2ND INTERNATIONAL CONFERENCE ON INFORMATION SECURITY AND COMPUTER TECHNOLOGY (ICISCT 2021)

(FORMERLY KNOWN AS ICAIS 2020)

24 - 25TH JULY 2021

PROGRAM BOOK & BOOK OF ABSTRACTS

"Securing Remote Connectivity"

ORGANIZED BY:

Premier Digital Tech University ™

UNIVERSITI TEKNOLOGI MARA

Fakulti Sains Komputer dan Matematik

FOREWORD

Professor Ts Dr Haryani Haron
Advisor
ICISCT 2021

On behalf of the Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, Malaysia, it is my pleasure to welcome you virtually to the 2nd International Conference on Information Security and Computer Technology (ICISCT 2021).

Cybersecurity is a collective responsibility where all of us, academics, researchers, businesses, and individuals, must play part. We must start if not continue to equip our arsenal with enhanced and innovative features utilizing data analytic, Artificial Intelligence, and other techniques to strengthen and further combat cyber attack.

ICISCT 2021 is dedicated to cover a wide spectrum of themes related to "securing remote connectivity" that we are all acutely aware of its crucial importance.

I am certain that all presenters and participants will have many fruitful and enriching discussions in identifying and discussing critical issues within this escalating problem, and at the end of our conference, I am also confident that our efforts here carefully craft ideas, policies, technical solutions, and contributions that would further navigate and enhance the capacity building for the cyber resilience into diminishing the proliferation of cyber-crimes.
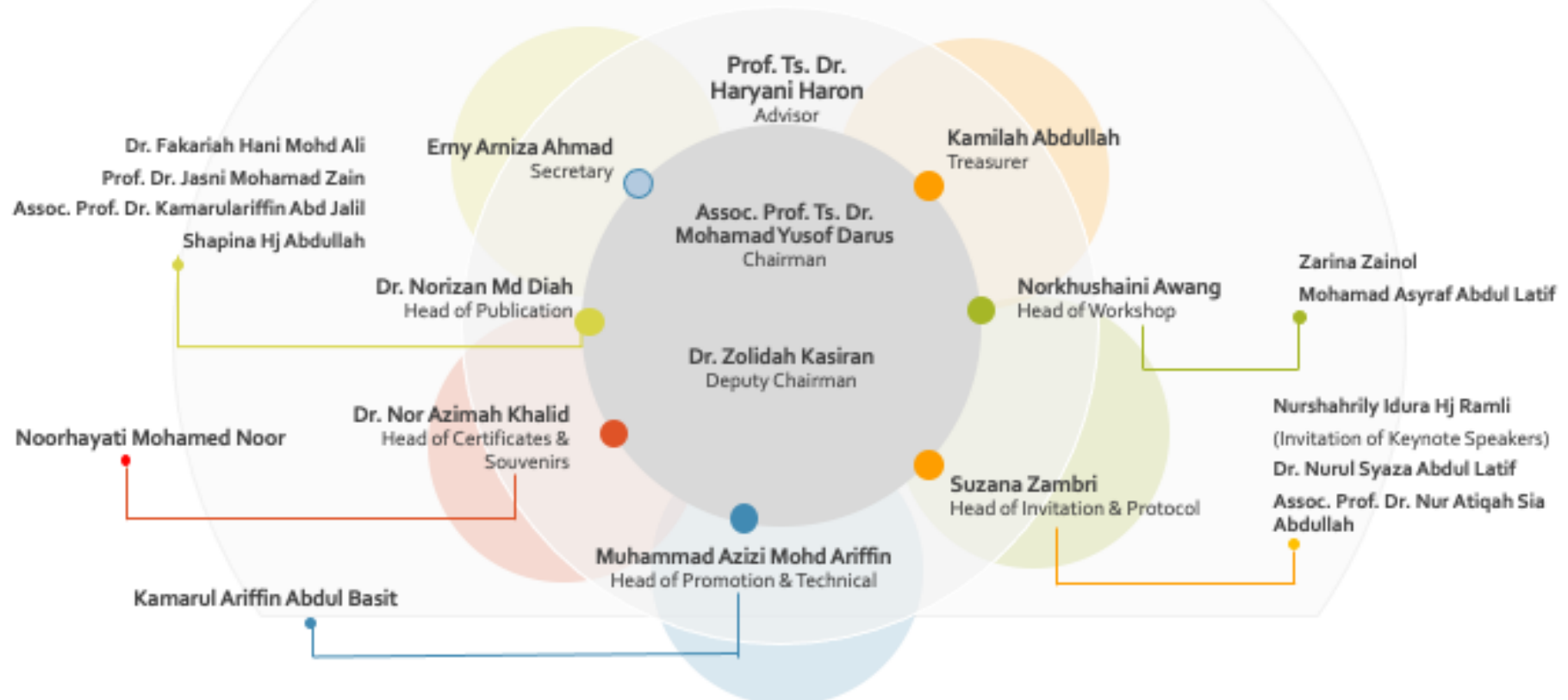
My sincere appreciation and acknowledgment to our collaborators, the Institute Teknologi Bandung (ITB) Indonesia and Mar Baselios College of Engineering and Technology (MBCET), India, for their exceptional synergy that made ICISCT effective, successful, and productive.

I am also most grateful to our organizing committee, for all their hard work, diligence, and enthusiasm in ensuring ICISCT a success. It is pleasing to see their phenomenal display of team spirit, and it is even more pleasing to see it being displayed in the most hectic and trying times.

And last but not least, I wish all of you inspiring and successful ideas, and I wish the conference immense success.

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ICISCT 2021

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PROGRAM TENTATIVE

Day 1 – 24ᵗʰ July 2021 (Saturday)		
Slot	Program	Meeting URL
08:00 AM	Registration and Guest Arrival	
08:30 AM	**Opening Ceremonies** • Opening Speech by Dean of Faculty Computer and Mathematical Sciences, UiTM, Professor Ts. Dr Haryani Haron, • Opening Speech from ITB • Officiate by Deputy Vice Chancellor (Academic and International) UiTM, Professor Dr Roziah Mohd Janor	Cisco Webex: https://icisct2021.page.link/1and3 Password: icisct2021
09:30 AM	Keynote Speaker (1) **Dr Ir Budi Rahardjo, Institut Teknologi Bandung (ITB)**	Cisco Webex: https://icisct2021.page.link/1and3 Password: icisct2021
10:30 AM	Break	
10:45 AM	**Parallel Session 1** *Kindly refer presentation schedule	Cisco Webex: https://icisct2021.page.link/1and3 Password: icisct2021
10:45 AM	**Parallel Session 2** *Kindly refer presentation schedule	Cisco Webex: https://icisct2021.page.link/2and4 Password: icisct2021
12:30 PM	Break	
02:15 PM	Keynote Speaker (2) **Ts Dr Asmawi Fadhilah B Mohd Ariffin (Senior Vice President, Cyber Security Responsive Services Division, CyberSecurity Malaysia)**	Cisco Webex: https://icisct2021.page.link/1and3 Password: icisct2021
03:00 PM	**Parallel Session 3** *Kindly refer presentation schedule below	Cisco Webex: https://icisct2021.page.link/1and3 Password: icisct2021
03:00 PM	**Parallel Session 4** *Kindly refer presentation schedule below	Cisco Webex: https://icisct2021.page.link/2and4 Password: icisct2021
05:00 PM	End of Day 1	

PROGRAM TENTATIVE

Day 2 – 25ᵗʰ July 2021 (Sunday)		
Slot	Program	Meeting URL
09:00 AM	Keynote Speaker 3 **Prof Ts Dr Salman Yussof (Universiti Tenaga Nasional- UNITEN)**	Cisco Webex: https://icisct2021.page.link/5 Password: icisct2021
10:15 AM	**Parallel Session 5** *Kindly refer presentation schedule below	Cisco Webex: https://icisct2021.page.link/5 Password: icisct2021
12:00 PM	Wrap Up & Closing Remarks Announcement of Best Paper and Presenter Awards **by Professor Ts. Dr Haryani Haron Dean of Faculty Computer and Mathematical Sciences, UiTM**	Cisco Webex: https://icisct2021.page.link/5 Password: icisct2021

PRESENTATION SCHEDULE

Parallel Session 1 (Saturday, 24ᵗʰ July 2021, 10:45AM GMT+8)

Cisco Webex:
https://icisct2021.page.link/1and3
Password: icisct2021

Slot	Paper ID & Title	Corresponding Author
10:45 AM	**Paper ID: 25** Organizational Decision for Digital Forensic Adoption: An Empirical Investigation in the Case of Malaysian Law Enforcement Agencies	Siti Nuur-Ila Dr Mat Kamal
11:00 AM	**Paper ID: 3** PCB Design for IoT Based Fire Alarm System	Norsuzila Ya'acob
11:15 AM	**Paper ID: 17** Implementation of SARIMA Algorithm in Understanding Cybersecurity Threats in University Network	Norulzahrah Mohd Zainudin
11:30 AM	**Paper ID: 40** Detecting Illicit Cryptocurrency Mining Activity in Cloud Computing Platform	Muhammad Azizi Bin Mohd Ariffin
11:45 AM	**Paper ID: 11** Analysis on Digital Image Watermarking Using DCT-DWT Techniques	Zolidah Kasiran
12:00 PM	**Paper ID: 13** Analysis on Computational Time of Hybrid Cryptography in Email System Network	Zolidah Kasiran

PRESENTATION SCHEDULE

Parallel Session 2 (Saturday, 24th July 2021, 10:45 AM GMT+8)

Cisco Webex:
https://icisct2021.page.link/2and4
Password: icisct2021

Slot	Paper ID & Title	Corresponding Author
10:45 AM	**Paper ID: 28** IOT Security: Data Encryption for Arduino-based IOT Devices	Shapina Hj Abdullah
11:00 AM	**Paper ID: 31** Polymorphic Malware Detection Based on Supervise Machine Learning	Nur Syuhada Selamat
11:15 AM	**Paper ID: 36** Detection of Malicious Binaries and Executables Using Machine Learning-based Detectors	John Martin M Ladrido
11:30 AM	**Paper ID: 32** Detecting Offensive Malay Language Comments on YouTube using Support Vector Machine (SVM) and Naive Bayes (NB) Model	Suzana Ahmad
11:45 AM	**Paper ID: 18** A Survey on Novel Energy Efficient Sleep Scheduling Routing Protocol for long life Wireless Sensor Network	Muhammad Zafar Khan
12:00 PM	**Paper ID: 20** Integration of Security Hardware Module ZYMKEY 4i with Raspberry Pi	Rizzo Mungka Rechie

PRESENTATION SCHEDULE

Parallel Session 3 (Saturday, 24ᵗʰ July 2021, 03:00 PM GMT+8)

Cisco Webex:
https://icisct2021.page.link/1and3
Password: icisct2021

Slot	Paper ID & Title	Corresponding Author
03:00 PM	**Paper ID: 5** Artificial Bee Colony Algorithm for Adaptive Glioblastoma Detection	Shafaf Ibrahim
03:15 PM	**Paper ID: 6** Optimizing the Portfolio in Malaysian Stock Market with Mean-Variance Model	Kah Fai Liew
03:30 PM	**Paper ID: 7** Solar Irradiance Forecasting Model using Artificial Neural Network for a Case Study in Pulau Pinang	Nor Salwa Damanhuri
03:45 PM	**Paper ID: 12** Improving Classification of Scoliosis on Radiographic Image using Ensemble Models	Raseeda Hamzah
04:00 PM	**Paper ID: 16** Comparing the Efficiency of Pathfinding Algorithms for NPCs in Platform Games	Norizan Mat Diah

PRESENTATION SCHEDULE

| Parallel Session 4 (Saturday, 24th July 2021, 03:00 PM GMT+8) |

Cisco Webex:
https://icisct2021.page.link/2and4
Password: icisct2021

Slot	Paper ID & Title	Corresponding Author
03:00 PM	**Paper ID: 30** Detection and Classification of Weightlifting Form Anomalies using Deep Learning	Noor Latiffah Adam
03:15 PM	**Paper ID: 32** Detecting Offensive Malay Language Comments on YouTube using Support Vector Machine (SVM) and Naive Bayes (NB) Model	Suzana Ahmad
03:30 PM	**Paper ID: 37** Counterfeit Malaysian Banknotes Detection Using Discrete Wavelet Transform	Nor Ashikin Mohamad Kamal
03:45 PM	**Paper ID: 22** TelcoSentiment: Sentiment Analysis on Mobile Telecommunication Services	Marshima Mohd Rosli
04:00 PM	**Paper ID: 29** The Performance of Deep Neural Networks in Deformed Iris Recognition System	Suzwani Ismail

PRESENTATION SCHEDULE

Cisco Webex:
https://icisct2021.page.link/5
Password: icisct2021

Slot	Paper ID & Title	Corresponding Author
10:15 AM	**Paper ID: 41** Performance Evaluations of Convolutional Neural Network (CNN)-Based Models for Semantic Segmentation of Plant Leaf Diseases	Nursuriati Jamil
10:30 AM	**Paper ID: 2** Impact of Transmitter and Receiver Distance of 3.5GHz Networks Channel Propagation in Line-of-Sight (LOS) and Non-Line-Of-Sight (NLOS) Environments	Azita Laily Yusof
10:45 AM	**Paper ID: 25** Organizational Decision for Digital Forensic Adoption: An Empirical Investigation in the Case of Malaysian Law Enforcement Agencies	Siti Nuur-Ila Dr Mat Kamal
11:00 AM	**Paper ID: 26** Enhancement Keylogger Application for Parental Control and Monitor Children's Activities	Mohamad Yusof Darus
11:00 AM	**Paper ID: 27** Integrating Socio-Digital Skills in the Industry 4.0 era for graduates' employability: An employers' perspective	Ainol Mardhiyah M Rahmat
11:15 AM	**Paper ID: 38** Using Data-Driven for Improved Educational Experience During COVID 19	Haryani Haron
11:30 AM	**Paper ID: 35** Endxiety Self-Relief Button Mobile Application	Nor Shahniza Kamal Bashah

PAPER ABSTRACTS

Parallel Session 1 (Saturday, 24ᵗʰ July 2021, 10:45AM GMT+8)
Paper ID ,Title, Authors and Abstract

Paper ID: 25

Organizational Decision for Digital Forensic Adoption: An Empirical Investigation in the Case of Malaysian Law Enforcement Agencies

Siti Nuur-Ila Dr Mat Kamal (Universiti Teknologi MARA Cawangan Johor Kampus Segamat); Othman Ibrahim (Universiti Teknologi Malaysia); Mehrbakhsh Nilashi (Universiti Teknologi Malaysia); Jafalizan Md Jali (Universiti Teknologi MARA Cawangan Selangor Kampus Puncak Perdana); Miratun Madihah Saharuddin (Cybersecurity Malaysia)

The mobile telecommunication services market in Malaysia has massively grown in the last decade. The competition among the existing and new telecommunication service companies became more intense as they are trying to maintain their existing customers and get new customers at the same time by making a lot of eye-catching promotions and seasonal events. These strategies are often compared by their customers on media social such as Twitter and Facebook. However, it will take a lot of time and effort to capture and review millions of tweets. This study aims to analyse the customer feedback and review on mobile telecommunication services in Malaysia using sentiment analysis approach. We develop a mobile application that analyse user reviews on mobile telecommunication services in Twitter data from Malaysia. The mobile application extracted data from Twitter, preprocessing the tweets in real-time, and visualise the sentiment analysis results using a bar chart, stacked area chart, and word cloud. We found that Naïve Bayes algorithm obtained the highest accuracy with 75.79% for ratio 9:1 and had the most informative features than other algorithms. We assessed the mobile application features using a preliminary evaluation. Many respondents agreed the mobile application is useful in visualising the sentiment analysis results and easy to use. The TelcoSentiment application can be used to suggest the public users in selecting the most preferred mobile telecommunication services. Furthermore, the application will be able to support telecommunication services companies to improve their service performance in the future.

Paper ID: 3
PCB Design for IoT Based Fire Alarm System

Norsuzila Ya'acob (Universiti Teknologi MARA); Yasser Asrul Ahmad (International Islamic University Malaysia); Fadhila Nasir Al Mashhoor (International Islamic University Malaysia)

A server room is a hub for operations and IT infrastructure. Since a lot of physical computers are stored, operated, and accessed from a server room, it is important to take safety measures to protect the data in this room from fire hazard. A hard-wired fire sensor is commonly placed in the server room. The system is large and when placed at proximity, the system can be damaged by the fire as well. This paper proposes an IoT-based fire alarm system that is smaller in size and operates independently from the server. This system is designed to consist of temperature and gas sensors that will take readings from its surroundings and alert the user through an IoT gateway. The Printed Circuit Board (PCB) is designed

and built using KiCad software to enable integration of gas and temperature sensors together with the IoT ESP8266 on a small footprint. The system was initially tested before the PCB design and retested again for validation when integrated on the PCB. Threshold values are set for the sensors, to alert the user remotely when the threshold values are exceeded. The system demonstrates functionality when the real time data is retrieved by the web application Blynk. The user can be alerted and remotely monitor and use this system.

Paper ID: 17
Implementation of SARIMA Algorithm in Understanding Cybersecurity Threats in University Network

Norkhushaini Awang (Universiti Teknologi MARA)

Currently, there are few studies on cybersecurity threats risk assessment in the university network. This research aims to fill the gaps by identifying cybersecurity threats through a quantitative study conducted in selected university. This study aims to investigate the use of predictive analysis by looking at network packets in the university network. We proposed a prediction model using Time Series Analysis (TSA) whereby data is gathered from the selected university network firewall. Conducting a risk assessment is a very important activity in an organization. The results of the risk assessment process can help network admin to make decisions in managing risks. The risk assessment also important because university network have many systems to be protected from cybersecurity threats. With risk assessment, network admin can manage the risks and prevent before cybersecurity threats interrupt the whole system in the university network. In this research, we adapted quantitative methods to analyze risk. Moreover, there are few studies on risk assessment prediction at university network. In building predictive models, we implemented the Seasonal Autoregressive Integrated Moving Average (SARIMA) method for time series forecasting with univariate data containing trends and seasonality. SARIMA has built a predictive model by looking at several variables namely seasonal autoregressive order, seasonal difference order, seasonal moving average order and also the number of time steps for a single seasonal period. The conclusion from this study shows that by using SARIMA algorithm, the researcher get the best prediction value in order to get a small Root Mean Squared Error (RMSE) value.

Paper ID: 40
Detecting Illicit Cryptocurrency Mining Activity in Cloud Computing Platform

Muhammad Azizi Bin Mohd Ariffin (Universiti Teknologi MARA); Dr Mohamad Yusof Darus (Universiti Teknologi MARA); Abidah Mat Taib (Universiti Teknologi MARA); Rozianawaty Osman (Universiti Teknologi MARA)

Cloud computing adoption in IT infrastructure is one of the key elements in the digital transformation strategy of an organization. The features such as on-demand self-service, resource allocation elasticity and massive scalability that cloud solutions offer have further accelerated adoption during Covid-19 Pandemics. This is because during a lockdown, the organization IT infrastructure must be able to cater for the dynamic requirements while supporting a remote working environment for their employees. Although cloud computing adoption brings many benefits to the organization, cloud users can abuse the cloud platform to conduct illicit cryptocurrency mining activity. The illicit crypto mining activity could be also caused by the spread of malware or security breaches on the cloud computing platform. The unwanted crypto mining activities will cause financial loss to the organization due to increased power consumption because of constant CPU utilization, inflated cooling needs and wasteful

computing cycle. To address the problem, this paper proposed a method to effectively detect cryptocurrency mining activity in cloud computing environments. In the method, the cloud's system metrics were collected, pre-processed, and then undergoes features extraction. Then the AD3 algorithm was used to process the values of the features to separate the noise caused by the background process and crypto mining activity for anomaly detection. To evaluate the effectiveness of the proposed method, it was tested on the cloud platform running an OpenStack and the result shows that the proposed method can effectively detect crypto-mining activity and differentiate it from other background activity noise. During mining activity was simulated, the graph of features density values shows a significant drop indicating an anomaly. The method can be further expanded to detect anomalies in a hybrid cloud or container-based environment.

Paper ID: 11
Analysis on Digital Image Watermarking Using DCT-DWT Techniques

Zolidah Kasiran (Universiti Teknologi MARA); Zarina Zainol (Universiti Teknologi MARA)

In recent years, digital images are used in various platforms by all means of purpose by people and also creators. The data also can be easily copied or altered, and anyone with a computer can create the forgeries too. The work on digital watermarking of images has introduced several strategies over the years, either using spatial or transform domain. Nevertheless, as the technologies are evolving, the digital images become more vulnerable towards illegal threats such as illegal duplication and removal attack without the creator's consent and the approach or watermarking techniques used are still aren't robust enough to secure the digital images hence, more approach can be applied to make it more secure. So to tackle the problem, the combined or hybrid of Discrete Cosine Transform (DCT) and Discrete Wavelet Transform (DWT) watermarking techniques are developed in this project to analyses and evaluate the performance of the proposed techniques. The techniques are developed and applied to the image according to the watermarking process, which started from the embedding process until the watermark extraction. Based on the results, the purposes of the project has been achieved as the watermarking techniques showed a good performance in terms of imperceptibility and robustness, measured by the two measuring parameter which are the Peak Signal-to-Ratio (PSNR) and correlation factor values.

Paper ID: 13
Analysis on Computational Time of Hybrid Cryptography in Email System Network

Zolidah Kasiran (Universiti Teknologi MARA); Azrina Dalil (Universiti Teknologi MARA)

E-mail is one of the most prominent, fastest and low-cost means of communication. Millions of people have made E-mail as a part of everyday life where it changes the way of work and collaboration as the E-mail messages can be sent to an individual or groups. However, the inherent vulnerability of the E-mail system can cause immense risks of information disclosure and misuse. The common threats to the E-mail system are malicious threats whether it is a malware attachment or a URL leading to malware, phishing or exploitation, spam, spoofing and unauthorized access. The aim of this project is to enhance the E-mail security system from being attacked by threats. This paper had proposed to use modified AES and RSA hybrid algorithms to increase the E-mail security system. Time execution of the algorithm is taken as the result of this research paper. It can be concluded that by modifying AES bit key to 320-bit, it can increase the E-mail security system.

Parallel Session 2 (Saturday, 24ᵗʰ July 2021, 10:45 AM GMT+8)

Paper ID & Title

Paper ID: 28
IOT Security: Data Encryption for Arduino-based IOT Devices

Shapina Abdullah (Universiti Teknologi MARA)

The Arduino Data Encryption Project is motivated by the lack of focus on data security in Internet of Things (IoT) powered projects. The focus of many IoT projects were on the functionality and the efficiency of the device. Security is just an afterthought after an IoT project is developed and often overlooked. Many of the IoT devices are vulnerable to data stealing by hackers that sniff an entire network targeting vulnerable IoT devices. IoT devices that are not secure communicate with the data in the form of plain text or string which makes the Arduino easily identified by the attackers. The valuable data being communicated in a network can also be stolen by sniffers that has breach the private network of the IoT device. The main aim of the project is to deploy cryptographic functions to encrypt the data being sent by the IoT system over a Wi-Fi network. There are three cryptographic algorithm s developed that have various forms of complexity and processing speed. The three cryptographic algorithms are Caesar Cipher, SHA 256 and AES 128 Bit. With the cryptographic functions coded into the Arduino Uno, the data of the Arduino can be encrypted and has been successfully proven by the Arduino IDE serial monitor. It has added an extra layer of security as the data no longer be understandable by the data thieves that sniff the network. The addition of cryptographic functions of the Arduino Uno also align with the objective of the project that is to encrypt the data being transferred by the Arduino Uno.

Paper ID: 31
Polymorphic Malware Detection Based on Supervise Machine Learning

Nur Syuhada Selamat (Universiti Teknologi MARA); Fakariah Hani Mohd Ali (Universiti Teknologi MARA)

Currently, the size of malware grows faster each year and poses a thoughtful global security threat. The number of malware developed is increasing as computers became interconnected, at an alarming rate in the 1990s. This scenario caused a rising number of malware. It also caused many protections are developed to fight the malware. The most common method of detecting malware relies on signature-based detection. Unfortunately, this method is no longer effective to handle more advanced malware such as polymorphic malware that poses a thoughtful threat to the modern computing. Malware authors have created them to be more challenging to be evaded from anti- virus scanner. Extracting the behaviour of polymorphic malware is one of the major issues that affect the detection result.The main idea in this work is focus the behaviour(dynamic) of polymorphic malware infect in computer system and to extract feature selection and evaluate a limited set of datasets in order to improve detection of polymorphic malware.This study used machine learning to improve malware detection.This research demonstrated improved polymorphic malware detection can be achieved with machine learning.This research used four types of machine algorithm which are K-Nearest Neighbours, Decision Tree, Logistic Regression, and Random Forest. As with most studies,careful attention was paid to false positive and false negative rates which reduce their overall detection accuracy and effectiveness.The result showed that the Random Forest algorithm is the best detection

accuracy compares to others classifier with 99 % on a relatively small dataset. The benefit of this work indicated that the implementation of a feature selection technique plays an important role in machine learning algorithms to increase the performance of detection.

Paper ID: 36
Detection of Malicious Binaries and Executables Using Machine Learning-based Detectors

John Martin M Ladrido (De La Salle University); Lawrence Materum (De La Salle University)

In digital networks, the most common goal of cybercriminals is to steal high-privilege credentials or valuable data. By obtaining high-privilege credentials, cybercriminals can easily navigate, destroy, or steal an organization's data, such as bank details, personal data, and intellectual properties. With the advent of information technology and operational technology convergence like the Internet of things (IoT), it becomes more critical on protecting the high-privilege credentials as cybercriminals can have the power to control operational technologies such as industrial control system (ICS) and supervisory control and data acquisition (SCADA). Unfortunately, even with this information, many organizations are easily susceptible to these attacks, especially manufacturing firms. This paper presents how a cybercriminal from the Internet can utilize malicious payloads and executables to compromise an organization. By collecting the malicious executables and binaries used in the attacks, this proposal also shows how organizations can detect those by utilizing an (ML) machine learning-based detection. Doing so could help organizations to be equipped with proper knowledge in understanding the underlying attack and, at the same time, implementing their detection mechanism specific to the cybercriminals attacking their network.

Paper ID : 32
Endxiety Self-Relief Button Mobile Application

Suzana Ahmad (Universiti Teknologi MARA); Norizan Mat Diah (Universiti Teknologi MARA); Ameliyana Mohd Isa (Universiti Teknologi MARA)

Mental health issues are commonly debate and heard these days. People often overlook that anxiety attack is one of the mental health problem which is commonly found among the communities. Anxiety attack caused by the anxiety disorder suffered by people need to be addressed properly. The main problem that lead to this research is most people do not aware there are different types of anxiety attack based on its respective symptoms. Hence, people did not know how to address the issues properly. Next, from medical perspectives there is currently no dedicated mobile application to address issue on types of anxiety disorder. It is due to the lack of knowledge on how to address the anxiety attack which may required for self-relief solution. The Endxiety Self-Relief Button mobile application is developed to help people who suffered from anxiety disorder and continuous anxiety attack to sooth themselves or reach for help if necessary, to authorities. It is developed using Ionic with AngularJS framework for Android operating system. A questionnaire was distributed among thirty (30) respondents who have the background and experienced of anxiety attack before. It was developed using Google Form and the feedback was analysed to proof on the validity of the self-relief functions provided by the mobile application. The result indicated that all the functions provided by the Endxiety Self-Relief Button mobile application work accordingly and able to provide self-relief treatment who are suffered with anxiety disorder.

Paper ID: 18
A Survey on Novel Energy Efficient Sleep Scheduling Routing Protocol for Long Life Wireless Sensor Network

Muhammad Zafar Khan (Universiti Teknologi MARA); Kamarularifin Abd Jalil (Universiti Teknologi MARA); Mohd Faisal Ibrahim (Universiti Teknologi MARA)

There have been enormous works that tried to increase the efficiency of Wireless Sensor Network (WSN). Most of the researchers have been using the clustering method in order to prolong the lifetime of sensor nodes in a WSN. The clustering of sensor nodes will result in the distribution of resource management in a WSN. Hence, this can avoid sensor nodes from being overloaded and promotes load distribution among the sensor nodes. In this paper, a number of related works using the clustering methods have been reviewed in depth. We have identified the gaps for each of the strategies used for each method. By using the gaps identified, a new routing protocol is proposed.

Paper ID: 20
Integration of Security Hardware module ZYMKEY 4i with Raspberry Pi

Rizzo Mungka Rechie (Universiti Teknologi MARA); Nur Nabila Mohamed (Mahsa University); Yusnani Yussoff (Universiti Teknologi MARA); Lucyantie Mazalan (Universiti Teknologi MARA); Suhairi Mohd Jawi (Cybersecurity Malaysia); Mohd Saufy Rohmad (Universiti Teknologi MARA)

The use of Raspberry Pi as a personal computer for daily or office use has been perceived as a new norm in the past few years. The motivation for this is the reliability and the reasonable price for it. As the usage of Raspberry Pi has increased especially along the IoT related industry, the demand of hardware security towards the Raspberry Pi has also increased. As Raspberry Pi are relatively new for some users, the implementation of Zymkey 4i as the security module is an added advantage when the Raspberry Pi is being implemented in a large number at one institution. The implementation of the hardware security module had shown great result on securing the Raspberry Pi without it being monitored regularly.

Parallel Session 3 (Saturday, 24th July 2021, 03:00 PM GMT+8)

Paper ID & Title

Paper ID: 5
Artificial Bee Colony Algorithm for Adaptive Glioblastoma Detection

Shafaf Ibrahim (Universiti Teknologi MARA)

Glioblastoma is a most dangerous and aggressive high-grade brain tumour. The high-grade tumors necessitate early detection and treatment due to the rapid growth rate, and early diagnosis may improve the chance of survival. The glioblastoma detection is currently done by a radiologist, however it is time-consuming, invasive, and prone to errors due to the enormous volume of cases. Thus, in this study, the Artificial Bee Colony (ABC) algorithm was employed to provide a non-invasive approach of adaptive glioblastoma detection. The feature properties of the glioblastoma were studied using the basic feature analysis of Minimum, Maximum, and Mean of grey level values. Four different types of T1-weighted, T2-weighted, Fluid Attenuated Inversion Recovery (FLAIR), and T1-contrast MRI images were used to assess the ABC's performance for adaptive glioblastoma detection. A total of 120 MRI glioblastoma images were evaluated, with 30 images per imaging category. The overall mean percentage of accuracy for glioblastoma detection was 93.67%, indicating that the suggested adaptive ABC algorithm has a high capability for glioblastoma brain tumor detection. Other feature extraction strategies, however, could be introduced in the future to improve the feature extraction performance.

Paper ID: 6
Optimizing the Portfolio in Malaysian Stock Market with Mean-Variance Model

Kah Fai Liew (Universiti Tunku Abdul Rahman); Weng Siew Lam (Universiti Tunku Abdul Rahman); Weng Hoe Lam (Universiti Tunku Abdul Rahman)

The FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBMKLCI) is a capitalization-weighted stock market index which plays a prominent role to evaluate the performance of the Kuala Lumpur stock market. The investors are interested in obtaining the maximum level of the expected return with the minimum level of the risk. In view of the COVID-19 pandemic, the FBMKLCI has been affected recently. Portfolio optimization is crucial to determine the optimal combination of stocks and proportions with the aim of achieving higher profit at minimum less risk in an investment. The mean-variance portfolio optimization model is robust to minimize the portfolio risk at the expected return. In this paper, an optimal portfolio is constructed with mean-variance model to obtain the target rate of return at minimum risk. The data of this paper consists of returns of 30 stocks of FBMKLCI. The main findings of this paper indicate that the optimal portfolio is able to obtain the target rate of return at minimum risk. This study is significant because it helps to construct the optimal portfolio for the investors to make a better investment decision using mean-variance model.

Paper ID: 7
Solar Irradiance Forecasting Model using Artificial Neural Network for a Case Study in Pulau Pinang

Nor Salwa Damanhuri (Universiti Teknologi MARA Cawangan Pulau Pinang); Nor Azlan Othman (Universiti Teknologi MARA); Nur Fasihah Rashidin (Universiti Teknologi MARA Cawangan Pulau Pinang); Ahmad Asri Bin Abd Samat (Universiti Teknologi MARA); Nur Sa'adah Muhammad Sauki1 (Universiti Teknologi MARA Cawangan Pulau Pinang); Mohd Najib Mohd Hussain (Universiti Teknologi MARA); Intan Rahayu Ibrahim (Universiti Teknologi MARA Cawangan Pulau Pinang)

Solar Photovoltaic (PV) system has been rapidly growth worldwide including in Malaysia. One of the important parameters for solar PV optimization is solar irradiance. Solar irradiance can be defined as the rate of solar energy when it falls onto the surface. Solar irradiance can make an importance decision, efficiency, performance, and maintenance on energy yield in the future. However, solar irradiance has high degree of uncertainty due to environmental and meteorological condition such as cloud cover, haze, fog and rapid change in ambient temperature. Thus, by forecasting solar irradiance, it would improve the efficiency, performance, and operation of the PV system in order to generate a maximum power. This research aims to develop a forecasting model of solar irradiance based on meteorological data from year 2018 in Pulau Pinang. The forecasting model is developed based on Artificial Neural Network (ANN) Multilayer Perceptron (MLP) method. The accuracy of the forecasting model is compared with the data from The National Aeronautics and Space Administration (NASA) and Sustainable Energy Development Authority (SEDA). The result shows that the forecasting model is able to deliver a good result with the correlation coefficient result of r = 0.82 (forecasted vs NASA) and r = 0.78 (forecasted vs SEDA). Thus, this solar irradiance forecasting model is able to predict almost the same value as the NASA and SEDA and can potentially be used to assist in evaluating and predicting the power output efficiency of the solar PV plant. Hence, this model can be regarded as an important tool in planning and managing the operation of PV system.

Paper ID: 12
Improving Classification of Scoliosis on Radiographic Image using Ensemble Models

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Scoliosis is a disorder in which the spine bends to one side or the other. Surgeons, physiatrists, and academicians can be confused when certain types of scoliosis that resemble the normal spine. Manually detecting scoliosis required a lot of time and effort. The need for a method that can speed up the process by using an approach that surgeons, physiatrists, and academicians will understand would undoubtedly solve the issues. To overcome this issue, a machine learning using image processing is introduced. A Gray level co-occurrence matrix (GLCM) implement with ensemble classification which is Adaboost to classify between normal and scoliosis radiographic images. According to the results of the experiments, this method achieved an accuracy of 86.67%. The study

would aid in the identification of more types of scoliosis by providing more data for future studies. Furthermore, it is hoped that it would be able to assist orthopedics in making decisions.

Paper ID: 16
Comparing the Efficiency of Pathfinding Algorithms for NPCs in Platform Games

Norizan Mat Diah (*Universiti Teknologi MARA*); Marina Ismail (*Universiti Teknologi MARA*)

Pathfinding has been a significant video game research area for decades. It is usually utilised as the core of any Artificial Intelligence moves in computer games. This research aims to identify a better suited and more efficient pathfinding algorithm for the platformer video game genre. This study compared two algorithms: the A* and Dijkstra algorithms. Both algorithms were implemented in a platform game environment and tested with several different obstacles for non-player characters (NPCs). The parameters measured were processing time, the length of the path taken, and the number of blocks/nodes played in the computational process. To evaluate the algorithms' performance, the travel time taken, the computed nodes, and the distance travelled by the NPC to reach its destination were analysed for each algorithm. The findings indicate that both algorithms are suitable for specific conditions in a platformer environment; Dijkstra's performed accurately and managed to find the shortest path when the route to the objective required less vertical movement, while A* performed more efficiently when the NPC was required to reach an objective that required more vertical movement. The results also suggest that A* performed better than Dijkstra's algorithm, as it has a heuristics function that increased its flexibility

Paper ID: 5
Artificial Bee Colony Algorithm for Adaptive Glioblastoma Detection

Shafaf Ibrahim (Universiti Teknologi MARA)

Glioblastoma is a most dangerous and aggressive high-grade brain tumour. The high-grade tumors necessitate early detection and treatment due to the rapid growth rate, and early diagnosis may improve the chance of survival. The glioblastoma detection is currently done by a radiologist, however it is time-consuming, invasive, and prone to errors due to the enormous volume of cases. Thus, in this study, the Artificial Bee Colony (ABC) algorithm was employed to provide a non-invasive approach of adaptive glioblastoma detection. The feature properties of the glioblastoma were studied using the basic feature analysis of Minimum, Maximum, and Mean of grey level values. Four different types of T1-weighted, T2-weighted, Fluid Attenuated Inversion Recovery (FLAIR), and T1-contrast MRI images were used to assess the ABC's performance for adaptive glioblastoma detection. A total of 120 MRI glioblastoma images were evaluated, with 30 images per imaging category. The overall mean percentage of accuracy for glioblastoma detection was 93.67%, indicating that the suggested adaptive ABC algorithm has a high capability for glioblastoma brain tumor detection. Other feature extraction strategies, however, could be introduced in the future to improve the feature extraction performance.

Paper ID & Title

Paper ID: 30
Detection and Classification of Weightlifting Form Anomalies using Deep Learning

Mohd Shazwan Sapwan (Universiti Teknologi MARA); Zaidah Ibrahim (Universiti Teknologi MARA); Zulaile Mabni (Universiti Teknologi MARA); Noor Latiffah Adam (Universiti Teknologi MARA)

Detection and classification of weightlifting anomalies is important to prevent the risk of inflicting injury and to maximise the effect of the weightlifting exercises. During COVID-19 pandemic, going to the gymnasium is not possible. Thus, for those who have the necessary weightlifting equipments at home but no instructor, having automatic anomalies detection is beneficial. Although, weightlifting form recognition or anomalies detection often require utilisation of external sensors or hardware such as motion sensors, kinetic sensors and more to produce accurate feedback for the user, not many have access to these external requirements. Thus, the objective of this research is to develop a prototype that is capable of providing feedback on the correctness of weightlifting technique execution using computer vision by implementing deep learning method. One of the popular deep learning methods for detection and recognition is You Only Look Once version (YOLO). Since there is no publicly available dataset for training and testing purposes, videos and images on weightlifting are searched and extracted from the Internet. 387 static images were collected with 219 images of normal forms and 134 images for abnormal forms. A confidence score in the range between 0.8 and 0.9 has been achieved during testing. Even though the performance produced is not high which is mainly due to the size of the training data, it can still serve as a foundation for future implementation for identifying weightlifter's technique execution and help to maximize the exercises.

Paper ID: 32
Detecting Offensive Malay Language Comments on YouTube using Support Vector Machine (SVM) and Naive Bayes (NB) Model

Suzana Ahmad (Universiti Teknologi MARA); Norizan Mat Diah (Universiti Teknologi MARA); Ameliyana Mohd Isa (Universiti Teknologi MARA)

Social media, such as YouTube, Twitter, and Facebook, have become a new way of communication allowing many users to interact and obtain information. Nowadays, many users on social media write and post using offensive language. Offensive language is an expression consisting of offensive words, either oral or text, including abusive, racial, and sexual content, and it can be in multiple languages. Offensive language may jeopardize user engagement. Users can manually control the offensive language; however, the colossal amount of unstructured data is challenging. Thus, this study addresses the issue by identifying the offensive words used in YouTube comments, focusing on the Malay language, based on the list of offensive words obtained from the Malaysian Communications and Multimedia Commission (MCMC). This study also builds an experiment for offensive YouTube comments detection using Term Frequency - Inverse Document Frequency (TF-IDF) and Bag of Words (BoW) features. This study employed the Random undersampling and Random oversampling techniques to treat the imbalanced data. Support Vector Machine (SVM) and Naïve Bayes (NB) were used to identify whether the comment is offensive. The results showed that

the SVM model and TF-IDF, as a weighting feature, are the best approach for this study, with Recall results of 98.70%. Both models are effective in this study, with NB produced slightly lower results than SVM. Results can improve by further data preprocessing and adjustment of the classifiers.

Paper ID: 37
Counterfeit Malaysian Banknotes Detection Using Discrete Wavelet Transform

Nor Ashikin Mohamad Kamal (Universiti Teknologi MARA)

The rate of counterfeit banknotes has increased by year due to advancements in colour printing technology. Due to this technological advancement, counterfeit currency notes can avoid the physical feature and chemical property-based counterfeit banknotes detection system. The end-user least accepts the fake detection tools because of poor accuracy, unavailability, high cost, and user-friendliness. As a result, counterfeit banknotes have become a big issue for some countries, including Malaysia. This paper proposes a method for Malaysian counterfeit banknotes detection using Haar wavelet transform as the feature extraction technique. The features were then classified using K-Nearest Neighbour (KNN) and Random Forest (RF) classifiers. The proposed models yield 85.80% and 95.89% accuracies for KNN and RF, respectively. In the future, this system can be enhanced into real-time currency detection.

Paper ID: 22
TelcoSentiment: Sentiment Analysis on Mobile Telecommunication Services

Marshima Mohd Rosli (Universiti Teknologi MARA); Muhammad Naim Yuri (Universiti Teknologi MARA)

The mobile telecommunication services market in Malaysia has massively grown in the last decade. The competition among the existing and new telecommunication service companies became more intense as they are trying to maintain their existing customers and get new customers at the same time by making a lot of eye-catching promotions and seasonal events. These strategies are often compared by their customers on media social such as Twitter and Facebook. However, it will take a lot of time and effort to capture and review millions of tweets. This study aims to analyse the customer feedback and review on mobile telecommunication services in Malaysia using sentiment analysis approach. We develop a mobile application that analyse user reviews on mobile telecommunication services in Twitter data from Malaysia. The mobile application extracted data from Twitter, preprocessing the tweets in real-time, and visualise the sentiment analysis results using a bar chart, stacked area chart, and word cloud. We found that Naïve Bayes algorithm obtained the highest accuracy with 75.79% for ratio 9:1 and had the most informative features than other algorithms. We assessed the mobile application features using a preliminary evaluation. Many respondents agreed the mobile application is useful in visualising the sentiment analysis results and easy to use. The TelcoSentiment application can be used to suggest the public users in selecting the most preferred mobile telecommunication services. Furthermore, the application will be able to support telecommunication services companies to improve their service performance in the future.

Paper ID: 29
The Performance of Deep Neural Networks in Deformed Iris Recognition System

Suzwani Ismail (Universiti Teknologi MARA); Fakariah Hani Mohd Ali (Universiti Teknologi MARA)

Recognition system is a powerful tool for person identification based on their special iris traits which are unique for each individual. Besides hand-crafted techniques, modern deep learning algorithms can be implemented as a good feature extractor for iris recognition system. Deformed iris texture due to different pupil dilation of the same eye can cause negative impact on iris recognition performance. Hence in this paper, we study the effectiveness of deep learning algorithms on extracting deformed iris features from the normalized iris images. We compared the performance of 17 available deep learning algorithms which followed by a multi-class Support Vector Machine (SVM) algorithm to perform classification. We then utilized different epoch number on the model until a good accuracy is achieved. We also extracted features using different type of layers in order to identify which type of layers could extract good features. Simulation results of 92% by Darknet-19 on CASIA-Iris-Lamp dataset reveal the effectiveness of deep learning algorithms on extracting irregular features of deformed iris.

Paper ID: 30
Detection and Classification of Weightlifting Form Anomalies using Deep Learning

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Paper ID & Title

Paper ID: 41
Performance Evaluations of Convolutional Neural Network (CNN)-Based Models for Semantic Segmentation of Plant Leaf Diseases

Ali Abd Almisreb (International University of Sarajevo); Nursuriati Jamil (Universiti Teknologi MARA)

This paper presented the evaluations of five CNN-based models, namely DeepLabV3+ network with Resnet18/Resnet50/Resnet101, modified Alexnet, and Segnet with VGG-16 for semantic segmentation of plant leaf diseases. The leaf images was acquired from Leaf Disease on Kaggle comprising four types of leaf diseases: bacteria, fungi, mematodes and virus. A total of 196 images were labeled for groundtruth development and training dataset. Image augmentation was conducted to increase the training dataset followed by assigning of class weightage to the imbalanced classes. A total of 1,918 labeled images were produced and these images were used to train the five CNN-based models. All the pre-trained CNN-based models were modified to cater to the new leaf disease dataset and to optimize the semantic segmentation. The results showed that DeepLabV3+ network with ResNet-18 outperformed other models achieving 95.8% global accuracy for segmentation of the leaf diseases. This is followed by Segnet with VGG-16, ResNet-50, ResNet-101 and modified AlexNet. However, upon closer study of the classes, the mean accuracy showed that AlexNet achieved better result compared to Segnet with VGG-16 and ResNet-50.

Paper ID: 2
Impact of Transmitter and Receiver Distance of 3.5ghz Networks Channel Propagation In Line-of-Sight (LOS) And Non-Line-of-Sight (NLOS) Environments

Azita Laily Yusof (Universiti Teknologi MARA); Mohamad Asief Iskandar Ab Rahim (Universiti Teknologi MARA); Norsuzila Ya'acob (Universiti Teknologi MARA); Nur Syaza Zainali (Universiti Teknologi MARA)

Malaysia is planned to implement 5G communication in an attempt to improve the country's digital infrastructure focusing on the 3.5 GHz band. However, this higher frequency band creates higher path loss, so Malaysia National Task Force has conducted a study on the impact of the transmitter and receiver distance on the propagation loss. The study, however, covered the field test measurement with limited parameters variation. This research is an approach to simulate the effect of the path loss propagation and received power due to transmitter and receiver distance in Line of Sight (LOS) and Non-Line of Sight (NLOS) environments. This research simulates the 3.5GHz frequency band in LOS and NLOS environments using the NYUSIM channel simulator. The transmitter and receiver distances were varied from 50m to 200m. The simulation results show that the path loss increases when the transmitter and receiver distance increases while the power received weakens. It can be concluded that the distances range is acceptable to be planned as the 3.5 GHz is in the higher frequency band for both LOS and NLOS environments. The outcome of this research can be served as a guideline in Malaysia for field trials and techniques of interference mitigation.

Paper ID: 25
Organizational Decision for Digital Forensic Adoption: An Empirical Investigation in The Case of Malaysian Law Enforcement Agencies

Siti Nuur-Ila Dr Mat Kamal (Universiti Teknologi MARA Cawangan Johor Kampus Segamat); Othman Ibrahim (Universiti Teknologi Malaysia); Mehrbakhsh Nilashi (Universiti Teknologi Malaysia); Jafalizan Md Jali (Universiti Teknologi MARA Cawangan Selangor Kampus Puncak Perdana); Miratun Madihah Saharuddin (Cybersecurity Malaysia)

The COVID-19 pandemic has shown global dependence on digital technology in which has naturally raised the importance of digital evidence of every single business activity within the context of law enforcement operations. As a result, digital forensic has become a mandatory component in Law Enforcement Agencies (LEAs). However, the engagement of Malaysian Enforcement Agencies (MLEA) with DF practices is unfavorable. Based on the integration of the Human Organization Technology (HOT)-fit model and Technology Organization and Environment (TOE) framework, this study aims to identify factors that affect the agencies' decision to adopt digital forensic. A multi-criteria decision-making technique, DEMATEL is then employed to identify the relationships between the factors and to find their importance level in Technological, Organizational, Environmental, and Human dimensions for the adoption of digital forensic. The results revealed that compatibility is the most imperative factor under the technological dimension, and infrastructure under the organizational dimension. In Environmental and Human dimensions respectively, vendor support and agency championship are found more salient than others. The findings of this study provide a comprehensive guideline that serves as a constructive contribution in the context of MLEA. Hence, the present study is expected to support the MLEA for better improvement of the decision-making process on innovation adoption and help to increase the pace of digital forensics adoption in the law enforcement agency setting.

Paper ID: 26
Enhancement Keylogger Application for Parental Control and Monitor Children's Activities

Mohamad Yusof Darus (Universiti Teknologi MARA); Muhammad Azizi Bin Mohd Ariffin (Universiti Teknologi MARA)

The Nowadays, keylogger has been used widely for malicious purposes, such as stealing passwords and credit card details. A keylogger also has benefits when used legally in terms of ethical purposes where parents can use a keylogger to monitor their children's activity on the Internet. However, the existing keylogger is overlooked because it lacks a screenshot function, webcam capture function, and persistence function. Besides that, the keyloggers mostly log all keystrokes typed on the target computer even though it is not an inappropriate word. Therefore, it is not convenient for parents to monitor everything typed by the children even though it is not an inappropriate word. Since online classes have been implemented in most schools because of the Covid-19 pandemic. Therefore, this project proposed an enhancement of a software-based keylogger with a screenshot function, webcam capture function, and persistence function for parents to monitor the children's online activities daily on the Internet. It is also logging only the inappropriate word typed on the target computer in a text file. Based on the functionality test result, parents had received three attachments on the email when the software detected the inappropriate word typed on the target computer. The three attachments consist of a text file, a screenshot image, and a webcam capture image. Besides, the text file consists

of the inappropriate word that has been detected by the software while the screenshot image displays the children's computer screen display in the form of .jpg format and the webcam capture image that displays the children's behaviors in a .png format. It can also keep the software executed in a hidden mode by enabling the persistence function even after the operating system is rebooting. In conclusion, this software can help parents take a much better approach to today's monitoring needs, especially during this pandemic, where parents are busy working from home.

Paper ID: 27

Integrating Socio-Digital Skills in the Industry 4.0 Era for Graduates' Employability: An Employers' Perspective

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The technological changes brought by the fourth industrial revolutions heavily impacted business environments and created a perfect storm in the employment market, prompting a need to explore the implications of changes in job demands and skills requirements. The debate remains to focus on graduate skills and employability, increasingly robust competition with experienced and skilful workers, changing skills due to technological changes. Identification of integration of skills is both essential and difficult. Considering that Industry 4.0 is still in Malaysia's early stage, this research intends to elucidate the exact integration of skills in the Industry 4.0 environment. This research adopts a qualitative methodology to explore the employment trend in the Industry 4.0 landscape. A qualitative research method is adopted, considering economies and labour-market experts do not yet know the exact mix or level of skills that particular occupations will demand. The findings revealed that employers value fresh graduates' effort to integrate social and digital skills, leading to greater employability opportunities. The graduates must be able to coherent narrative shows to influence and convince the employer that they possess the right integration of skills to fit the organisation's culture and goals. Future job demands allow graduates to gain employability and compete with experienced candidates in a digital environment. What sets the graduates apart and gives them a competitive advantage is constructing strong socio-digital skills. The graduates must be able to coherent narrative shows to influence and convince the employer that they possess the right integration of skills to fit the organisation's culture and goals.

Paper ID: 38
Using Data-Driven for Improved Educational Experience During COVID 19

Haryani Haron (Universiti Teknologi MARA); Muhammad Azizi Bin Mohd Ariffin (Universiti Teknologi MARA); Mohamad Yusof Darus (Universiti Teknologi MARA); Nasiroh Omar (Universiti Teknologi MARA); Azlan Ismail (Universiti Teknologi MARA); Sharifah aliman (Universiti Teknologi MARA)

The Covid19 pandemic shifted the higher education institutions learning ecosystem, from face-to-face teaching to online or open distance learning. While many studies focused on data analytics' learning potential, the efficiency of online learning was dependent on meeting students' internet accessibility needs. This research takes a practical approach to describing the internet accessibility of students and giving insights on the suitable approaches for teaching and learning. A three-phase research work was used to accomplish this. The first phase is gathering quantitative data from two secondary sources with the primary purpose of determining student geographical distribution and assessing internet connections across the country. The second part involves mapping the students' geolocation distribution and internet connections. The final stage is the recommendation of viable online teaching and learning tools. The findings of this research shows that a significant number of students do not have access to the internet. This is of concern in ensuring that 'no student is left behind'. In terms of network coverage types, the higher-end network type (4G) is best for online sessions. More than two thousand students have limited access to only 3G network. The diploma and degree students are the majority of students having access to lower-end network technology. Students using lower-end technology, such as 2G, may experience service interruptions even if an asynchronous approach to online instruction is adopted. This study contributed towards developing a proposed teaching and learning approaches based on network types, besides contributing to practical approach of data analytics application in higher education.

Paper ID: 35
Endxiety Self-Relief Button Mobile Application

Nor Shahniza Kamal Bashah (Universiti Teknologi MARA); Nurul Ashiqin Faizali (Halalmall Online); Norjansalika Janom (Universiti Teknologi MARA); Noor Habibah Arshad (Universiti Teknologi MARA); Syaripah Ruzaini Syed Aris (Universiti Teknologi MARA)

Mental health issues are commonly debate and heard these days. People often overlook that anxiety attack is one of the mental health problem which is commonly found among the communities. Anxiety attack caused by the anxiety disorder suffered by people need to be addressed properly. The main problem that lead to this research is most people do not aware there are different types of anxiety attack based on its respective symptoms. Hence, people did not know how to address the issues properly. Next, from medical perspectives there is currently no dedicated mobile application to address issue on types of anxiety disorder. It is due to the lack of knowledge on how to address the anxiety attack which may required for self-relief solution. The Endxiety Self-Relief Button mobile application is developed to help people who suffered from anxiety disorder and continuous anxiety attack to sooth themselves or reach for help if necessary, to authorities. It is developed using Ionic with AngularJS framework for Android operating system. A questionnaire was distributed among thirty (30) respondents who have the background and experienced of anxiety attack before. It was developed using Google

Form and the feedback was analysed to proof on the validity of the self-relief functions provided by the mobile application. The result indicated that all the functions provided by the Endxiety Self-Relief Button mobile application work accordingly and able to provide self-relief treatment who are suffered with anxiety disorder.