individuals and authenticate their identity. commonly categorized into three different categories which are rolled, plain and latent fingerprints. The reliability of image segmentation for latent fingerprint which is used in criminal issues still challenges, The difficulty of latent fingerprint image segmentation mainly lies in the poor quality of fingerprint patterns and the presence of the noise in the background, This research has investigated the fingerprint segmentation and matching based on EDTV and presented Chan-vease active contour segmentation technique, in addition, presented NIST SD27 for grayscale dataset of latent fingerprint which is standard by National Institute of Standard and Technology, where is dataset have varieties of fingerprint image samples, a total about 258 of latent fingerprint, those samples collected from crime scenes and matching fingerprint and shown the performance of matching accuracy ROC and CMC curves, To evaluate the performance of the matching ROC and CMC curves has been deployed, The area under curve (AUC) of the ROC of the good images performance is 72% with CMC rank1-identification of 42% and rank-20 identification of 79%. the result shows that the latent fingerprint method performance is better for good latent fingerprint images compare to bad and ugly images, while there is no much difference for bad and ugly image.

**Keywords**— EDTV, Segmentation, fingerprint, image, Chan-Vese

## Latent Fingerprint Enhancement and Segmentation Technique Based on Hybrid Edge Adaptive DTV Model

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**Abstract**— Image enhancement and segmentation is widely used for fingerprint identification and authorization in biometrics devices, criminal scene is most challenges due to low quality of fingerprint, the most significant efforts is to develop algorithm for latent fingerprint enhancement which become challenging problem due to the complex and existing problem for instance, developing algorithms of latent fingerprint is able to extract features of image blocks and removing overlapping and isolate the poor and noisy background. however, it's still challenging and interested problem specifically latent fingerprint enhancement and segmentation. The aim study of this paper is to propose latent fingerprint enhancement and segmentation based on hybrid model and Chan-Vese method for segmentation, in order to reduce low image quality and increase the accuracy of fingerprint. The desired characteristics of intended technique are adaptive, effective and accurate, hybrid model of edge adaptive direction achieves accurate latent fingerprint enhancement and segmentation, the target needs to improve feature detection and performance, this research has proposed system architecture of research method in fingerprint enhancement and segmentation where is the method content two stages, the first is normalization and second is reconstruction, using EDTV model is required for adaptive noise, in addition Chan-vase technique contributed for identification of fingerprint image features, the result and testing using RMSE with three categories of fingerprint images good, bad and ugly show better performance for all three categories, as well RMSE shows the average of good latent fingerprint before and after enhancement. Latent Fingerprint Enhancement and Segmentation Technique Based on Hybrid Model Edge Adaptive Directional Total Variation

**Keywords**— Image, Segmentation, Hybrid model, Enhancement

## An Affordable Monitoring System for Room's Temperature and Humidity (MS\_RTH)

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**Abstract**— Automation becomes a mandatory option to be used in our daily life. This includes home automation systems which is referred to controlling home utilizations either by wired or wireless communication. This facility is even more required for an elder, disable, or any other vulnerable person in the house. On the other hand, Arduino is an easy to use, powerful, cost effective, and efficient microcontroller tool which is used in many automation systems. In this paper, an affordable monitoring system is proposed by integrating an Arduino-built system with a suitable smartphone application to measure and control a room's temperature and humidity. Knowing that, mobile technology has changed everybody's life in today's world and people are carrying smartphones nearly all the time whether they are outside or inside their homes, it is suitable to have a smartphone application to measure and control any room's temperature using them. For this paper requirements, Android smartphone platform was chosen to build the required application and connected successfully with the Arduino-built measurement system using MIT APP Inventor2 builder. The application was built and implemented effectively in measuring any room's temperature and humidity frequently successfully. The Android application also provides a warning message if the temperature exceeds the permitted edge. The later facility is very important to avoid possible fire accidents or similar undesired room's atmosphere.

**Keywords**—Home automation system, Arduino, smartphone applications, affordable system.

## Performance Analysis of Intrusion Detection Systems for Smartphone Security Enhancements

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**Abstract**—In order to protect user privacy and a smartphone from imminent security breaches, it is necessary to have an intrusion detection system (IDS). According to stock market surveys, Android is the most popular mobile operating system (OS). By 2021, smartphone traffic is expected to exceed that of personal computers. This makes the smartphone most attractive for potential attacks. The risk is due to the creation of malicious applications and gaming, the majority of which are freely available to users. The main problems with the IDS developed for Smartphone Technology are the CPU, memory, and their battery usage, because there are limited energy resources for smartphones and other mobile devices. The other problem is that most other security devices including anti-malware and antiviruses continuously need to upgrade their signatures from servers and upgrading antivirus signatures is more energy consuming. At the same time hackers use innovative types of attacks to hack smartphones while signatures for these do not exist at the server side. In this study the main focus is on the performance analysis of IDS for Smartphone communications and transactions. In addition the implication of this analysis with a view to improving existing intrusion detection systems is discussed. A detailed comparative study of existing method of intrusion detection system for smartphone security improvement and enhancement is presented to point out the pros and cons of the currently in use intrusion detection technique for smartphones.

**Keywords**-IDS (Intrusion detection system), Android Debug Bridge, Artificial Neural Network, Android, Security, 5G, Malware detection, Host-based IDS, Network-based IDS. Machine learning, Deep Learning, Android Interface Definition Language

## Review of Weapon Detection Techniques Within the Scope of Street-Crimes

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**Abstract**—The ratio of street crimes in under developing is very high. Everyday violent incidents are reported, which happen mainly because a person having access to armory. In certain areas, armory is controlled by installing X-rays, or allocating police. In some cases, CCTV cameras are installed to monitor visual armory. But these methods of controlling armory are expensive and require a huge deal of manual efforts. However Deep Learning has revolutionized the weapons detection system using CNN's architectures. In this review paper we have discussed various weapons detection paper within the scope of street crime.

**Keywords:** *CNN, Handgun, Weapons, Arms, Street-Crimes, Machine Learning, Deep Learning*



## Street-Crimes Modelled Arms Recognition Technique (SMART) : Using VGG

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**Abstract**—Open access of arms(weapons) is one of the very common threat to the peace. Criminal activities especially violence directly hits peace and economic status of the society which results in stress and downfall; one of the major reason for all this anarchy is the open access to arms. This disordered situation can be handled using automatic arms detection. CNN along with its variant models demonstrated to be the best among all other machinerics. In this paper VGG is compared with LeNet and AlexNet and a system is proposed for arms detection from video surveillance and named it SMART (Street-crimes Modelled Arms Recognition Technique). Results shown the efficacy of the proposed model (SMART) as compared to other models.

**Keywords:** CNN, VGG, Handgun, Arms, Street-Crimes

## An Adaptive Automated Arabic Essay Scoring Model Using the Semantic of Arabic WordNet

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**Abstract-**An Automated Essay Grading (AEG) system is designed to be used in public schools, universities and companies, which is used to saving time and cost and to reduction in errors and unfairness due to human bias. The AEG widespread use and applied for multi-language such as English and French and others, but the researches in automated Arabic essay is limited. Therefore, this research introduces an Arabic Automated Essay Grading (AAEG). The aim of this research is to build a new model that is able to evaluate students' answers to Arabic essay questions with a score that is close to that provided by the teacher manually. The model relies on the semantic of Arabic WordNet model to achieve the accuracy and to avoid the weakness in stemming, after using a hybrid method in stemming with Arabic WordNet tables and using Arabic WordNet to search for all synonyms for all reference answer words so that students' marks don't oppress because they didn't write the same words reference answer.

**Keywords** —*Information Retrieval, Similarity measure, Automated Essay Grading, Arabic WordNet, Stemming Techniques.*

## Essay Question Generator based on Bloom's Taxonomy for Assessing Automated Essay Scoring System

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**Abstract**—An automated essay scoring system (AES) is advantageous in evaluating student's learning outcomes since it gives them the chance to exhibit their knowledge. Most of the AES is using machine learning (ML) to enhance student's scores but did not consider the proper construction of the essay questions. This study aims to integrate the cognitive level of Blooms' taxonomy (BT) in constructing essay questions and compare the scores of the student. Identifying the most appropriate ML method in classifying essay exam questions (EEQ) based on BT that will be embedded in the Essay Question Generator (EQG). Using F1-Measure, the evaluation results show that the Support Vector Machine (SVM) (85.7%) outperforms Naïve Bayes (82.6%) and K-Nearest Neighbor (77.6%). Therefore, SVM together with the NLP techniques is applied to automatically extract essay questions from the given text for the teachers to select and apply. The EQG was evaluated using the scores of 375 students who answered two sets of essay exam questions using Bloom's Taxonomy (BT) and without Bloom's taxonomy (NBT). Using frequency distribution, the scores between two types were evaluated and the result shows that most students performed well in answering the essay exam using BT 5.6% of the students obtains a perfect score of 5.0 but nobody got 5.0 for NBT. In a conclusion, this study shows that the essay questions constructed according to BT cognitive level produce higher scores using EQG when compared to exam questions prepared by the teachers.

**Keywords**—machine learning; natural language processing; blooms taxonomy; support vector machine

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## A Systematic Analysis for Botnet Detection using Genetic Algorithm

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**Abstract**— Internet faces different types of threats from the attackers using malicious software (malwares) such as viruses, worms and botnets. Botnets are considered to be among as one of the biggest threats in the cyber world and rapidly evolving day by day. It has become as one of the most dangerous malicious malware due to the difficulty to detect the botnet. This research paper presents a systematic analysis on how botnet works and how it is being detected and how genetic algorithm can be applied in detecting botnets. Furthermore, it also discusses the future challenges and the ongoing research techniques to detect botnets.

**Keywords**— *cyber security, botnet detection, network security, worms, genetic algorithm*

## Digital Forensics Domain and Metamodeling Development Approaches

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**Abstract**— Metamodeling is used as a general technique for integrating and defining models from different domains. This technique can be used in diverse application domains, especially for purposes of standardization. Also, this process mainly has a focus on the identification of general concepts that exist in various problem domain and their relations and to solve complexity, interoperability, and heterogeneity aspects of different domains. Several diverse metamodeling development approaches have been proposed in the literature to develop metamodels. Each metamodeling development process has some advantages and disadvantages too. Therefore, the objective of this paper is to provide a comprehensive review of existing metamodeling development approaches and conduct a comparative study among them-eventually selecting the best approach for metamodel development in the perspective of digital forensics.

**Keywords**— *Digital forensics, Metamodel, Metamodeling*

## CIPM: Common Identification Process Model for Database Forensics Field

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**Abstract**— Database Forensics (DBF) domain is a branch of digital forensics, concerned with the identification, collection, reconstruction, analysis, and documentation of database crimes. Different researchers have introduced several identification models to handle database crimes. Majority of proposed models are not specific and are redundant, which makes these models a problem because of the multidimensional nature and high diversity of database systems. Accordingly, using the metamodeling approach, the current study is aimed at proposing a unified identification model applicable to the database forensic field. The model integrates and harmonizes all exiting identification processes into a single abstract model, called Common Identification Process Model (CIPM). The model comprises six phases: 1) notifying an incident, 2) responding to the incident, 3) identification of the incident source, 4) verification of the incident, 5) isolation of the database server and 6) provision of an investigation environment. CIMP was found capable of helping the practitioners and newcomers to the forensics domain to control database crimes.

**Keywords**— Database forensics; Identification process; digital forensics, metamodelling

## Comparative Analysis of Network Forensic Tools and Network Forensics Processes

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**Abstract**— Network Forensics (NFs) is a branch of digital forensics which used to detect and capture potential digital crimes over computer networked environments crime. Network Forensic Tools (NFTs) and Network Forensic Processes (NFPs) have abilities to examine networks, collect all normal and abnormal traffic/data, help in network incident analysis, and assist in creating an appropriate incident detection and reaction and also create a forensic hypothesis that can be used in a court of law. Also, it assists in examining the internal incidents and exploitation of assets, attack goals, executes threat evaluation, also by evaluating network performance. According to existing literature, there exist quite a number of NFTs and NFPs that are used for identification, collection, reconstruction, and analysing the chain of incidents that happen on networks. However, they were vary and differ in their roles and functionalities. The main objective of this paper, therefore, is to assess and see the distinction that exist between Network Forensic Tools (NFTs) and Network Forensic Processes (NFPs). Precisely, this paper focuses on comparing among four famous NFTs: Xplico, OmniPeek, NetDetector, and NetIecept. The outputs of this paper show that the Xplico tool has abilities to identify, collect, reconstruct, and analyse the chain of incidents that happen on networks than other NF tools.

**Keywords**— *Digital forensics, Network forensics, Comparative analysis, Xplico, OmniPeek, NetDetector, NetIecept*

## Common Investigation Process Model for Internet of Things Forensics

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**Abstract**— Internet of Things Forensics (IoTFs) is a new discipline in digital forensics science used in the detection, acquisition, preservation, rebuilding, analyzing, and the presentation of evidence from IoT environments. IoTFs discipline still suffers from several issues and challenges that have in the recent past been documented. For example, heterogeneity of IoT infrastructures has mainly been a key challenge. The heterogeneity of the IoT infrastructures makes the IoTFs very complex, and ambiguous among various forensic domain. This paper aims to propose a common investigation processes for IoTFs using the metamodeling method called Common Investigation Process Model (CIPM) for IoTFs. The proposed CIPM consists of four common investigation processes: i) preparation process, ii) collection process, iii) analysis process and iv) final report process. The proposed CIPM can assist IoTFs users to facilitate, manage, and organize the investigation tasks.

**Keywords**— *IoT, IoT forensics, metamodeling, digital forensics*



## Simple Fabrication of Bismuth Telluride Used as Saturable Absorber for Generating Microsecond Pulse Fiber Laser

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**Abstract**— This paper is the explanation of the development of Q-switched Erbium doped fiber (EDF) laser using Bismuth Telluride  $\text{Bi}_2\text{Te}_3$  as SA. The continuous wave (CW) was then demonstrated in the EDF laser, which also shows the output is increased from 0.36 to 6.3 mW by increasing in the pump power from 15 to 147 mW. The center wavelength of 1567.7 nm with a 3dB bandwidth of 0.2 nm at pump power of 112 mW has been reported. The fabrication of Bismuth Telluride  $\text{Bi}_2\text{Te}_3$  used a liquid phase exfoliation method. By adding a small piece of qualified  $\text{Bi}_2\text{Te}_3$  film was incorporated among two optical fiber ferrules to produce the SA tool after the optical isolator, the generation of Q-switching pulse train in the EDFL cavity with the SA was generated starting from 61 to 112 mW pump power. The highest repetition rate of 46 kHz and the minimum pulse width of 7.8  $\mu\text{s}$  are attained using  $\text{Bi}_2\text{Te}_3$  SA with corresponding signal to noise ratios (SNR) of 47 dB. The high SNR values indicate the stability of both Q-switched lasers. The highest pulse energy and output power were achieved at 67 nJ and 4 mW respectively. The result shows a great potential for use in generating Q-switching pulses in the EDFL. The fabrication of both SAs is simple and cheap while the output of both Q-switched lasers is highly stable at room temperature.

**Keywords**—EDFL, Q-switching, Bismuth Telluride, Saturable Absorber

## Review of Blockchain Application in Education Data Management

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**Abstract**—The development and growth of blockchain technology today have gained widespread attention from researchers and practitioners. This popularity is due to the various positive benefits of this technology in multiple sectors such as finance, public administration, health care, education, science, culture, and the arts. Various studies have been conducted to examine the application of blockchain technology in the education sector. However, there are still many hidden things and research areas that have not been discussed. This literature review will discuss blockchain applications in the process of education management. This literature study focuses on answering three main questions: what type of application blockchain technology is used for, what kind of data is stored using blockchain, and unresolved constraints or challenges in adopting and implementing blockchain technology in education. The results of our study show that there is great potential that this technology can bring to education. We also found and discuss solutions to various challenges in certain data types and problems in implementing this technology in education management. The results of this literature study are aimed at researchers interested in carrying out research using blockchain technology in education by providing an overview of what needs to be done for further research.

**Keywords**— *Blockchain in Education, Blockchain Application, Education Technology*

## A Comparative Study of Cybersecurity Awareness on Phishing Among Employees from Different Departments in an Organization

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**Abstract—** Cybersecurity is an important issue for people who usually use the Internet for their purposes (e.g., ecommerce) in this era of the COVID-19 pandemic. For cyberthreats, phishing, which can be sent via email, can harm information systems in the organization. However, the risks from this kind of threats can be reduced if the employees have cybersecurity awareness. To prove this hypothesis with Thai employees, this paper presents a comparative study of cybersecurity awareness enhancement associated with the employees who work in different departments within the same organization in Bangkok, Thailand. In this study, the first phishing attack simulation was conducted before providing knowledge and training in cybersecurity to the employees and attacking with the second simulation. After result collection and analysis, it has been found that there are significant differences in cybersecurity awareness level between Thai employees from technology-based departments (e.g., IT department) and socialbased departments (e.g., HR department) within the same organization. Of course, the technology-based employees are the better. Furthermore, it has been found that the cybersecurity awareness level of Thai employees from the social-based department, which were poor when compared to the other one, was improved obviously after they were involved with the cybersecurity awareness enhancement processes.

**Keywords-** *Cybersecurity*

## E-puck Mobile Robot Obstacles Avoidance Controller Using the Fuzzy Logic Approach

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**Abstract**— This paper presents the development of the E-puck mobile robot controller using a fuzzy logic approach for obstacle avoidances in various static environments. The WEBOTS simulator was selected to test E-puck performances in finding a free path to the desired target while avoiding obstacles within the environment. This E-puck model is equipped with eight proximity sensors and driven by two DC motors that will be the input and output to the development of the fuzzy inference system of the fuzzy logic controller. The execution of fuzzy rules depended on the input and output membership function which consists of the sensor distance, velocity, and turning angle of the E-puck. The results proved that the E-puck robot can avoid the obstacles successfully while heading towards the goal point in several test environments. Different numbers and shapes of obstacles were allocated within the environment. The trajectory and time taken were recorded to validate the effectiveness and robustness of the proposed fuzzy logic controller in avoiding obstacles. The trajectory indicates the safe path obtained and the time taken most when the E-puck finds a path in a complex environment as compared to the simple environment. The local minima problem can also be avoided using fuzzy control.

**Keywords**- Mobile robot, Fuzzy Logic, Obstacle Avoidances

## *Electronic Enterprise Track*

### **Comparison Between Rule-Based Expert Support System and Machine Learning Expert Support System in KM**

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***Abstract***— Machine Learning is gaining popularity nowadays, but we found some key activities involving the business core of the companies still rely on Rule-Based. Therefore, in terms of Knowledge Management, we tried to figure out how Rule-Based and Machine Learning contribute to the Knowledge Management of business (such as providing insights on business intelligence) and e-learning, specifically through their capability as Expert Support Systems. Eventually we are to figure out the comparison between Rule-Based and Machine Learning Expert Support System in the KM. While it can be arguable for the results if we only rely on the qualitative perspective gained from literature study, we then involve AHP to bring the comparison become real, quantitatively. But for reader's knowledge enhancement, we take the chance to also demonstrate quantitatively in even more real case using Orange. This research shows that ML is better than Rule-Based for some points, but there are also points in which Rule-Based is even better. Therefore, even though ML is a new trend with its undisputed capability, Rule-Based is still need; it is even not a bad idea to consider having hybrid Expert Support System in which both ML and Rule-Based exist. Ultimately, this research should bring the insights about the current usage of both through reading this paper, as well as the understanding about the comparison of both to wisely decide which one is to choose to support future business and or e-learning endeavor.

***Keywords***—*knowledge management, expert support system, business, e-learning, rule-based, machine learning.*

## Management of Electrical Lighting System Using Programmable Logic Controllers

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**Abstract** — *Automatic lighting in building automation is a technology mainly designed for energy efficiency and uniformity of illumination during working hours. In this paper design and implementation of automatic lighting controller, consists of low cost and simple approach of electric lighting interface module with Programmable Logic Controller (PLC) is presented. To achieve illumination standard, the number of lamps were accordingly determined and their illumination levels were maintained automatically with the use of PLC. In order to quantify the results obtained by the PLC as a controller, the results were also obtained without using the PLC. It is observed that, illumination levels were found to be 300-310 lux and 120-160 lux with and without using the PLC respectively. Furthermore, uniformity ratio and power consumption were also estimated. It is observed that, the uniformity ratios were found to be 0.9 - 0.95 and 0.1 - 0.15 with and without using the PLC respectively. Thus, illumination level and uniformity ratio with PLC's are in close agreement with the anticipated values. Also, the power consumptions of the lamps used in the system with and without using the PLC were found to be 100 W and 400 W respectively. Therefore, it can be concluded that the proposed model is reasonably efficient in saving electrical energy. That is the energy saving of nearly 75% is obtainable in a system of lighting control using PLC.*

**Keywords** — *Day lighting system, Ladder logic program, Lighting control interface module.; Programmable Logic Controllers; PLC's.*

### **Blockchain as a Decentralized Communication Tool for Sustainable Development**

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**Abstract**—This research introduces the distributed ledger technology (blockchain) in terms of sustainable development in the future. This study is based on private, public and global communications in various industries. The growing demands for secure and decentralized transactions around the world demonstrate the need for Blockchain technology as a medium of operations and communications. The blockchain system is completely decentralized and allows users to exchange messages in an efficient and secure manner. The highlight of the paper is the anticipated future use of blockchain networks as a communication tool in every business and digital economy for a safe and sustainable development, while presenting its advantages and limitations that have been confirmed based on the experiences of various experts. Moreover, the article provides recommendations for the use of blockchain to greatly complicate its identification in future communications. The paper also concludes that the use of the blockchain system could be beneficial and enhance future communications and digital technologies.

**Keywords**— *Blockchain Technology, Future Development, Communication Tool, Digital Economy, Decentralized systems.*

## Track Home Maintenance Business Centers with GPS Technology in the IR 4.0 Era

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**Abstract**—A home helper is in high demand these days because it relieves the stress of doing household chores. Home helpers are usually self-employed and work part-time in their clients' homes. Be that as it may, having domestic helper departments within the nearby local area is annoying since residents, in general, have no foggy idea of when or how to contact the person providing these types of help. Examples of departments that could be offered include escort departments, garden maintenance, dinner planning, pet grooming, assistance with family tasks, or even friendship for the elderly. It is clear that there is a gap between the specialized household cooperatives and the neighboring local area that requested the departments. Usually, individuals introducing departments present their administrations by using flyers or bypassing their phone numbers to individuals. This is definitely not an accurate display system because the dispersion of the data is limited to just a small aggregation of the surrounding local area. Going forward, I-HomeHelper acts as a unique stage for people to bring their department to an end through openness who are asking their departments to take advantage of current developments in Global Positioning Systems (GPS) with Industry Revolution 4.0 (IR4.0). I-HomeHelper authorizes to make an orderly reservation for the necessary departments and also fills as a stage for the advancement of the various departments accessible. The finer details of departments that include costs, name of home partners, and contact numbers are likewise shown on the advanced page so that the general community can choose which departments meet their models. This app is expected to create an ecosystem for holistic critical development for these freelance people and benefit an audience that really needs help with family chores or home maintenance.

**Keywords**— *Industry Revolution 4.0, Global Positioning System, Dynamic Platform, Technology Solutions.*



## Exploitation of a Technique in Arranging an Islamic Funeral

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**Abstract**—Technologies continue to evolve and develop as practically all activities and services such as commerce, business, and online education can be terminated. Tragically, the commemorative service track and the handling service still run a similar cycle as more seasoned individuals have done previously. Here, the recommended app will help customers deal with the memory service faster and easier. The term "Islam" means identification with God and man, and complete surrender to God in contemplations, sayings, beliefs, and activities. Longitude in Islamic culture is sufficient and seen as a typical piece of life. Muslims consider that change begins with one country and then another, not an end. A Muslim's corpse is referred to in Arabic as a "burial service." I-JenzCare is a stage where service providers and customers can coordinate their needs in serving the remembrance service plan. I-JenzCare is a unique idea on the basis that no similar application or framework has been established regarding dealing with Islamic burial services in Malaysia yet. This research introduces new characteristics of the traditional Islamic burial service services practiced in the Malay community. I-JenzCare uses an innovative Analytic Hierarchy (AHP) that requires only a mid-end cell phone to keep everything according to the best customer experience principles. To illustrate this, the framework is a useful application for individuals who need immediate assistance in dealing with burial services in Malaysia.

**Keywords**— AHP, Mobile App., Funeral, Malaysia, Islamic Sharia.

## Track Student Attendance at a Time of the COVID-19 Pandemic Using Location-Finding Technology

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**Abstract**—With the improvement of innovation that has become increasingly unexpected and modern, the use of cell phones has become the primary option in supervising various issues of life. The Covid-19 episode is starting to take the course to move from learning strategies to open distance learning. Open distance learning is an idea where students rate addresses from different locations. Among the exercises affected by this change is the way to record student participation and collaboration through web addresses, rather than the usual way of being in a similar classroom while talking. Global Positioning System (GPS) is a global satellite path frame that provides area and time synchronization. This methodology can help teachers monitor their students' attitudes throughout the learning meeting. GPS activity is based on the triangulation technique where the area is determined by estimating the distance to the satellites. Accordingly, iHadir was recommended to overcome the issue of pursuing student participation. iHadir is a versatile application framework that can find the student's area during a learning meeting. This app can be used as another option in checking student engagement during web-based learning. IHadir will help increase the validity of sharing records during web-based learning.

**Keywords**— Mobile App., GPS, Student Attendance System, Covid-19.

## E-Government and E-Commerce Issues in Malaysia

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**Abstract**—In Malaysia, an e-commerce company is still considered a new middleman. As well as the development of information and communication technology strongly affects business companies at the present time in terms of management, business strategies, production, sales and marketing, and other aspects that underpin business profitability in general. E-commerce, known as e-commerce, refers to a general term for a commercial activity using modern technologies, or a commercial transaction that includes the exchange of data via electronic frameworks, especially the Internet, as well as many modern systems used in personal computers, smart phones, etc. It is not just limited to doing business between companies but also related to online services between governments and individuals. Various investigations related to e-commerce have identified obstacles related to information technology (IT) organization, internet use, financial situation, government and administrative activities as important determinants of doing business online. Information and Communication Technology (ICT) has revolutionized businesses around the world. In this paper, e-commerce practices in Malaysia are analyzed by their characteristics, drawbacks, openings and risks. This paper provides a general review of the current issues considered by e-commerce organizations today. It also suggests the challenges and problems facing e-commerce companies at the present time and how to solve them using e-commerce concepts.

**Keywords**— *E-Government, Electronic Commerce, Business Models, Bandwidth, Hardware Infrastructure.*

## Determinants of Customer Purchase Intention Using Zalora Mobile Commerce Application

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**Abstract**—In the era of modern technologies and with the development of marketing, nowadays the customer can save time buying things without having to visit the store. They just need to shop online, find what they are buying and pay it with just a few simple clicks. With this convenience in mind, the indulgence of people buying online has risen quite well. The customer's decision to purchase a product through Internet commerce under the concept of electronic commerce - which has been developed into e-commerce or mobile commerce - usually takes a serious action with perceived confidence in the services and their suitability. Therefore, customer behaviour is an important factor to facilitate online electronic service. Hence, it is important to understand customer perceptions on these services and their intention of using it. Zalora is one of the fastest online search platforms providing kind of world-famous brands in Malaysia. The objective of this study is to examine factors that influence Malaysian consumers' purchase intention through Zalora mobile application. Based on the theory of planned behaviour along with other factors, the study proposes a theoretical model for the empirical examination of the customer intention for purchasing via Zalora mobile application. Data were collected from sixteen respondents to test the relationship between variables. Data analysis was carried out using PLS-SEM. The empirical results indicated that perceived friendliness, perceived convenience, and perceived influence have a significant impact on purchase intention. The result may be preserved by providing an easy shopping experience to the user when using commerce sites and building trust to maintain the intent to buy. In addition, this analysis is helpful for Zalora marketers to suggest the most effective promotion methods in reference to further marketing of their products.

**Keywords**— *Electronic Commerce, Malaysia, Mobile Commerce, Purchase Intention, Theory of Planned Behaviour, Zalora*

## Efficient Online Shopping Platforms in Southeast Asia

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**Abstract**—With the emergence of current developments and their devices that allow correspondence between organizations with each other, just as it is between organizations and service providers, just as with their customers, for some reasons, including advertising and a return to what is acceptable to them with the organization. Items, deals, etc., therefore, this examination provides an internal and external investigation of the current web-based business phase with a focus on promising conditions, risks, qualities, and shortcomings of FashionValet's electronic stage, whose administrations offer more than the Internet. Also, FashionValet is a stage organizer for online shopping and style in Southeast Asia other than Poplook, Zalora, and others, and the bulk of them are important competitors to FashionValet and they implement their own systems. The FashionValet experience, for example, is the history of the creator just as the other company's foundation has been pointed out to characterize how organizations, especially FashionValet, have moved from their primary stage to where they are today as the most aggressive design project. In addition, the technologies and innovations used by FashionValet are shown to provide a comprehensive detailed blueprint. To understand the improvement in style organizations in Malaysia, it was examined further. The paper outlines the critical elements to FashionValet's thriving as an end.

**Keywords**— *Internet Business Stage, FashionValet, Southeast Asia, Online Shopping, Competitive Industry.*

## Evaluation of Chinese Electronic Enterprise from Business and Customers Perspectives

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**Abstract**—The evaluation of companies in the era of modern technologies is due to how and to what extent these companies use such technologies. Provided that modern technologies are dealt with in all aspects of the company, internally and externally. Also, the first company to provide market data and information for free to all shoppers and visitors to its online platform around the world is the Alibaba Group. Alibaba also has its own mission of making the process of buying or marketing everything in the world uncomplicated for everyone, but specifically to introduce Chinese business to the people of the world serving China's vision of conquering the world with its products. Alibaba Group revenues are rising as it reaches more demand than its opponent in the global market. Besides that, the Alibaba Group communication system and how the business connects with the retailer is very interesting. Their business approach has made them famous and distinguished in Asia. Internationally, it is important for Alibaba to gain a higher connection to join well-known western brands, especially luxury and luxury brands, due to the unfulfilled requirements among Chinese customers for the brand that cannot be reached in China. So, it is also possible for Alibaba to be a lucrative brand for retailers around the world to sell their products and as the world grows, that could also be for the Business to Business (B2B) or Customer to Customer (C2C) marketplace.

**Keywords**— *E-Commerce, Chinese online Market, Alibaba Group, Electronic Enterprise.*

## Amazon in Business to Customers and Overcoming Obstacles

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**Abstract**—Electronic commerce, or people call it e-commerce, it refers to buying and selling products or services on the Internet and transferring money and data to carry out these transactions. More consumers are shifting from traditional transactions to e-commerce, as e-commerce becomes faster and cheaper. In contrast, electronic commerce provides more ease and variety in the composition of goods and services worldwide. E-commerce is the type of electronic business that has been in business for more than 25 years and is used by many users around the world. This research aims to shed light on the nature of electronic commerce and the difficulties it faces on the technical side. This research used descriptive methodology after gathering data from online and indexed research. The research also mentioned five of these obstacles, and how the Amazon overcomes them, and we will take a look at how the opportunities of the Amazon grow so that they have an effect called the Amazon effect, the research reached an important conclusion that eDesk is the leading help desk for online sellers, specifically designed to meet the exact requirements of e-commerce. The research also found solutions to some of the weaknesses faced by electronic commerce platforms.

**Keywords**— Amazon, Electronic commerce, e-commerce Obstacles, B2C, Business Models.

## Mobile Commerce and its Apps - Opportunities and Threats in Malaysia

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**Abstract**—The purpose of this study is to discuss on opportunities and threats of Foodpanda as an online E-commerce platform including their strength and weaknesses. Electronic Commerce commonly known as E - Commerce means buying and selling of goods and services through internet. E-commerce is a way of conducting business online. Though e-commerce is facing challenges in the market but it has scope to outsource the traditional markets. Nowadays, E-commerce is a very big and potential platform in business organization. There are so many platform of E-commerce and one of them is Foodpanda. Foodpanda is one of the leading online food delivery marketplaces and is spread out globally. Its main job is to enable users to place orders at nearby restaurants with the assistance of its website or via its mobile app. A study on Foodpanda will show on opportunities and threads of Foodpanda as one of the biggest online E-Commerce platform.

**Keywords**— Food Delivery, Foodpanda, E-commerce, Mobile Commerce, SWOT Analysis, Malaysia.



## Enterprise Problems and Proposed Solutions Using the Concept of E-Commerce

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**Abstract**—The noise of e-commerce businesses has seen the extension of number of the online businesses global. Buyers now are opted with online business commerce which is greatly benefit compared to traditional businesses. It is undeniable e-commerce enterprises contribute more profits, comparing to "bricks-and- mortal" traditional enterprises, but not to be avoided the problems and challenges faced by the e-commerce marketplace. This study emphasizes the problems and challenges of e-commerce and a set of recommended solutions to those problems and challenges. Those problems are trust, readiness and security. For each of the problems, proposed solutions are presented. Companies have conducted business electronically by applying a range of electronic commerce solutions. In the current situation, a corporation enters the electronic market by building trading partner agreements with sellers or wholesalers of their choice. These deals may include any items that cannot be agree electronically, like terms of transfer, payment devices, or implementation rules. After discovering the right market relationships, a company must choose the elements of their electronic commerce system. In this paper have been formulate current ecommerce problems, challenges and their effective solutions. In future, e-commerce marketplace should concentrate more on securing payment, e-banking and e-government. With that, problems and challenges in e-commerce can be reduce.

**Keywords**— *E-commerce, E-Businesses, Problems and Solutions, Security.*

## The Benefit and Impact of E-Commerce in Tourism Enterprises

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**Abstract**—It is generally accepted that the advancement of information and communication technology (ICT) has contributed to the exponential growth of the electronic marketplace. ICT, especially the internet, is believed to be the most cost-effective tool to help brick and mortar companies gain greater markets and the opportunity to compete with other competitive organizations in attracting consumers to their goods, services and knowledge with the strong waves of globalization and liberalization around the world. Nowadays, technology is developing and making our world borderless and infinite. E-commerce is one of the innovations that is transforming the demand for businesses. Electronic commerce (e-commerce) is considered to be an effective method for promoting, selling and incorporating online services that can play an important role in customer recognition, acquisition and maintenance. Through the e-commerce site, people can also promote services, replacing the conventional process, which is cheaper and more efficient. There is a set of effective organizational and external organizational variables in e-commerce that should be taken into consideration. The aim of this study is to suggest an e-commerce solution that can solve the problem for tourism companies. The paper focuses on Malaysia's tourism industry and focuses only on the angle of e-commerce adoption management.

**Keywords**— *E-commerce, problem solving, Electronic Enterprise, ICT, Tourism Enterprises.*

## The Future of E-Commerce in The Publishing Industry

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**Abstract**—In comparison to conventional book-printed content, electronic "publishing" has allowed users to import files to either a personal computer or an e-book reader to read text in a digital format. Reduced printing costs and reduced time to market by streamlined drafting, proofing, and printing methods are the benefits of the publishing industry over the conventional printed book (p-book). It prevents binding, distribution and shipping. The intent of this paper is to explore the strategic use of e-commerce in the transformation of the publishing industry. The first part of the paper discusses the strategic use of e-commerce/Web-Based Business in the transition from a single distribution channel mass producer of printed books to a multiple distribution channel that will include e-books and print on demand technology in the publishing industry. Emphasis is put on management techniques in the global marketplace for the use of emerging information technologies. The second section of this paper addresses the transfer in competitive influence between the different levels of the supply chain of the publishing industry, including the latest trends in electronic publishing from the stakeholders' point of view. Expected to serve as the base for development within the digitized print industry. As e-publishing becomes popular and moves towards maturity, to allow a "mainstream" status, common standards must emerge and combine.

**Keywords**— *Publishing Industry, E-Commerce, Web-Based Business, Mass Producer, E-Books, Electronic Publishing.*

## Factors Influencing Students' Intention To Use Mobile Learning: A Study at Yemen Higher Education Institutions

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**Abstract**— M-learning services makes Yemeni higher education more accessible, but for successful acceptance, students must understand the technology. M-learning implementation in Yemeni higher education institutions are facing two issues namely: the disparity concerning the perceptions of technology between students and the university, and inadequate knowledge and inclusion of students' acceptance during technology investment decision. The acceptance and use of m-learning services among students in Yemeni higher education is thus examined in this study, and an acceptance model of students of m-learning in higher education environment is proposed banked on Extended Technology Acceptance Model (TAM2). Students' acceptance of behavior intention to use m-learning and its impact on usage behavior is investigated in higher education environment. Factors such Perceived Ease of Use, Perceived Usefulness, Information Quality and Social Influence have shown a great impact on the Behavior Intention to use Mobile Learning services. This research employed SPSS analysis techniques to test the measurement and structural models with a sample of 381 students.

**Keywords**—mobile learning, TAM, Perceived Ease of Use (PEOU).

## Digital Adoption in New Normal Emergency Remote Teaching and Learning: Exploring Assorted Trials in Malaysia HEIs

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**Abstract**—Malaysia higher education institutions were affected by the COVID-19 pandemic like other countries globally, most of universities and colleges in which they were not fully prepared of what will come to teaching and learning. This is resulted to adopt the new vision of education called remote teaching and learning through digital adoption. This research aimed to explore factors that influence Malaysians' HEIs Digital Adoption in New Normal Emergency Remote teaching and learning. The quantitative approach was adopted to collect information from 200 participants purposively selected from higher education institution in Malaysia. The findings indicated that perceived ease of use and perceived usefulness and HEI supports influencing Malaysians' HEIs digital adoption in new normal emergency remote teaching and learning. The result of a convergent validity indicated measures or indicators correlates positively with other indicator of the same construct consists of t-statistics 3.377, 3.366 and 2.154 with p=value (0.000, 0.001 and 0.001) respectively. The research recommended that upgrading the level of qualification and training of faculty members in distance education programs at the university on the latest methods and modern technological systems in the field of digital learning and distance education; to provide a distinguished educational level in various theoretical and applied disciplines.

**Keywords**— *Remote Teaching and Learning, Digital Adoption, Higher Education Institution*

**A Proposed Multi-Criteria System to Elect Employees for Overtime Working Hours  
Private Banking Sector in Iraq as a Case Study**

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***Abstract***— A successful enterprise must be able to produce the valued information in a way that serves the organization’s mission and achieve its competitive advantage. Within this context, stakeholders began to invest technology to serve the enterprise and reach success. In Iraqi, stakeholders/managers in private banking sector face the challenges of electing employees/workers to stay for overtime working hours every day as a part of daily work requirements. This matter is a time-consuming and a conflict subject for any manager or stakeholder; especially for those who are in sensitive and important enterprises. In this paper, we are proposing a multi-criteria system in an innovative way which is based on a field work and system analysis approaches in National Islamic Bank Iraq as an example of private banking sector in Iraq. The paper starts by giving an introduction about computer based systems, describes the significance of this research, going through literature review, system analysis phase for the National Islamic Bank Iraq, interviews, extracting criteria, designing the system, and describing the system functions and output. The system provides an easy, efficient, and assistance tool which saves time and effort for those stakeholders/managers in achieving the required election decision electronically by following simple steps to acquire information.

***Keywords***—Systems, Multi-criteria, overtime, Banking sector, Iraq.

## The Moderating Effect of Compatibility Factor in the Usage of E-Government Services Among Malaysian Citizens

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**Abstract**—The primary aim of the study was to investigate the role of E-government services among citizens of Malaysia. Unified theory of acceptance and use of technology (UTAUT) was used in this descriptive study for testing how the Malaysian citizens perceive technology usage in E-government services utilizing e-applications. The purposive and snowball sampling was applied in choosing the respondents. Self-administered questionnaire was used in gathering primary data and 381 usable responses were obtained. The approach of PLS was applied for the data analysis. The outcomes show support to all UTAUT hypotheses. From the outcomes, Compatibility (C) appears to partially moderate the relationship of Performance Expectancy (PE), Social Influence (SI), Facilitating Condition (FC), Effort Expectancy (EE). Overall, the citizens appear to be well adapted to the utilization of electronic technology for general E-government services. Nonetheless, the impact of electronic technology being a tool appears to be restricted within E-government, similar to the finding of past works. This implies the possible presence of other factors that decrease the mobile apps usage for services, aside from technology. The knowledge regarding citizen's behaviour within the progressive domain of E-government is expanded in this work. In practice, this study assists E-government practitioners in comprehending the citizen's needs.

**Keywords**—E-government Services, Compatibility, Performance Expectancy, Social Influence, Facilitating Condition, Effort Expectancy, Unified theory of acceptance and use of technology.

## The Moderating Effects of Demographic Factors: The Usage of M-Learning Services among Jordanian Students

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**Abstract**—This study attempts to suggest a model that will increase the usage of M-Learning Services in developing countries. This study intends to study the aspect of Jordanian university students' acceptance of M-learning services by looking into the students' intention to use & the Continued Usage Intention of the M-learning services. The proposed model may facilitate the understanding of how certain factors can affect the level of usage of M-Learning Services in Jordan. The main objective of this study is identifying the effects of Effort Expectancy (EE), Facilitating Condition (FC), Performance Expectancy (PE), Social Influence (SI), Culture Factors (FC), Quality of Service (QoS) and Student Readiness (SR) on the Usage Behaviour (UB) of m-learning services. Determining the significant factors influencing students' acceptance is aimed at reducing students' resistance to the use of m-learning system. This study applied a quantitative research methodology, which includes a numerical measurement and analysis of the factors which influence acceptance. The findings of this study practically contribute to solving the research problem, namely students' acceptance of m-learning. The descriptive statistics revealed that, respondents indicated of this study have expertise and good experience with using m-learning in Jordan. More importantly, the study has offered results of PLS-SEM analysis which was obtained from evaluating hypotheses testing, the measurement model, and structural model.

**Keywords**-M-Learning, Higher education, Jordan, continued usage intention behavior.



## Light Dependent Resistor Sensor Used for Optimal Power Consumption for Indoor Lighting System

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**Abstract**— Electricity had become one of the most essentials in life. The need for electricity keeps increasing. It has become a challenge to maintain this service evenly to everyone around the world. The high demand and the consumed power bring negative feedback due to the lack of natural resources and have a high impact on global warming. Hence, this paper is built to optimize electrical power consumption. The research of the optimum energy consumption and utilization control system works based on proposed goals. The working principle is interfacing among the Light Dependent Resistor (LDR), Global System of Mobile (GSM), bulbs, and Arduino board. LDR works according to the surrounding environment, while the GSM depends only on the user's order for the ON/OFF functions. The obtained results and calculations have shown that this system can save much electrical power consumption during the day. The essential factor for the bulb light intensity depends on the external light source; therefore, it varies according to the climatic conditions, the season of the year, and the day. The most important in this research is to provide the best and the most convenient lighting system that can easily save electrical power consumption.

**Keywords**— *LDR sensor; LED Power consumption; Indoor lighting system.*

## Does Project Risk Management Matter for the Success of Information Technology Projects in Egypt

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**Abstract**— Risk management could be seen as one of the important knowledge areas in the project management field that affects all the other areas in the project and also affect the success of the project as whole. In the recent years, Information Technology (IT) projects have become more complex as a result of the technological changes and the demand of having easy and flexible products, so it is important to give more focus to how the IT projects are managed. This research study aimed to study the link between implementing the project risk management activities and the success of the IT project in IT and Telecommunication sectors in Egypt. The success of the IT projects was measured using four dimensions: project time management (schedule), project cost management, project scope management and project quality management. The risk management activities contain the following: plan risk management, identify risks, perform qualitative risk analysis, perform quantitative risk analysis, plan risk response, implement risk response, monitor risk. In order to achieve the objectives of this research, questionnaire was developed as a main instrument to collect the primary data. The questionnaire consisted of the following parts: the first part relates to background information; the second part relates to the project risk management and the third section relates to the project success. This study targeted the employees of IT project in Egypt, and 103 questionnaires were distributed to the study sample, and then SPSS was used to analyze the collected data. The results of this research showed that there is a positive impact for performing risk management activities on the IT project success and illustrate that implementing the risk management activities affect in a positive way the project success, and risk management should be considered as a one of the key activities that should be implemented in IT project and also should be considered as a one of the key factors that contribute to the IT project success.

**Keywords**—IT Project; Project Management; Risk Management; Project Success; Egypt.

## Performance Evaluation of Multiple-Beam Free Space Optics in Tropical Rainy Weather

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**Abstract**— Free space optics (FSO) has the potential to replace optical fiber as a solution for the last mile problem. FSO is favored because of its cheap maintenance costs and quick deployment time as compared to other communication system such as fiber optics. Atmospheric attenuation is a problem for FSOs with classic single beam systems, especially when it rains heavily specially in tropical region like Malaysia. As a result, a multibeam FSO transceiver system has become popular as a solution to this problem. The purpose of this study is to compare the standard single beam FSO system with the suggested multibeam FSO system. At a bit error rate (BER) of  $10^{-9}$ , the comparison is made in terms of received optical power, channel distance, and geometrical losses. Rain intensity data is gathered over a six-month period. To evaluate the performance of both systems, the average rain attenuation is calculated from this data and exposed to single beam and multibeam FSO systems. The multibeam FSO approach was found to increase the system's performance. The results show that employing up to four beams improves the quality of received power and increases the channel distance to 1150 m when compared to a single beam FSO system with a channel distance of only 830 m.

**Keywords**— Free Space Optics (FSO), multiple beams TX/RX FSO, Geometrical Losses, Link Margin, and Atmospheric Loss.

**Factors Affecting the Behavioural Intention to Use Electronic Banking Services Among Users in Yemen: Using an Extension of the Unified Theory of Acceptance and Use of Technology**

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**Abstract**—E-banking offers services to those under its jurisdiction, where they can benefit from all the electronic transactions with the E- banking. Most studies that look into usage models have not been tested extensively in developing countries, with inconsistent results noted in instances where these models have been tested in developing countries. Even among developing countries in the same region, there are many differences - economic, cultural, political, and demographic- features. This study keen to suggest a model that will increase the usage of E- banking services in developing countries. The proposed model may facilitate the understanding of how certain factors can affect the level of usage of E-banking government services in Yemen. The main objective of this study is to gauge the possible antecedents of E- banking services usage by working on a new model based on UTAUT model as well as to answer the research questions posed. This study applied a quantitative research methodology, which includes a numerical measurement and analysis of the factors which influence adoption. In this study, survey questionnaires which involved 393 respondents were be adopted to aggregate the results. The investigation seeks to identify whether variables – Culture, IT support, Familiarity, Performance Expectancy, Social Influence, Facilitating Conditions and Effort Expectancy with the behavioural intention of E-banking services in Yemen. The results show that culture, IT support, familiarity, performance expectancy, social influence, facilitating conditions and effort expectancy were found to positively affect with the behavioural intention of E-banking government services in Yemen.

**Keywords**— *Yemen, IT support, familiarity, UTAUT model.*

## Arduino based Underground Cable Fault Distance Locator: Hardware Design

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**Abstract-** The underground fault location is typical practice in many sectors and in various industrial units. Whenever a system failure occurs, for some reason, the repair process related to the defective wire becomes difficult because it is not possible to trace the position of the faulty cable. Therefore, the purpose of this research paper is to determine the location of the buried cable broken lines from the source station to the exact location. This research will help to easily identify and locate underground cable failure without digging the entire length of the cable before repairing or replacing the entire cable due to the difficulties of detection of the cable fault. In addition, helps to reduce loss of income due to damage when trying to detect faults. Hardware implementation was done by assembling the functional components required to demonstrate how fault detection and location can be realized A general purpose project board was used for this hardware version of the prototype, which shows the physical prototype of the fault detection and location system. Results shows the accuracy of the proposed system, where it was capable of indicating the fault location. The accuracy depends on the specifications in the instruction codes 'or instance, the number of decimals displayed depends on specifications in the microcontroller program.

**Keywords—** Underground cables, Ardiuno, Faults Detection,

## *Big Data Track*

### **Classification Analysis of COVID19 Patient Data at Government Hospital of Banyumas using Machine Learning**

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**Abstract**—The development of the COVID-19 pandemic has not ended for almost 2 years. Even new variants appear that are more worrying. Including cases of COVID-19 in the Banyumas Raya area, a new variant from India entered through the Cilacap district. The objective study is to analyze the classification of COVID-19 patient data at the Government Hospital (RSUD) Banyumas from December 2020 to March 2021. In this analysis, we use several Machine Learning (ML) algorithms, including Decision Tree (DT), Support Vector Machine (SVM), Random Forest (RF), K-Nearest Neighborhood (KNN), Naïve Bayes, and linear regression. The variable used are vital sign factor which are blood pressure, temperature, Respiratory Rate (RR), SpO<sub>2</sub>, pulse rate, age, and age category. The class variable is age category. Based on the data obtained, a number of 6,464 patients are categorized as elderly. In general, the vital sign examinations show that they are within normal limits, except for the rate of respiration (RR), which is an average of 21 cycles per minute, which should normally be 8-12 cycles per minute. The classification process of age category variables shows that the RF algorithm provides the highest classification accuracy of 99.92%. For the future, this dataset could be examined by using Deep Learning (DL) algorithms to improve the accuracy.

**Keywords**—classification analysis, COVID-19, vital sign, RSUD Banyumas

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