



SCHOOL OF
COMPUTER SCIENCES

COMPUTER SCIENCE POSTGRADUATE COLLOQUIUM 2020

C S P C 2020

Embracing Our Research Journey in the New Normal

Date: 3 September 2020

Venue: Online via Webex



Foreword.....	3
About CSPC 2020.....	5
Objectives of CSPC 2020.....	6
Event Schedule.....	7
Workshop.....	9
Special Sessions.....	11
Three Minute Thesis.....	15
Poster Competition.....	27
Recipients for Q1-Q2 Journals	53
Organizing Committee	58
Acknowledgement	61



First, I would like to extend my heartiest gratitude to the organizing committee in sustaining the Computer Science Postgraduate Colloquium throughout these years. Since the year 2004, the Computer Science Postgraduate Colloquium has been the annual meeting ground for our postgraduates to showcase their research findings and share research ideas as well as socialize with fellow students and lecturers.

Following the global situation of Covid-19 pandemic, this year's CSPC is held in a very special way where all of us meet via a virtual platform. We all know that the pandemic has posed a new challenge to all of us where we are unable to meet face to face and most of the social activities are forced to be conducted online. Hence, the theme for this year's CSPC is set as "EMBRACING OUR RESEARCH IN THE NEW NORMAL" which focuses on how to overcome the challenges and changes faced by researchers during this pandemic.

In the setting of new normal, postgraduate studies have its own new challenges, ranging from supervision, lab work, meeting with peers and even viva. Nevertheless, with the advancement of technology like virtual meeting platform, I can see that we are adapting well to this new mode studies. Keep up the good work.

Finally, I also would like to thank all speakers, participants, judges and attendees for your support and contribution to make this event a successful one.

Thank you and stay safe.



“Yesterday I was clever, so I wanted to change the world. Today I am wise, so I am changing myself.”

— Rumi

It is a great privilege for me to extend my warmest welcome to all of you for joining our Computer Science Postgraduate Colloquium (CSPC 2020) this year.

First and foremost, I would like to thank the organising committees, distinguished guests, invited speakers, judges, participants and individuals for making this event a success.

Every year, CSPC is organised by the School of Computer Sciences as a platform for research postgraduate students to share their research ideas, progress, and outcomes within the CS community. In addition to peer’s interaction, CSPC also serves as the platform to connect our students with the industries, other universities, and alumni. Hence, various activities such as poster competition, 3-minutes thesis (3MT) competition, talk, forum, and workshop are organized for postgraduate’s participation.

This year, we are privileged to have international line up of speakers and forum panels from Monash University (Malaysia & Australia), JAIST (Japan), UTAR (Malaysia) and Western Digital. We are also delighted to include a motivational talk titled “Hitting the Reset Button with Mental Resilience in the New Normal” this year, which is essential to serve as guidance for us to embrace research in this new normal situation. Not forgetting the technical knowhow, we are exciting to hold the workshop on Machine Learning Experiment Design.

Again, on behalf of the organizing committee, I would like to welcome you to the Computer Science Postgraduate Colloquium 2020 and hope that you will receive the utmost benefits from attending this colloquium. Lastly, I would like to take the opportunity to express my sincere thanks to the team of committees who had worked hard to make this event a success.

Thank you. Have a wonderful day.

Foreword from the General Chair

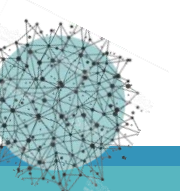


“EMBRACING OUR RESEARCH IN THE NEW NORMAL”

Computer Science Postgraduate Colloquium (CSPC) is an annual event for research mode postgraduate students of School of Computer Sciences to share their research with their peers, academics as well as invited public viewers. This colloquium provides a platform for communicating and networking via different types of activities like research poster exhibition & competition, 3MT competition, research talk, motivational talk, technical workshop, forum etc.

During the colloquium, postgraduate students and faculty members from the School of Computer Sciences also get to interact with invited parties ranging from peers from National Advanced IPv6 Centre (NAv6) USM, industries players as well as participants from other universities. All postgraduate research students are welcomed to join the event.

This year, the theme of CSPC is **EMBRACING OUR RESEARCH IN THE NEW NORMAL**. As the world is facing its challenge due to Covid 19 pandemic, our event for this year will focus on how to continue the journey of research together in this challenging moment. We hope that everyone will enjoy our event virtually this year.



- To provide a platform for postgraduate students to share knowledge and experience
- To open up channel for industry – community – university to communicate for a more sustainable relationship in research and innovation
- To foster relationship and communication among postgraduate students and Computer Science staff
- To explore new knowledge in the current state of the art for respective studies in Computer Sciences



CSPC Workshop 2020: Machine Learning Experiment Design	Time
Machine Learning (ML) Overview ML Experiment Setup (Supervised Learning) by: Dr. Jasy Liew Suet Yan	2:00 pm – 2:45 pm
Classification: Model Evaluation and Analysis	2:45 pm – 3:30 pm
Short Break	
Regression: Model Evaluation and Analysis	3:45 pm – 4:30 pm
ML Diagnostic	4:30 pm – 4:45 pm
Q&A 4:45 pm – 5:00 pm	Q&A 4:45 pm – 5:00 pm





Program	Time
Opening Ceremony	9:00 am – 9:15 am
Keynote Speech – Between PhD research, collaboration, and commercialization: Opportunities and Challenges by Dr. Muhammad Fermi Pasha (Monash University)	9:30 am – 10:15 am
Motivational Talk – Hitting the Reset Button with Mental Resilience in the New Normal by Ms. Cheryl Oon	10:30 am – 11:15 am
Short Break	
Poster Competition (Parallel Tracks) – Enabling Technologies and Infrastructures – Data to Knowledge – Service Computing	11:30 am – 1:00 pm
Break	
3 Minute Thesis Competition	2:00 pm – 3:00 pm
Forum – Career after a PhD: Academia vs Industry by Dr. Mohd Nor Akmal Khalid (JAIST), Ts. Dr. Cheng Wai Khuen (UTAR), Mr Usman Sarwar (Monash), Dr. Davinna Jeremiah (WD)	3:15 pm – 4:30 pm
Closing Ceremony	4:30 pm – 5:00 pm

Workshop

Machine Learning Experiment Design



Dr. Jasy Liew Suet Yan

**Senior Lecturer
School of Computer Sciences, USM**

Dr. Jasy Liew Suet Yan is a Senior Lecturer at the School of Computer Sciences, Universiti Sains Malaysia specializing in sentiment analysis, natural language processing and machine learning. Her broader research interests include text mining, computational linguistics, affective computing and human-computer interaction. Dr. Jasy completed her PhD from the School of Information Studies, Syracuse University, USA in 2016. Her dissertation titled "Fine-grained Emotion Detection in Microblog Text", which explored building machine learning models to detect fine-grained emotions expressed in text was awarded the Syracuse University iSchool 2016 Doctoral Prize and recognized as the runner-up for the iSchools Doctoral Dissertation Award 2017. She applies machine learning in her research to build emotion and sentiment detection models and is a regular instructor for the Machine Learning (postgraduate) course at the School of Computer Sciences. She is also a member of the Academy of Sciences (ASM) Special Interest Group on Machine Learning (SIG ML).

COMMITTEE

Dr. Azleena Mohd Kassim

Assoc. Prof. Dr. Cheah Yu-N

Ms. Haziqah Shamsudin

Ms. Nur Aqilah Paskhal Rostam

WORKSHOP ON MACHINE LEARNING EXPERIMENT DESIGN

2nd September 2020 2:00 pm – 5:00 pm VIRTUAL via Webex



Dr. Jasy Liew Suet Yan


Senior Lecturer
School of Computer Sciences, USM

Dr. Jasy Liew Suet Yan is a Senior Lecturer at the School of Computer Sciences, Universiti Sains Malaysia specializing in sentiment analysis, natural language processing and machine learning. Her broader research interests include text mining, computational linguistics, affective computing and human-computer interaction. Dr. Jasy completed her PhD from the School of Information Studies, Syracuse University, USA in 2016. Her dissertation titled "Fine-grained Emotion Detection in Microblog Text", which explored building machine learning models to detect fine-grained emotions expressed in text was awarded the Syracuse University iSchool 2016 Doctoral Prize and recognized as the runner-up for the iSchools Doctoral Dissertation Award 2017. She applies machine learning in her research to build emotion and sentiment detection models and is a regular instructor for the Machine Learning (postgraduate) course at the School of Computer Sciences. She is also a member of the Academy of Sciences (ASM) Special Interest Group on Machine Learning (SIG ML).



Special Sessions

- Keynote Speech
- Motivational Talk
- Forum



Dr. Muhammad Fermi Pasha
Lecturer, BCS Course Coordinator
School of Information Technology, Monash University Malaysia

Between PhD research, collaboration, and commercialization: Opportunities and Challenges

As a PhD candidate, it's important to think about how your research contributes to knowledge in your academic discipline. However, there are other aspects surrounding your PhD journey. Do you know the benefit of exploring multidisciplinary or industry collaboration? And what about commercialisation? Simply put, why don't you make use of your PhD years to learn other skill sets that will set you apart from other PhD graduates. In this talk, I will share my experience during my postgraduate studies and beyond. How to attract collaboration with industry? How to be effectively involved in multidisciplinary collaboration? How to tune your research towards commercialisation? are among the questions that I will discuss in my talk.



Ms. Cheryl Oon
Trainee Counsellor, Certified Financial Planner (CFP)

Hitting the Reset Button with Mental Resilience in the New Normal

People differ widely in how they respond to challenges and difficulties in daily lives. While physical distancing may be a way of life for now due to Covid-19 pandemic, social separation, discontinued learning or demotivated living are certainly not. We may never know what to expect from this unexpected situation, but we can learn to adapt and be mentally resilient. Embracing change, strengthening psychological resilience and identifying ways to cope and to adjust to the new routines in this pandemic time.






Dr. Mohd Nor Akmal Khalid

Mr. Usman Sarwar

Ts. Dr. Cheng Wai Khuen

Dr. Davinna Jeremiah

COMMITTEE

Dr. Azleena Mohd Kassim

Assoc. Prof. Dr. Cheah Yu-N

Ms. Haziqah Shamsudin

Ms. Nur Aqilah Paskhal Rostam

BETWEEN PHD RESEARCH, COLLABORATION, AND COMMERCIALIZATION: OPPORTUNITIES AND CHALLENGES

3rd September 2020 9:30 am – 10:15 am VIRTUAL via Webex



Dr. Muhammad Fermi Pasha

Lecturer, BCS Course Coordinator
School of Information Technology, Monash University Malaysia

Between PhD research, collaboration, and commercialization: Opportunities and Challenges

As a PhD candidate, it's important to think about how your research contributes to knowledge in your academic discipline. However, there are other aspects surrounding your PhD journey. Do you know the benefit of exploring multidisciplinary or industry collaboration? And what about commercialisation? Simply put, why don't you make use of your PhD years to learn other skill sets that will set you apart from other PhD graduates. In this talk, I will share my experience during my postgraduate studies and beyond. How to attract collaboration with industry? How to be effectively involved in multidisciplinary collaboration? How to tune your research towards commercialisation? are among the questions that I will discuss in my talk.



HITTING THE RESET BUTTON WITH MENTAL RESILIENCE IN THE NEW NORMAL

3rd September 2020 10:30 am – 11:15 am VIRTUAL via Webex

Ms. Cheryl Oon

Trainee Counsellor, Certified Financial Planner (CFP)

Hitting the Reset Button with Mental Resilience in the New Normal

People differ widely in how they respond to challenges and difficulties in daily lives. While physical distancing may be a way of life for now due to Covid-19 pandemic; social separation, discontinued learning or demotivated living are certainly not. We may never know what to expect from this unexpected situation, but we can learn to adapt and be mentally resilient. Embracing change, strengthening psychological resilience and identifying ways to cope and to adjust to the new routines in this pandemic time.



CAREER AFTER A PHD: ACADEMIA VS INDUSTRY

3rd September 2020 3:15 pm – 4:30 pm VIRTUAL via Webex

Dr. Mohd Nor Akmal Khalid



Mr. Usman Sarwar



Ts. Dr. Cheng Wai Khuen



Dr. Davinna Jeremiah

3 Minute Thesis

JUDGES

Mr. Mohd Azam Osman



Dr. Syaheerah Lebai Lufti



Assoc. Prof. Dr. Hasrina Mustafa



PARTICIPANTS

Alzaidi Mohammed Khaleel

Bello Rotimi-Williams

Wafa' Hamdan Alshoura

Muhammad Ubale Kiru

Addy Suyatno Hadisuwito

Manal Ahmad Saleh Al-rawashdeh

Haruna Abdu

Shamsuddeen Rabi

Bello Ibrahim Kangiwa

Fakhitah Ridzuan

COMMITTEE

Dr. Manmeet Mahinderjit Singh

Ms. Fatima Al-Aswadi

Mr. Bello, Rotimi-Williams



Three Minutes Thesis Competition

3MT




Judges Panel

1. Dr. Syaheerah
2. AP Dr. Hasrina Mustafa
3. Mr. Mohd Azam


Prizes

1st Prize: RM300
People's Choice: RM100
2 Consolation Prizes

Embracing Our Research Journey in the New Normal

 3rd Sept	 12 hrs Format	Presenter's Name	Title of 3MT
Speech	02:00 p.m. to 02:04 p.m.	Fatima Al-Aswadi (Moderator)	Introduction & Remarks
Presenter 01	02:05 p.m.	Alzaidi Mohammed Khaleel	Multiple Sequence Alignment
Presenter 02	02:10 p.m.	Bello Rotimi-Williams	Deep-Learning Based Precision Livestock Farming
Presenter 03	02:15 p.m.	Wafa' Hamdan Alshoura	A New Chaotic Image Watermarking Scheme Based On SVD And IWT
Presenter 04	02:20 p.m.	Muhammad Ubale Kiru	Intelligent Automatic Door System Based On Supervised Learning
Presenter 05	02:25 p.m.	Addy Suyatno Hadisuwito	Prediction Of Meteorological Parameter Time Series Data For The Forest Fire Early Warning System
Presenter 06	02:30 p.m.	Manal Ahmad Saleh Al-Rawashdeh	Internet Of Things In Healthcare
Presenter 07	02:35 p.m.	Haruna Abdu	Worry NOT About Who Will Be Your Care Giver In Your Elderly Age
Presenter 08	02:40 p.m.	Shamsuddeen Rabi'u	A Novel Hybrid Approach for Optimization Load Balancing and Auto-Scaling in Container Microservice Cloud-Based System.
Presenter 09	02:45 p.m.	Bello Ibrahim Kangiwa	Exploring Collaborative Learning Using Learning Analytic (LA) to Foster Learning Engagement and Academic Achievement of The At-Risk Online Learners
Presenter 10	02:50 p.m.	Fakhitah Ridzuan	A Novel Approach for Enhancing Data Quality and Veracity of Big Data
Closing	02:56 p.m. to 03:00 p.m.	Moderator	Closing Remarks

Webex Link
<http://bit.ly/cspchall2>



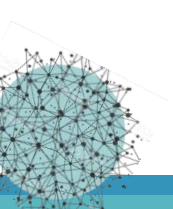
MULTIPLE SEQUENCE ALIGNMENT

Alzaidi Mohammed Khaleel

Supervisor: Prof. Dr Rosni Abdullah

Abstract

A Multiple sequence alignment is a tool used to study closely related genes to find the evolutionary relationships between genes and to identify shared patterns among functionally or structurally related genes.





A NEW CHAOTIC IMAGE WATERMARKING SCHEME BASED ON SVD AND IWT

Wafa' Hamdan Alshoura

Supervisor: DR. ZURINAHNI BINTI ZAINOL

Abstract

Image watermarking schemes based on singular value decomposition (SVD) have become popular due to a good trade-off between robustness and imperceptibility. However, the false positive problem (FPP) is the main drawback of SVD-based watermarking schemes. The singular value is the main cause of FPP issues because it is a fixed value that does not hold structural information of an image. In this paper, a new SVD-based image watermarking scheme that uses a chaotic map is proposed to overcome this issue. The secret key is first extracted from both the host and watermark image. This key is used to generate a new chaotic matrix and chaotic multiple scaling factors (CMSF) to increase the sensitivity of the proposed scheme. The watermark image is then transformed based on the chaotic matrix before being directly embedded into the singular value of the host image by using the CMSF. The extracted secret key is unique to the host and the watermark images, which improves security and overcomes FPP issues. Experimental results show that the proposed scheme fulfils all watermarking requirements in terms of robustness, imperceptibility, security, and payload. Furthermore, it achieves high robustness with different scaling factors, and outperforms several existing schemes.



DEEP-LEARNING BASED PRECISION LIVESTOCK FARMING

Bello Rotimi-Williams

Supervisor: Prof. Abdullah Zawawi Talib

Abstract

Employing computer vision based methods in monitoring individual cattle and obtaining their health information including their welfare have become what researchers are striving for. The methods are essential as the information exhibited by the cattle such as body condition score, live weight and activity behaviours could be used to ascertain their welfare and performance. The accuracy of the existing methods is below expectation in handling these tasks especially when there is presence of some smallest detectable patches in the image which might be mistaken for cattle. Moreover, the existing recognition and identification systems can still be improved to achieve better and more accurate results. An improved method comprising a combination of a number of methods is considered in order to achieve a better recognition and identification rate. To start with, an object tracking method is proposed for the purpose of detecting the position of cow in videos with consideration given to the automated tracking of multiple cattle in the same ranch. In order to achieve more accuracy in the course of the cow tracking, a systematic method is proposed to detect and identify cow trajectory patterns. In this research, an enhanced particle filter algorithm for object tracking is proposed. The enhanced algorithm is further integrated with mean-shift tracker for cattle motion detection. The second method involves enhancing Mask R-CNN method for instance segmentation of the cattle images. The enhanced Mask R-CNN includes colour feature descriptor, namely generalised colour Fourier descriptor (GCFD) for more accurate characterisation of the cow. The enhanced Mask R-CNN involves applying the GCFD to identify and store the unique features representing the cow after the convolutional network has detected and extracted the key images that contain the cattle motion before furthering the instance segmentation process. Adapted Grabcut algorithm is integrated with the enhanced Mask R-CNN for cow structural mapping and contour extraction. A better automated framework of a complete cow detection and identification system incorporating all the proposed methods will be designed and developed to evaluate the methods proposed in this study. The proposed object tracking and image segmentation methods are expected to produce results that show improvements over the existing methods which result in a better automated cow detection and identification system. As a whole, the main output of this research could be employed by the animal husbandry for precision livestock farming in monitoring individual cattle and obtaining their health information including their welfare instead of using the conventional methods.





INTELLIGENT AUTOMATIC DOOR SYSTEM BASED ON SUPERVISED LEARNING

Muhammad Ubale Kiru

Supervisor: Prof. Bahari Belaton

Abstract

The widespread adoption of automatic sliding doors in both commercial and non-commercial environment globally has necessitated the need to improve their efficiency, safety and mode of operation. Automatic door gives access to go into or outside a building by sensing the approaching individual using sensors. However, it does not have the intuition to understand when a person is not authorized to go outside based on their age limit, for example, children. To address this problem, researchers have proposed solutions ranging from the use of fuzzy logic to rule-based approaches to make automatic doors better than the previous ones. In this study, an AI-based automatic door system is proposed, which uses a supervised machine learning approach to train classifiers using human body measurement. Our evaluation of different classifiers indicates that SVM is capable of classifying the instances correctly while achieving about 88.9% F-score. Thus, the proposed approach is expected to improve the safety of automatic doors, thereby making them smarter and more intelligent.



PREDICTION OF METEOROLOGICAL PARAMETER TIME SERIES DATA FOR THE FOREST FIRE EARLY WARNING SYSTEM

Addy Suyatno Hadisuwito

Supervisor: Dr. Fadratul Hafinaz Hassan

Abstract

A forest fire early warning system must be developed to reduce the impact of greater community losses. One effort to develop an early warning system is to use a forest fire hazard index as a potential assessment guide. The main factor which is a parameter in the fire hazard index calculation method is the meteorological parameter. In general, to know today's fire hazard index is calculated from today's weather conditions, but the need for an early warning system is to know the future fire hazard index. Based on a series of meteorological conditions data held for thirty-six months, using the backpropagation algorithm, it is estimated that the meteorological conditions will be several months to come. Several meteorological parameters have their respective roles, the unknown contribution of which is calculated. In this study, each parameter will be measured by predicting time series data and compared with the results of calculations. The method of calculating the forest fire index used is the McArthur Forest Fire Danger Index with the meteorological parameter elements are temperature, relative humidity, wind speed, and drought factor. Each parameter was trained in artificial neural networks and tested its predictions to produce accuracy for data series temperatures of 91.67%, the relative humidity of 83.33%, and wind speed of 50%.

INTERNET OF THINGS IN HEALTHCARE

Manal Ahmad Saleh Al-rawashdeh

Supervisor: Prof.Bahari Belaton/ Dr Pantea Keikhosrokiani

Abstract

Internet of things (IoT) is a new paradigm in technology which provides a set of new services for the next wave of technological innovations. IoT is based on integrations of various processes such as identifying, sensing, networking, and computation, it enables large-scale technological innovations and value-added services that personalize users' interaction with various "things". There are numerous IoT applications that can be grouped into various domains such as health, traffic, logistics, retail, agriculture, smart cities, smart metering, remote monitoring, process automation, etc Advances in technology, and network innovations play a vital role in health care systems and contribute to the development of medical information systems. Indeed, health care is one of the significant social and economic problems that every country faces. Yet health care administrators, physicians, nurses and other health professionals are facing increasing pressure to respond to the growing demands of both the public and the private sector.



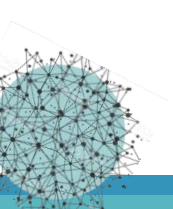
WORRY NOT ABOUT WHO WILL BE YOUR CARE GIVER IN YOUR ELDERLY AGE

Haruna Abdu

Supervisor: Prof. Dr. Rosni Abdullah/ Dr. Mohd Halim Mohd Noor

Abstract

The increase in the availability of wearable devices offers a prospective solution to the increasing demand for elderly human activity monitoring, in the essence of improving the independent living standard of the growing population of elderly humans. With all the availability of the wearable devices fully embedded with sensors that are being used for human health monitoring, a lot of techniques are been proposed and used in the process. However, most of the publicly available datasets in use today, are collected in a fully controlled or semi-natural settings. Also, elderly peoples from rural areas and transitional activities are mostly not considered, which will cause a lack of generalization of the dreamed HAR models. The purpose of this research is to collect a new dataset from elderly peoples in a rural area and find the best sensor position among the ankle and waist by subjecting the newly collected datasets to different machine learning classifiers. Sliding window technique with 50% overlapping was used to segment the sensor data collected from the elderly subjects. Relevant features were extracted, and selected using the wrapper method. From the results obtained, it has shown that the sensor attached at the waist position yield a better result compared to the ankle position on the newly collected elderly data. KNN algorithm has the highest accuracy level in both cases compared to the remaining tested classifiers.





A NOVEL HYBRID APPROACH FOR OPTIMIZATION LOAD BALANCING AND AUTO-SCALING IN CONTAINER MICROSERVICE CLOUD-BASED SYSTEM

Shamsuddeen Rabi

Supervisor: Associate Professor Dr. Chan Huah Yong and Dr. Sharifah Mashita

Syed Mohamad

Abstract

Microservice has achieved good results in recent years due to the advent of container technology. Containers are heavily used in deploying the Microservice applications independently as they are easy to manage and lightweight when compared to traditional Virtual Machines (VMs). Recently, there has been a trend to use containers to deploy microservices across clouds. Despite a large number of solutions and implementation on containers microservice cloud-based system, there remain open issues that have not been address. Most of studies address autoscaling and load balancing independently to minimize application deployment cost, work load, scalability, traffic spikes and response time. In order to provide a better quality of service (QoS) for microservices cloud-based system to the users, this research aims to improve the performance of the system in the area of Infrastructure as a service (IaaS) by designing a multi-objective optimization algorithm based on load balancing, target to optimize a better solution for containers microservice cloud-based system using docker container as the tool in order to obtain optimal values for the response time, workload distribution, and scalability. There is also need to propose a hybrid approach that combine the two objective constrains of load balancing and auto-scaling simultaneously by optimizing the above metrics in order to avoid server overloaded, handle traffic spikes, services or application failure and to scale up/out the computing resources dynamically based on the loads, for better quality of service (QoS) to the users.



EXPLORING COLLABORATIVE LEARNING USING LEARNING ANALYTIC (LA) TO FOSTER LEARNING ENGAGEMENT AND ACADEMIC ACHIEVEMENT OF THE AT-RISK ONLINE LEARNERS

Bello Ibrahim Kangiwa

Supervisor: Dr. Mohd Halim Bin Mohd Noor

Abstract

Online learning, described as learning with the assistance of the internet and personal computer which takes place with no defined space and time, has created a paradigm shift in education making it broadly accessible to learners who previously may not have had access to education due to geographical location, financial constraints, personal and or environmental impediments. These flexible offerings in online education made it a viable alternative for educational delivery to academic institutions throughout the world witnessing massive increase in students' enrollment. Despite the tremendous benefits of online learning in terms of flexibility, access and convenience; academic achievement, retention to graduation and on-time graduation in online learning is argued to be lower than in face-to-face learning mode. The absence of face-to-face interaction between students and instructors and among students in online learning creates feelings of isolation among learners which leads to decrease in learning engagement which also affects academic success. As student's engagement is linked to aspects of academic achievement, retention, student satisfaction, and institutional success, improving learning engagement is of great importance to various actors in education industry. To address the problem of poor engagement in online learning, the research aimed at exploring collaborative learning strategy using LA to improve learning engagement and achievement of the at-risk online learners. The online learning log data of learners stored in the Learning Management System (LMS) is to be utilized to design a prediction model which identifies learners at-risk of poor achievement due to poor engagement and then accordingly learning interventions to be effected early to save the at-risk situation through improved engagement. Analyzing the collaborative learning strategy, the thesis aimed to come up with student interaction model to guide in the design of online courses which is hoped to guarantee improved online learning engagement and subsequently the academic achievement.

A NOVEL APPROACH FOR ENHANCING DATA QUALITY AND VERACITY OF BIG DATA

Fakhitah Ridzuan

Supervisor: Dr Wan Mohd Nazmee Wan Zainon

Abstract

Massive amount of data are available for the organisation to drive the business ahead from the competitors. Data are collected from variety of resources are dirty and this will affect their business decision. Various data cleansing tools are available to cater the issue of dirty data and offers a better data quality, which will be a great help for the organization to make sure their data is ready for the analysis. However, there have been an issue raised regarding the trustworthiness of the result despite the quality of the data is high. Veracity is one of the characteristics of Big Data, which referred to the trustworthiness on the data. It always relates with data quality, but there has been less work on standard that defines data quality specifically for Big Data. Besides, most of the studies also show the need of Data Quality Rules to satisfy variety of errors presents in the data. However, this process require domain expert that is expensive to employ. . Consequently, this research proposes a new method to automate DQR and an enhanced veracity assessment framework.

Poster Competition

3 Tracks

1 Service Computing

2 Enabling Technologies and Infrastructures

3 Data to Knowledge

JUDGES

Prof. Dr. Putra Sumari

Dr Heikal Husin

Ms.Maziani Sabudin

Assoc. Prof. Dr. Umi Kalsom Yusof

Dr. Wan Mohd Nazmee Wan Zainon

Dr. Mohd Halim Mohd Noor

Assoc. Prof. Dr. Wan Tat Chee

Dr. Teh Je Sen

Mr. Gian Chand Sodhy



PARTICIPANTS

Usman Hamza

Zaher Ahmed Sahal Bamasood

Hongyan LI

Abubakar Mu'azu Ahmed

Sani Abdullahi

Mustafa Mohammad Al Qudah

Alzaidi Mohammed Khaleel

Auwal Shehu Ali

Zahid iqbal

Nur azimah bt mohd

Suhaila Farhan Ahmad Abuowaida

Oluwaseyi Jaiyeoba

Shamsuddeen Rabi'u

Bello Rotimi-Williams

Muhammad Ubale Kiru

Ali Fawzi Mohammed Ali

Chua hooi chin

Oyelami Julius Olusegun

Nawaf farhan

Hussein Abdulkareem Younu

Osamah Mohammed Fadhil

COMMITTEE

Dr. Manmeet Mahinderjit Singh


Mr. Zahid Iqbal

Mr. Aurangzeb Muzammil


Mr. Yong Kuan Shyang

Poster Competition Track

Service Computing




Judges Panel

1. Prof. Dr. Putra Sumari
2. Dr. Heikal Husin
3. Madam. Maziani Sabudin


Prizes

1st Prize
RM 200
Consolations
Two Prizes

Embracing Our Research Journey in the New Normal

 3rd Sept	 12 hrs Format	Presenter's Name	Title of Poster
Speech	11:30 a.m. to 11:35 a.m.	Aurangzeb Muzammil (Moderator)	Introduction & Remarks
Presenter 01	11:36 a.m. to 11:45 a.m.	Usman Hamza	A Stakeholder-Inclusive Model for DevOPs in E-Commerce System
Presenter 02	11:46 a.m. to 11:55 a.m.	Zaher Ahmed Sahal Bamasood	The Effect of Face and Gesture Expression on Trust: Comparing Yemenis to Mixed Ethnic Group
Presenter 03	11:56 a.m. to 12:05 p.m.	Abubakar Mu'azu Ahmed	A Model For Intention To Use MOOCs: The Moderating Role of Facilitating Condition, Subjective Norm, Openness
Presenter 04	12:06 p.m. to 12:15 p.m.	Sani Abdullahi	Aspect Extraction of Product Review In Cross Domain Using Convolutional Neural Network
Presenter 05	12:16 p.m. to 12:25 p.m.	Mustafa Mohammad Al Qudah	Multimodal, thermal based, affective state recognition
Presenter 06	12:26 p.m. to 12:35 p.m.	Hongyan Li	Factors influencing the students's intention to adopt AI Oriented Personalized Learning Environment
Closing	12:36 p.m. to 12:40 p.m.	Moderator	Closing Remarks

Webex Link

<https://bit.ly/cspchall3>



Poster Competition Track

Data To Knowledge




Judges Panel

1. AP Dr. Umi Kalsom Yusof
2. Dr. Wan Mohd Nazmee Wan Zainon
3. Dr. Mohd Halim Mohd Noor


Prizes

1st Prize
RM 200
Consolations
Two Prizes

Embracing Our Research Journey in the New Normal

 3rd Sept	 12 hrs Format	Presenter's Name	Title of Poster
Speech	11:30 a.m. to 11:35 a.m.	Ali Olow Jimale (Moderator)	Introduction & Remarks
Presenter 01	11:36 a.m. to 11:45 a.m.	Bello Rotimi-Williams	Cow image instance segmentation using enhanced Mask R-CNN integrated with adapted Grabcut
Presenter 02	11:46 a.m. to 11:55 a.m.	Muhammad Ubale Kiru	Intelligent Automatic Door System based on Supervised Learning
Presenter 03	11:56 a.m. to 12:05 p.m.	Ali Fawzi Mohammed Ali	Automated brain tumor segmentation based on optimized fuzzy c-mean and cascade deep CNN
Presenter 04	12:06 p.m. to 12:15 p.m.	Chua Hooi Chin	Sentiment polarity classification using distribution point-mutual information based on sentiment lexicon integration and sentiment propagation
Presenter 05	12:16 p.m. to 12:25 p.m.	Oyelami Julius Olusegun	Cyber Security Defense Policies: A Proposed Guidelines for Organisation Cyber Security Practices
Presenter 06	12:26 p.m. to 12:35 p.m.	Nawaf Farhan	Deep Learning Approaches in Fish Detection and Tracking in Underwater Videos
Presenter 07	12:36 p.m. to 12:45 p.m.	Hussein Abdulkareem Younus	Audio and Text Recognition Algorithm in A Human-Robot Interaction Scenario Using NAO Robot
Presenter 08	12:46 p.m. to 12:55 p.m.	Osamah Mohammed Fadhil	Features selection using meta-heuristics methods for text classification
Closing	12:56 p.m. to 13:00 p.m.	Moderator	Closing Remarks

Webex Link
<https://bit.ly/cspchall1>





Poster Competition Track

Enabling Technologies & Infrastructures



Embracing Our Research Journey in the New Normal

3rd Sept	12 hrs Format	Presenter's Name	Title of Poster
Speech	11:30 a.m. to 11:35 a.m.	Zahid Iqbal (Moderator)	Introduction & Remarks
Presenter 01	11:36 a.m. to 11:45 a.m.	Zahid Iqbal	Decentralized Collaborative Learning of Heterogeneous Models with Unlabeled Non-iid Data
Presenter 02	11:46 a.m. to 11:55 a.m.	Alzaidi Mohammed Khaleel	Haris Hawks Optimization Algorithm Protein Multiple Sequence Alignment
Presenter 03	11:56 a.m. to 12:05 p.m.	Nur Azimah bt Mohd	Security and usability evaluation model of ecommerce website
Presenter 04	12:06 p.m. to 12:15 p.m.	Rajes Khana	Breast Self-Examination System Based on Multi-Faceted Trustworthiness in Social Media
Presenter 05	12:16 p.m. to 12:25 p.m.	Suhaila Farhan Ahmad Abuowaida	Food recognition system using deep learning
Presenter 06	12:26 p.m. to 12:35 p.m.	Oluwaseyi Jaiyeoba	Passenger Vehicle Avoidance Time Model For Connected and Autonomous Vehicles
Presenter 07	12:36 p.m. to 12:45 p.m.	Shamsuddeen Rabiul	A Novel Hybrid Approach for Optimizing Load balancing and Auto-Scaling in container microservice cloud-based system
Presenter 08	12:46 p.m. to 12:55 p.m.	Auwal Shehu Ali	Readability and Usability of Privacy Policy from Security and Privacy Perspective: A Review
Closing	12:56 p.m. to 01:00 p.m.	Moderator	Closing Remarks

Webex Link

<http://bit.ly/cspchall2>



Poster Competition Schedule



SERVICE COMPUTING

A STAKEHOLDER-INCLUSIVE MODEL FOR DEVOPS IN E-COMMERCE SYSTEM

Usman Hamza

Supervisor: Dr Sharifah Mashita Syed Mohamad

Abstract

DevOps methodologies and tools have become a must for organizations to stay competitive in the market in this decade. It's perceived as a culture that emphasizes automation of the processes of building, testing, and deploying software. Successful implementation of DevOps culture totally depends solely on an acceptance of its development methodologies by the DevOps stakeholders. Due to lack of standardization of process, common guidelines, unified definitions and tools along with cultural barriers, organizations are facing huge problems in DevOps adoption. As a result, different organization needs, leads to various definitions for DevOps. We argue that, common guideline, standardizing the process, as well as relevant stakeholders are needed to collaborate to achieve success in DevOps, as against the current approach. Our research study reviews the literature to set the background definition of DevOps and proposes an inclusive-stakeholder model for DevOps in e-commerce. This is to ensure balanced interests of all stakeholders and deliver services that deliver value to users and customers.



SERVICE COMPUTING

THE EFFECT OF FACE AND GESTURE EXPRESSION ON TRUST: COMPARING YEMENIS TO MIXED ETHNIC GROUP

Zaher Ahmed Sahal Bamasood

Supervisor: Dr. Syaheerah Lebai Lutfi

Abstract

It has been argued that among all human relationships, from romantic relations to professional advice, trust occupies a central component because research has shown that trust has crucial effects on decision making. For example, in negotiations, trust has a pivotal role in determining the success or failure of deals because trust is based on feelings. In fact, it is well-known that trust is considered to be an emotional response. Emotions have been shown to significantly impact the decision of trusting a person even if there was zero acquaintance. Furthermore, trust markers can be analysed through the use of several visual, vocal, and behavioural cues. Yet, the most evident trust markers are the visual ones, namely facial and gesture expressions. This study intends to investigate the characteristics of trustworthiness based on facial and gestures expressions. The rationale behind taking this as the purpose of the study is to gauge trust features towards constructing synthetic agents which can be perceived as trustworthy in domains that require negotiations. Specifically, the present study explores the use of a benchmarked audiovisual corpus, called the One-Minute-Gradual Emotion (OMG), which is widely used in the community. This particular corpus was selected because it allows researchers to examine the level of trustworthiness among speakers using both facial and gesture expressions. The corpus was prepared in such a way that the respondents can only focus on the facial and gesture expressions of the speakers- hence, muted. The participants in this study were asked to watch some selected OMG video clips and rate their perceived trustworthiness of the speakers by responding to several questions pertaining to the speakers' behaviour, namely (emotional) state, gesture, activeness, comfort, and integrity. Next, the speakers' behaviours (state, gesture, activeness, comfort, and integrity) as well as the trust ratings were analysed using ANOVA and Spearman's correlation tests. Then, speakers' behaviours and trust ratings were further examined by using the Means plot. Finally, some conclusions can be drawn based on the findings of the study. First, the more active, faster gestured, and relaxed speakers are while they are delivering their speech, the more trust they can gain from the audience, and the more comfortable the audience feels. Second, the integrity was also rated as high when these speakers are perceived in the oral states.



SERVICE COMPUTING

FACTORS INFLUENCING THE STUDENTS'S INTENTION TO ADOPT AI ORIENTED PERSONALIZED LEARNING ENVIRONMENT

Hongyan Li

Supervisor: DR. Syaheerah Lebai Lutfi

Abstract

Adaptive learning is receiving a significant attention due to facing great challenges when developing web-based applications under Intelligent tutoring systems. The three greatest challenges are Construction of learning screens and learner expression image database under specific cultural background, Learner emotion recognition based on facial expressions and experimental study on the effect of adaptive adjustment of learning picture on learners' emotion. This paper describes and analyzes various strategies that have been developed recently for overcoming these three major challenges that seriously affect the performance of Intelligent tutoring systems. This survey is organized in three parts. In the first part, the study of intelligent tutoring systems are classified, illustrated and compared. The second part briefly describes the flaws of monitoring of teaching effects in current personalized learning systems and the associated solutions. In the third part, affective computing challenge is illustrated.



SERVICE COMPUTING

A MODEL FOR INTENTION TO USE MOOCS: THE MODERATING ROLE OF FACILITATING CONDITION, SUBJECTIVE NORM, OPENNESS

Abubakar Mu'azu Ahmed

Supervisor: Dr. Nor Athiyah Abdullah
Abstract

In the age of the industrial revolution in the ICT industry led to an upsurge of e-learning systems that deliver MOOCs services and becoming evidently global part of our educational systems. the achievement of the e-learning program depends not only on technology willingness or world competitiveness but also on the intent of students to use it, with little participation rate in developing countries was assumed to be due to numerous complex conditions, such as the deficiency of access to digital technology. Nevertheless, the recent demographic data discloses there is very small participation rates from low revenue countries, especially in Africa. This sum up to create a gap in understanding of intention to use MOOCs from the student's point of view. Although the intention to use MOOCs have been discussed in various studies; most of the studies focused on technical difficulties of development and usage behaviour rather than incorporating the assessment of the level of openness ,facilitating condition, subjective norm of the MOOCs which determine the intention or otherwise of the MOOCs technology. Thus, the main concern of this research would be to identify the factors of determining user intention to use MOOCs from students' point of view. Massive Open Online Courses (MOOCs) is intended to serve as open educational system that can be accessed by all. Regarding the adoption of MOOCs in developing countries there are eight aspects that need to be investigated, perceive ease of use, perceived usefulness, reputation, autonomy, awareness, openness, facilitating condition and subjective norm. Therefore, this research intends to develop a model of test-students intention to use MOOCs in developing countries with reference to Nigeria. The study would use a questionnaire survey method where the sample units will examined who had not used the Massive Open Online Courses (MOOCs) system in Nigeria public university, Then non-users may provide valuable information of barriers encountered by innovations and the proposed model will be tested through a structural equation modelling (SEM).



SERVICE COMPUTING

ASPECT EXTRACTION OF PRODUCT REVIEW IN CROSS DOMAIN USING CONVOLUTIONAL NEURAL NETWORK

Sani Abdullahi

Supervisor: Dr.Gan Keng Hoon

Abstract

Adaptive learning is receiving a significant attention due to facing great challenges when developing web-based applications under Intelligent tutoring systems. The three greatest challenges are Construction of learning screens and learner expression image database under specific cultural background, Learner emotion recognition based on facial expressions and experimental study on the effect of adaptive adjustment of learning picture on learners' emotion. This paper describes and analyzes various strategies that have been developed recently for overcoming these three major challenges that seriously affect the performance of Intelligent tutoring systems. This survey is organized in three parts. In the first part, the study of intelligent tutoring systems are classified, illustrated and compared. The second part briefly describes the flaws of monitoring of teaching effects in current personalized learning systems and the associated solutions. In the third part, affective computing challenge is illustrated.



SERVICE COMPUTING

MULTIMODAL, THERMAL BASED, AFFECTIVE STATE RECOGNITION

Mustafa Mohammad Al Qudah

Supervisor: Dr. Ahmad Sufri

Abstract

Since recent decades, recognition of human affective state become crucial in many applications. Wide Pervious researches have been focused on human faces due its important role of human affects. Despite literatures have mainly focused on visual (RGB imaging) recently the concept of thermal imaging became used because of the advancement appeared in thermal techniques. However, affective state recognition modalities are still limited by several factors such as occlusion, head motion, differentiating between pretended and spontaneous emotions, and illumination variation problem in visual imaging. Therefore, this research will propose human affective state recognition under wider range of conditions based on thermal facial signatures. The research composes three main stages: firstly, this research proposes model to recognize human affects along with valance dimension and to explore the differences between pretended and spontaneous emotions. Secondly, fusion of spatial facial features from visual images with statistical thermal facial features to overcome occlusion and illumination variation challenges. The third proposed solution will use deep learning algorithm (CNN) and thermal images in temporal domain to solve head motion and occlusion problems in affective state recognition by using thermal images.



Enabling Technologies and
Infrastructures

MULTIPLE SEQUENCE ALIGNMENT

Alzaidi Mohammed Khaleel

Supervisor: Prof. Rosni Abdullah

Abstract

A multiple sequence alignment is a tool used to study closely related genes to find the evolutionary relationships between genes and to identify shared patterns among functionally or structurally related genes.





Enabling Technologies and Infrastructures

READABILITY AND USABILITY OF PRIVACY POLICY FROM SECURITY AND PRIVACY PERSPECTIVE: A REVIEW

Auwal Shehu Ali

Supervisor: Dr. Zarul Fitri Zaaba

Abstract

Privacy policies operate as a memorandum of understanding (MoU) between the internet users and internet service providers. Internet users find it difficult reading these policies because of their length, difficult to understand, time consuming, ambiguous, and full of legal jargon used, especially to non-English speakers. We review the techniques of improving privacy policies and identified three main process of generating privacy policy, which are machine readable privacy policy, graphical privacy policy, and natural language privacy policy. We then identify the strength and weaknesses of each and suggested enhancement. The result will reduce the length and simplify the readability which will encourage users to read and make informed decision in their privacy and security.



Enabling Technologies and Infrastructures

DECENTRALIZED COLLABORATIVE LEARNING OF HETEROGENEOUS MODELS WITH UNLABELED NON-IID DATA

Zahid Iqbal

Supervisor: Assoc. Prof. Dr. Chan Huah Yong

Abstract

This research work addresses a novel problem in Decentralized Learning where different smart devices collaborate to train a single global model in very challenging environment that is each smart device has 1) some private (non-shareable) data 2) different (non-iid) data distribution 3) partially or fully unlabeled (unsupervised) data 4) has different (heterogeneous) model architecture. Given such challenging environment, primary aim of this research work is to train a high performance single global model by collaboratively learning from all these private distributions. To address these challenges, this research leverages the traditional approaches like network Codistillation and Federated Learning, where devices share their trained-model's output (rather than private data) with central server which distill the knowledge and perform aggregation. Where and central server performs the aggregation on distilled knowledge from these devices. To address the unlabeled and Non-iid challenge, the proposed method performs weighted aggregation by adaptively emphasizing those clients with high confidence value against given distillation sample. The proposed method demonstrates very effectively on public datasets like CIFAR-10 and FMNIST.





Enabling Technologies and Infrastructures

SECURITY AND USABILITY EVALUATION MODEL OF ECOMMERCE WEBSITE

Nur Azimah Bt Mohd

Supervisor: Dr zarul fitri zaaba

Abstract

Electronic commerce (E-commerce) websites have grown significantly over the years. However, due to security and usability issues, only 29% of users convert their online search into a purchase. The aim of this study is to provide an overview of the strengths and weaknesses of the existing evaluation models in the aspect of usability and security dimensions for an e-commerce website. This study reviewed the evaluation models that have been applied to E-commerce from the year 2000 to 2018. The study reviewed 11 models and listed the usability and security elements evaluated by each model. The strength and weakness of each model was highlighted. This study found that there is a lack of one comprehensive model that is able to measure all the usability components together with the security components. There is a need to design an evaluation model that will be able to evaluate usability and security together for e-commerce website in order to improve the e-commerce website.



Enabling Technologies and Infrastructures

BREAST SELF-EXAMINATION SYSTEM BASED ON MULTI-FACETED TRUSTWORTHINESS IN SOCIAL MEDIA

Rajes Khana

Supervisor: Dr. Manmeet Mahinderjit Singh

Abstract

Breast cancer is the number one mortality cases among females. Females feel reluctant and embarrass to meet physicians face to face to discuss their genital area; as a result, they prefer to use social media for interaction. The number of patients and physicians that interact and seek information related to breast cancer in social media is growing. However, the physician may create inappropriate conduct in social media due to the excessive sharing of patient’s personal medical data to their colleague or public. As a result, this act will reduce the trustworthiness between the patient and the physician. Thus, in this study, an exploration of a more suitable trust model will be presented. By investigating the current multi-faceted trust model that has been used for social media interaction, an enhancement in adopting its usage for breast self-examination (BSE) will be done. Multi-faceted trust model characteristics are beyond from being personalized, context-dependent, and transitive. This model is more user-centric, which allows any user to evaluate the interactions process. In this study, a Breast (BSE) using a multi-faceted trust model has been proposed and evaluated. Based on the 772 participants on questionnaire and 32 participants on FGD the BSE system reveals confidence as having a strong positive correlation (.82) followed by faith (.81), reliability (.77), and belief (.71). Others are competency (.68), credibility (.67), and reliability (.73), and the lowest preference is honesty (.52). The relationship effect between trustworthiness and BSE system is significant due to the probability value (p-value) =.001, where $p < 0.05$. On the other hand, the trust level of a patient to a particular physician will increase after several interactions.





Enabling Technologies and Infrastructures

FOOD RECOGNITION SYSTEM USING DEEP LEARNING

Suhaila

Supervisor: Assoc. Prof. Dr. Chan Huah Yong

Abstract

"Deep learning is the branch of the machine learning, which has received much attention recently because of effectiveness in many filed such as computer vision (Simonyan & Zisserman, 2014), speech recognition (Abdel-Hamid, Abdel-rahman, Ji, & Penn, 2012) and neural language processing. The Convolutional Neural Network (CNN) is most important model of deep learning and considered as the state of the art in image recognition and detect subject. Through the use of CNN, it was found that the CNN is characterized by high accuracy compared to other algorithm that depends on traditional computer vision techniques (Krizhevsky, Sutskever, & Hinton, 2012), which opened the way for researchers used CNN for recognition and detection object (Girshick , Donahue, Darrell, & Malik, 2014), by modified few details such as the type and number of layer to locate in the network and used different size of filter and adaptation various techniques of training architecture (He, Zhang, Ren, & Sun, 2016) and avoid overfitting as dropout (Krizhevsky, Sutskever, & Hinton, 2012) as will be shown in the following chapter. In this research work, we aim to create pipeline of two models dependent on each other for solving difficult problem which is food recognition system. Food recognition systems that rely on image capture and analysis became impressive widely accepted all over the world due to the great advances in computer vision. The motivation of food recognition system based on image. Food classification, which is a particular problem from computer vision and still under development for several reasons such as different recipes, cooking method and light condition. In addition, these reasons may change on food appearance."





Enabling Technologies and Infrastructures

PASSENGER VEHICLE AVOIDANCE TIME MODEL FOR CONNECTED AND AUTONOMOUS VEHICLES

Oluwaseyi Jaiyeoba

Supervisor: Professor Azman Samsudin

Abstract

VANET-based Connected and Autonomous Vehicle technology has the potential to improve safety hence reduce road fatalities. Many simulations in VANET develop only message dissemination protocol without considering the safe time needed between moving vehicles and these are rather inaccurate for safety preventions because communications without an effective time gap between vehicles could still lead to collisions. Passenger vehicles avoidance time can be associated with L0 – L2 and L3 – L5 levels of autonomy, dependent on either human-induced deceleration braking or full automated system braking. Two passenger vehicle avoidance time models have been proposed. The results obtained shows marked differences in the needed avoidance time for safe vehicle braking to avoid a crash. A delay of 4s is suggested to maintain a suitable avoidance time between leading and following vehicles for CAVs in urban and highway roads. Keywords— avoidance time, TGFD, VANET, autonomous, CAV.





Enabling Technologies and Infrastructures

A NOVEL HYBRID APPROACH FOR OPTIMIZING LOAD BALANCING AND AUTO-SCALING IN CONTAINER MICROSERVICE CLOUD-BASED SYSTEM

Shamsuddeen Rabi

Supervisor: Associate Professor Dr. Chan Huah Yong and Dr. Sharifah Mashita Syed Mohamad
Abstract

Microservice has achieved good results in recent years due to the advent of container technology. Containers are heavily used in deploying the Microservice applications independently as they are easy to manage and lightweight when compared to traditional Virtual Machines (VMs). Recently, there has been a trend to use containers to deploy microservices across clouds. Despite a large number of solutions and implementation on containers microservice cloud-based system, there remain open issues that have not been address. Most of studies address autoscaling and load balancing independently to minimize application deployment cost, work load, scalability, traffic spikes and response time. In order to provide a better quality of service (QoS) for microservices cloud-based system to the users, this research aims to improve the performance of the system in the area of Infrastructure as a service (IaaS) by designing a multi-objective optimization algorithm based on load balancing, target to optimize a better solution for containers microservice cloud-based system using docker container as the tool, to obtain optimal values for the response time, workload distribution, and scalability. There is also need to propose a hybrid approach that combine the two objective constrains of load balancing and auto-scaling simultaneously by optimizing the above metrics in order to avoid server overloaded, handle traffic spikes, services or application failure and to scale up/out the computing resources dynamically based on the loads, for better quality of service (QoS) to the users.



Data to Knowledge

COW IMAGE INSTANCE SEGMENTATION USING ENHANCED MASK R-CNN INTEGRATED WITH ADAPTED GRABCUT

Bello Rotimi-Williams

Supervisor: Prof. Abdullah Zawawi Talib

Abstract

In this paper, we propose an instance segmentation method that combines Mask R-CNN with GCFD for an enhanced Mask R-CNN. This is to retain the colorimetric information of image's object throughout the image segmentation process. The enhanced Mask R-CNN is further improved by integrating it with an adapted Grabcut for cow contour extraction. The adapted Grabcut relies on the structural mapping algorithm to perform the contour extraction. The evaluation of the proposed method is carried out using the performance measure and benchmarking.



Data to Knowledge

INTELLIGENT AUTOMATIC DOOR SYSTEM BASED ON SUPERVISED LEARNING

Muhammad Ubale Kiru

Supervisor: Prof. Dr Bahari Belaton

Abstract

The widespread adoption of automatic sliding doors in both commercial and non-commercial environment globally has necessitated the need to improve their efficiency, safety and mode of operation. Automatic door gives access to go into or outside a building by sensing the approaching individual using sensors. However, it does not have the intuition to understand when a person is not authorized to go outside based on their age limit, for example, children. To address this problem, researchers have proposed solutions ranging from the use of fuzzy logic to rule-based approaches to make automatic doors better than the previous ones. In this study, an AI-based automatic door system is proposed, which uses a supervised machine learning approach to train classifiers using human body measurement. Our evaluation of different classifiers indicates that SVM is capable of classifying the instances correctly while achieving about 88.9% F-score. Thus, the proposed approach is expected to improve the safety of automatic doors, thereby making them smarter and more intelligent.



Data to Knowledge

AUTOMATED BRAIN TUMOR SEGMENTATION BASED ON OPTIMIZED FUZZY C-MEAN AND CASCADE DEEP CNN

Ali Fawzi Mohammed Ali

Supervisor: Prof.Bahari Bin Belaton, Dr.Anusha Achuthan

Abstract

Brain imaging is of high importance causes many brain-related diseases such as neuro-logical diseases, neurodegenerative diseases, and brain tumors. These diseases can be diagnoses and classified through imaging and automatic labeling of anatomical brain structures. Thus, brain images play a major part in specialist decisions and diagnosis. In this proposal, we will present an optimized fuzzy c-mean algorithm for the initial seg-mentation of brain tumor regions and further improved by integrating with cascade deep CNN. The proposed method solves the major limitation of CNN based segmenta-tion method which is the dependency on a large amount of manually labeled dataset by preparing an automated labeled dataset using an optimized fuzzy c-mean clustering method.





Data to Knowledge

SENTIMENT POLARITY CLASSIFICATION USING DISTRIBUTION POINT-MUTUAL INFORMATION BASED ON SENTIMENT LEXICON INTEGRATION AND SENTIMENT PROPAGATION

Chua Hooi Chin

Supervisor: Assoc. Prof. Dr Cheah Yu N

Abstract

A method for classifying polarity review using D-PMI based on multiple sentiment lexicons integration and sentiment propagation to improve generalization capability of sentiment polarity classification.





Data to Knowledge

CYBER SECURITY DEFENSE POLICIES: A PROPOSED GUIDELINES FOR ORGANISATION CYBER SECURITY PRACTICES

Oyelami Julius Olusegun

Supervisor: Dr. Azleena Mohd Kassim

Abstract

Many organisations have been struggling to defend their cyberspace without a specific direction or guidelines to follow and they have described and identified cyberattack as a devastating potential on business operation in a broader perspective. Since then, researchers in cyber security have come out with numerous reports on threats and attack on organisations. This study is conducted to develop and propose a Cyber Security Defense Policies (CSDP) by harmonising and synthesizing the existing practices identified from the literature review. Observation and questionnaire were adopted to evaluate, review and collect data under ethical agreement from 10 organisations. The validation is based on the principal components for the proposed CSDP and the proposed CSDP, using SPSS as the statistical tool. The result shows that, the validation of the proposed CSDP by 20 experts reveals a standard deviation of 0.607, 0.759, 0.801, 0.754, 0.513, 0.587 and 0.510 on each of the principal components without a missing value respectively. While the correlation matrix and the reproduced correlation matrix for the proposed CSDP indicated 61% and the percentage of acceptance on the principal components for the proposed CSDP are higher than 50%. Therefore, from the outcome, it has shown that the acceptance responds towards the proposed CSDP and the result from the principal components analysis (eigenvalue analysis) are significant enough for implementation and can be adopted by organisations as a guideline for organisation cyber security practices.



Data to Knowledge

DEEP LEARNING APPROACHES IN FISH DETECTION AND TRACKING IN UNDERWATER VIDEOS

Nawaf Farhan

Supervisor: Dr.Abdallah Zwaia

Abstract

The process of tracking objects using mathematical methods has become common among researchers, but most research in this area has been applied to humans, and there is not much research that was applied on animals such as fish. Researchers in fish tracking have used many processes, such as the use of many cameras in different places to determine fish patterns, speed and motion (Lee et al., 2015). Tracking and object detection algorithms depend on the location, shape and motion of the object (Ma, Chi & Zhang, 2004; Yang, Pan & Li, 2005). Most of the tracking algorithms focus on the shape and tracking of the object by its motion (Lee et al., 2014) by dividing the video into several frames to see the motion of the object. Fish tracking is a major challenge for researchers because it is difficult to determine the shape of the fish and the pattern of swimming and the fish move at different speeds and angles. There are many challenges in tracking fish in underwater videos such as movement of fish at different angles and speeds, and light change in underwater. Most fish tracking algorithms do not work well when fish change their speed and work only on one object and not on multiple objects. There is also the problem of overlapping objects. Therefore, these problems must be resolved for better tracking of fish in underwater videos. Deep learning which is a branch of machine learning has had a great impact in recent years because of its effectiveness in many fields such as computer vision (Simonyan & Zisserman, 2014) and image recognition (Krizhevsky et al., 2012). Convolutional Neural Network (CNN) is the most effective deep learning techniques, for recognition and detection of item in a frame. CNN is characterized by a high accuracy of recognition of the object within the images compared to other algorithms based on conventional computer vision techniques. AlexNet network (Krizhevsky et al., 2012) has achieved excellent results using CNN in detecting, recognizing, and classifying object from images. Long ShortTerm Memory (LSTM) and Recurrent Neural Network (RNN) do get a better job each time for capturing based on overtime for their many gates. LSTM has proven to be effective in many areas such as language translation, and image and video annotation (Sutskever et al., 2014).



Data to Knowledge

AUDIO AND TEXT RECOGNITION ALGORITHM IN A HUMAN-ROBOT INTERACTION SCENARIO USING NAO ROBOT

Hussein Abdulkareem Younus

Supervisor: Dr.Ahmad Sufril Azlan Mohamed

Abstract

At the end of 2019, in particular December, COVID-19 appeared in some countries. After the beginning of 2020, it spread to most countries across the world. This is where the education challenge started. The COVID-19 crisis has led to the closure of thousands of schools and universities all over the world. Therefore, many educational institutions in many of these countries have resorted to the option of online education in order to continue with the established school curricula, and to fill any educational gaps resulting from the exacerbation of the crisis in the following countries: America, France, Britain, Italy, Germany, Malaysia, Singapore, Indonesia and the Arab countries. The use of robotics in education is a very important issue for disposal and galaxies in this era of the pandemic (COVID-19). Where this study examines the topic of robotics in education (RIE). A new Audio and text recognition algorithm in a human-robot interaction scenario using NAO robot proposed.



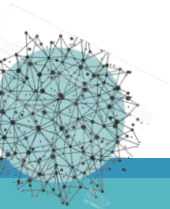
**FEATURES SELECTION USING META-HEURISTICS METHODS
FOR TEXT CLASSIFICATION**

Osamah Mohammed Fadhil

Supervisor: Assoc. Prof Dr.Cheah Yu-N

Abstract

Text document analysis is a widely used technique in the field of text mining and machine learning. Therefore, has a lot of applications like categorizing articles, labelling etc. When classifying text, the biggest issue is the large data scale that contains a large number of irrelevant or redundant features. To reduce and solve the problem, the feature selection using meta-heuristics algorithms is a common solution that has a significant impact on classification accuracy.



Recipients for Q1-Q2 Journals

➤ 2020

➤ 2019

Q1 Publications (2020)					
No	Paper Title	First Author (Student)	Main Supervisor	Journal Name	Quartile
1	An Efficient Intrusion Detection Model Based on Hybridization of Artificial Bee Colony and Dragonfly Algorithms for Training Multilayer Perceptrons	Waheed Ali H. M. Ghanem	Aman Jantan	IEEE Access	Q1
2	Bluetooth Low Energy Mesh Networks: Survey of Communication and Security Protocols	Muhammad Rizwan Ghorl	Tat-Chee Wan	Sensors	Q1
3	Critical Success Factors for Big Data: A Systematic Literature Review	Zaher Ali Al-Sai	Rosni Abdullah	IEEE Access	Q1
4	SenseCrypt: A Security Framework for Mobile Crowd Sensing Applications	Nsikak Pius Owoh	Manmeet Mahinderjit Singh	Sensors	Q1
5	A New Hash Function Based on Chaotic Maps and Deterministic Finite State Automata	Moatsum Alawida	Azman Samsudin	IEEE Access	Q1
6	Quantized Deep Residual Convolutional Neural Network for Image-Based Dietary Assessment	Ren Zhang Tan	Xinying Chew	IEEE Access	Q1
7	Filter-Based Multi-Objective Feature Selection Using NSGA III and Cuckoo Optimisation Algorithm	Ali Muhammad Usman	Umi Kalsom Yusof	IEEE Access	Q1
8	A New Chaotic Image Watermarking Scheme based on SVD and IWT	Wafa' Hamdan Alshoura	Zurinahni Zainol	IEEE Access	Q1

Q2 Publications (2020)					
No	Paper Title	First Author (Student)	Main Supervisor	Journal Name	Quartile
1	Improved deep learning framework for fish segmentation in underwater videos	Nawaf Farhan Funkur Alshdaifat	Abdullah Zawawi Talib	Ecological Informatics	Q2
2	Feature Selection for High-Dimensional and Imbalanced Biomedical Data Based on Robust Correlation Based Redundancy and Binary Grasshopper Optimization Algorithm	Garba Abdulrauf Sharifai	Zurinahni Zainol	Genes	Q2
3	HoneyDetails: A prototype for ensuring patient's information privacy and thwarting electronic health record threats based on decoys	Abiodun Esther Omolara	Aman Jantan	Health Informatics Journal	Q2
4	Breast Self-Examination System Using Multifaceted Trustworthiness: Observational Study	Rajes Khana	Manmeet Mahinderjit Singh	JMIR Medical Informatics	Q2
5	Discovering Informative Features in Large-scale Landmark Image Collection	Alaa Alzoubi	Gan Keng Hoon	Journal of Information Science	Q2

Q1 Publications (2019)					
No	Paper Title	First Author (Student)	Main Supervisor	Journal Name	Quartile
1	EEG Signals Denoising Using Optimal Wavelet Transform Hybridized With Efficient Metaheuristic Methods	Zaid Abdi Alkareem Alyaseri	Ahamad Tajudin Khader	IEEE Access	Q1
2	Link-based multi-verse optimizer for text documents clustering	Ammar Kamal Abasi	Ahamad Tajudin Khader	Applied Soft Computing	Q1
3	A new approach for intrusion detection system based on training multilayer perceptron by using enhanced Bat algorithm	Waheed A. H. M. Ghanem	Aman Jantan	Neural Computing and Applications	Q1
4	Automatic ontology construction from text: a review from shallow to deep learning trend	Fatima N. Al-Aswadi	Huah Yong Chan	Artificial Intelligence Review volume	Q1
5	Enhanced digital chaotic maps based on bit reversal with applications in random bit generators	Moatsum Alawida	Azman Samsudin	Information Sciences	Q1
6	Digital Cosine Chaotic Map for Cryptographic Applications	Moatsum Alawida	Azman Samsudin	IEEE Access	Q1
7	Deterministic chaotic finite-state automata	Moatsum Alawida	Azman Samsudin	Nonlinear Dynamics	Q1
8	Comprehensive Review of Artificial Neural Network Applications to Pattern Recognition	Oludare Isaac Abiodun	Aman Jantan	IEEE Access	Q1
9	Survey on the Incorporation of NDN/CCN in IoT	Ahed Aboodi	Tat-Chee Wan	IEEE Access	Q1
10	An enhanced Bat algorithm with mutation operator for numerical optimization problems	Waheed A. H. M. Ghanem	Aman Jantan	Neural Computing and Applications	Q1
11	A new hybrid digital chaotic system with applications in image encryption	Moatsum Alawida	Azman Samsudin	Signal Processing	Q1
12	Enhancing unimodal digital chaotic maps through hybridisation	Moatsum Alawida	AzmanSamsudin	Nonlinear Dynamics volume	Q1
13	An artificial bee colony algorithm with a Modified Choice Function for the traveling salesman problem	Shin Siang Choong	Li-Pei Wong	Swarm and Evolutionary Computation	Q1
14	An image encryption scheme based on hybridizing digital chaos and finite state machine	Moatsum Alawida	Azman Samsudin	Signal Processing	Q1
15	A Deception Model Robust to Eavesdropping Over Communication for Social Network Systems	Abiodun Esther Omolara	Aman Jantan	IEEE Access	Q1
16	EEsRA: Energy Efficient Scalable Routing Algorithm for Wireless Sensor Networks	Eyman Fathehrhman Ahmed Elsmany	Mohd Adib Omar	IEEE Access	Q1
17	A survey on techniques to handle face recognition challenges: occlusion, single sample per subject and expression	Badr Lahasan	Syaheerah Lebai Lutfi	Artificial Intelligence Review	Q1

Q2 Publications (2019)					
No	Paper Title	First Author (Student)	Main Supervisor	Journal Name	Quartile
1	Training a Neural Network for Cyberattack Classification Applications Using Hybridization of an Artificial Bee Colony and Monarch Butterfly Optimization	Waheed A. H. M. Ghanem	Aman Jantan	Neural Processing Letters	Q2
2	Formal knowledge model for online social network forensics	Humaira Arshad	Aman Jantan	Computers & Security	Q2
3	Spatial information extraction from travel narratives: Analysing the notion of co-occurrence indicating closeness of tourist places	Erum Haris	Keng Hoon Gan	Journal of Information Science	Q2

Q1 Publications (2020)

No	Paper Title	First Author (Student)	Main Supervisor	Journal Name	Quartile
1	An Efficient Intrusion Detection Model Based on Hybridization of Artificial Bee Colony and Dragonfly Algorithms for Training Multilayer Perceptrons	Waheed Ali H. M. Ghanem	Aman Jantan	IEEE Access	Q1
2	Bluetooth Low Energy Mesh Networks: Survey of Communication and Security Protocols	Muhammad Rizwan Ghor	Tat-Chee Wan	Sensors	Q1
3	Critical Success Factors for Big Data: A Systematic Literature Review	Zaher Ali Al-Sai	Rosni Abdullah	IEEE Access	Q1
4	SenseCrypt: A Security Framework for Mobile Crowd Sensing Applications	Nsikak Pius Owoh	Manmeet Mahinderjit Singh	Sensors	Q1
5	A New Hash Function Based on Chaotic Maps and Deterministic Finite State Automata	Moatsum Alawida	Azman Samsudin	IEEE Access	Q1
6	Quantized Deep Residual Convolutional Neural Network for Image-Based Dietary Assessment	Ren Zhang Tan	Xinying Chew	IEEE Access	Q1
7	Filter-Based Multi-Objective Feature Selection Using NSGA III and Cuckoo Optimisation Algorithm	Ali Muhammad Usman	Umi Kalsom Yusof	IEEE Access	Q1
8	A New Chaotic Image Watermarking Scheme based on SVD and IWT	Wafa' Hamdan Alshoura	Zurinahni Zainol	IEEE Access	Q1

Q2 Publications (2020)					
No	Paper Title	First Author (Student)	Main Supervisor	Journal Name	Quartile
1	Improved deep learning framework for fish segmentation in underwater videos	Nawaf Farhan Funkur Alshdaifat	Abdullah Zawawi Talib	Ecological Informatics	Q2
2	Feature Selection for High-Dimensional and Imbalanced Biomedical Data Based on Robust Correlation Based Redundancy and Binary Grasshopper Optimization Algorithm	Garba Abdulrauf Sharifai	Zurinahni Zainol	Genes	Q2
3	HoneyDetails: A prototype for ensuring patient's information privacy and thwarting electronic health record threats based on decoys	Abiodun Esther Omolara	Aman Jantan	Health Informatics Journal	Q2
4	Breast Self-Examination System Using Multi-faceted Trustworthiness: Observational Study	Rajes Khana	Manmeet Mahinderjit Singh	JMIR Medical Informatics	Q2
5	Discovering Informative Features in Large-scale Landmark Image Collection	Alaa Alzoubi	Gan Keng Hoon	Journal of Information Science	Q2

Q1 Publications (2019)					
No	Paper Title	First Author (Student)	Main Supervisor	Journal Name	Quartile
1	EEG Signals Denoising Using Optimal Wavelet Transform Hybridized With Efficient Metaheuristic Methods	Zaid Abdi Alkareem Alyasseri	Ahamad Tajudin Khader	IEEE Access	Q1
2	Link-based multi-verse optimizer for text documents clustering	Ammar Kamal Abasi	Ahamad Tajudin Khader	Applied Soft Computing	Q1
3	A new approach for intrusion detection system based on training multilayer perceptron by using enhanced Bat algorithm	Waheed A. H. M. Ghanem	Aman Jantan	Neural Computing and Applications	Q1
4	Automatic ontology construction from text: a review from shallow to deep learning trend	Fatima N. Al-Aswadi	Huah Yong Chan	Artificial Intelligence Review volume	Q1
5	Enhanced digital chaotic maps based on bit reversal with applications in random bit generators	Moatsum Alawida	Azman Samsudin	Information Sciences	Q1
6	Digital Cosine Chaotic Map for Cryptographic Applications	Moatsum Alawida	Azman Samsudin	IEEE Access	Q1
7	Deterministic chaotic finite-state automata	Moatsum Alawida	Azman Samsudin	Nonlinear Dynamics	Q1
8	Comprehensive Review of Artificial Neural Network Applications to Pattern Recognition	Oludare Isaac Abiodun	Aman Jantan	IEEE Access	Q1
9	Survey on the Incorporation of NDN/CCN in IoT	Ahed Aboodi	Tat-Chee Wan	IEEE Access	Q1
10	An enhanced Bat algorithm with mutation operator for numerical optimization problems	Waheed A. H. M. Ghanem	Aman Jantan	Neural Computing and Applications	Q1
11	A new hybrid digital chaotic system with applications in image encryption	Moatsum Alawida	Azman Samsudin	Signal Processing	Q1
12	Enhancing unimodal digital chaotic maps through hybridisation	Moatsum Alawida	AzmanSamsudin	Nonlinear Dynamics volume	Q1
13	An artificial bee colony algorithm with a Modified Choice Function for the traveling salesman problem	Shin Siang Choong	Li-Pei Wong	Swarm and Evolutionary Computation	Q1
14	An image encryption scheme based on hybridizing digital chaos and finite state machine	Moatsum Alawida	Azman Samsudin	Signal Processing	Q1
15	A Deception Model Robust to Eavesdropping Over Communication for Social Network Systems	Abiodun Esther Omolara	Aman Jantan	IEEE Access	Q1
16	EESRA: Energy Efficient Scalable Routing Algorithm for Wireless Sensor Networks	Eyman Fathelrhman Ahmed Elsmay	Mohd Adib Omar	IEEE Access	Q1
	A survey on techniques to handle face recognition challenges: occlusion, single sample per subject and expression	Badr Lahasan	Syaheerah Lebai Lutfi	Artificial Intelligence Review	Q1

Q2 Publications (2019)					
No	Paper Title	First Author (Student)	Main Supervisor	Journal Name	Quartile
1	Training a Neural Network for Cyberattack Classification Applications Using Hybridization of an Artificial Bee Colony and Monarch Butterfly Optimization	Waheed A. H. M. Ghanem	Aman Jantan	Neural Processing Letters	Q2
2	Formal knowledge model for online social network forensics	Humaira Arshad	Aman Jantan	Computers & Security	Q2
3	Spatial information extraction from travel narratives: Analysing the notion of co-occurrence indicating closeness of tourist places	Erum Haris	Keng Hoon Gan	Journal of Information Science	Q2

CSPC 2020 Organizing Committee

COMMITTEE

Advisor: Professor Dr. Azman Samsudin

General Chair: Dr. Gan Keng Hoon

General Co-Chair: Dr. Pantea Keikhosrokiani

3MT:

Dr. Manmeet Mahinderjit Singh

Ms. Fatima Al-Aswadi

Mr. Bello, Rotimi-Williams

Registration:

Dr. Gan Keng Hoon

Mr. Ferdinand Murni Hamundu

Mr. Bello, Rotimi-Williams

Souvenir & Prizes:

Ms. Eliza Yasmin

Mr. Arief Ramadhan Juswa

Ms. Fakhitah Ridzuan

Website & Program Book:

Dr. Pantea Keikhosrokiani

Mr. Abrar Noor Akramin Kamarudin

Mr. Ali Olow Jimale

Poster Competition:

Dr. Manmeet Mahinderjit Singh

Mr. Zahid Iqbal

Mr. Aurangzeb Muzammil

Mr. Yong Kuan Shyang

Special Session:

Dr. Azleena Mohd Kassim

Assoc. Prof. Dr. Cheah Yu-N

Ms. Haziqah Shamsudin

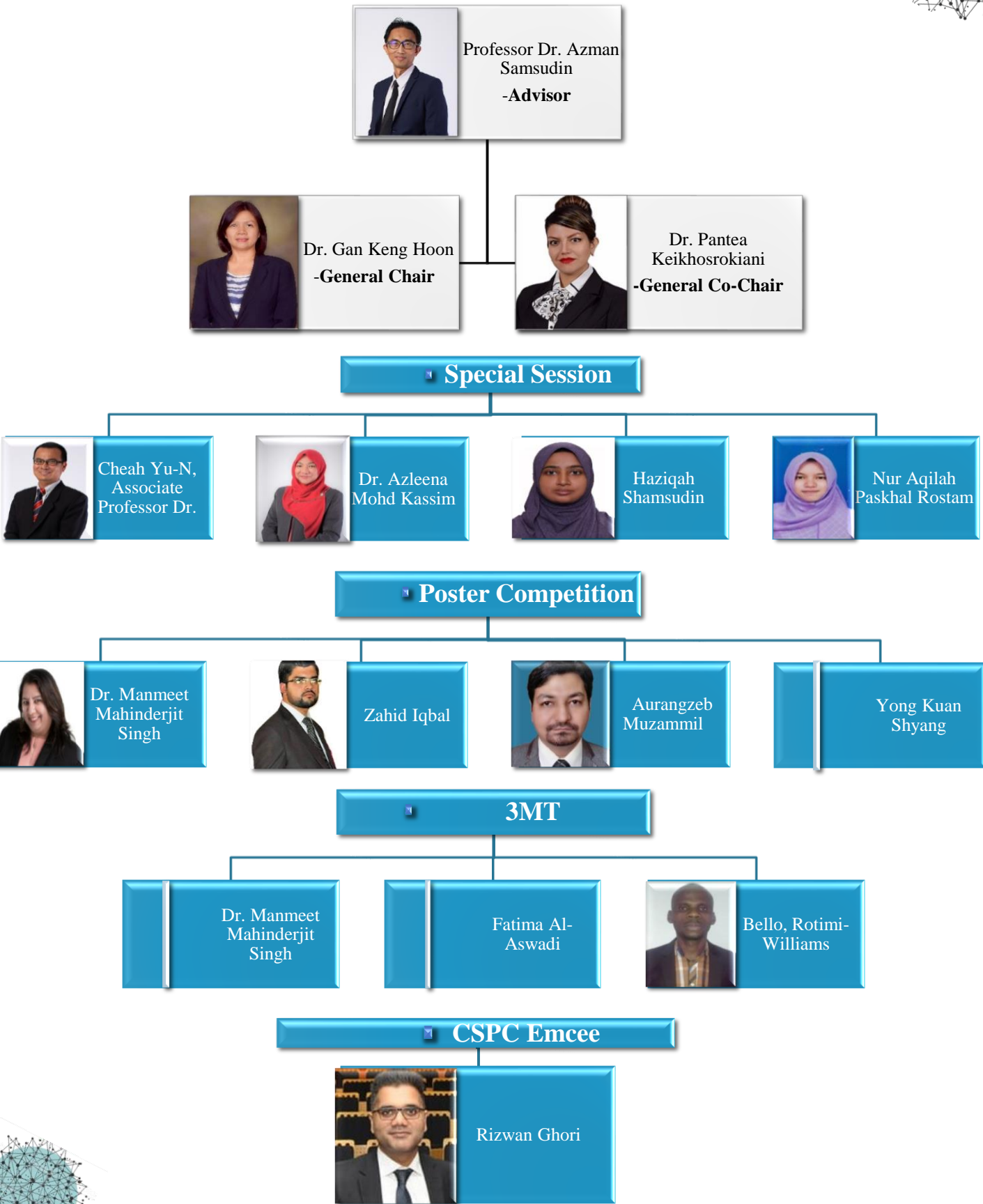
Ms. Nur Aqilah Paskhal Rostam

CSPC Emcee:

Mr. Rizwan Ghori

Logistics & Printing

Mr. Muhamad Hadzri Yaakop



Souvenir & Prizes



Ms. Eliza Yasmin



Arief Ramadhan
Juswa



Fakitah Ridzuan

Registration



Dr. Gan Keng Hoon



Ferdinand Murni
Hamundu



Bello, Rotimi-
Williams

Website & Program Book



Dr. Pantea
Keikhosrokian



Abrar Noor
Akramin Kamarudin



Ali Olow Jimale

Logistics & Printing



Muhamad Hadzri Yaakop



SCHOOL OF COMPUTER SCIENCES UNIVERSITI SAINS MALAYSIA



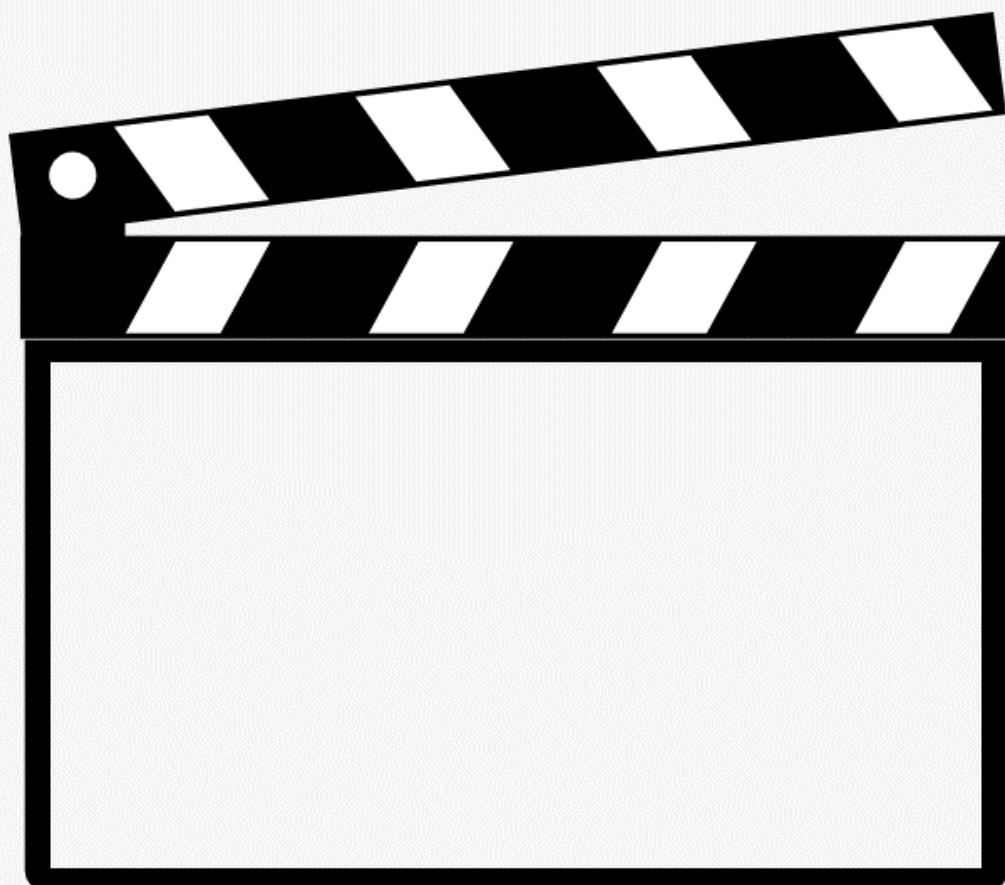
Contact us:

School of Computer Sciences, Universiti Sains Malaysia,
11800 Pulau Pinang, Malaysia.

Tel: +604-653 3647/3610 | Fax: +604-653 3335/4759

Email: cs@usm.my

Acknowledgement



Thank You 😊

CSPC 2020 Organizing Committee