FCSIT

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Dean's Message

It is my pleasure to welcome you to our latest issue of the FCSIT Research Bulletin for December 2017 with the theme "Towards Industrial Revolution 4.0". The theme chosen for this edition reflects the current interest of researchers, industry players, policy makers and the general public on two hotly discussed and debated topic which are the Fourth Industrial Revolution (IR 4.0) and the Digital Economy Initiative of the Sarawak State Government.

The IR 4.0 is the term given to the current trend of automation and data exchange mainly in the manufacturing technologies but has also been widely adopted in various other sectors as well. The IR 4.0 includes nine (9) pillars of technology which includes cyber-physical system, Big Data, Cybersecurity, Internet of Things (IoT), Cloud Computing, and so on. On the other hand, the Digital Economy Initiate is an idea mooted by the Honorable Chief Minister of Sarawak, Datuk Patinggi Abang Abdul Rahman Zohari in April 2017. The objective of the Digital Economy initiative is to transform the current economic model of Sarawak which is based on natural resources towards an economy which is based on digital technology. These developments provide ample opportunities in term of research, development, and commercialization for the researchers from the university and specifically to our faculty which is directly aligned within the areas of interest in the IR 4.0 and also the Digital Economy Initiative of Sarawak.

The research at the faculty is progressing well with more than 70% of the lecturers are Principle Investigator for internal and external research grants. Furthermore, there are more than 100 postgraduate students who are actively involved in various research projects in the faculty. The research bulletin covers all research areas in the faculty and seeks to share the latest research activities and finding from various research projects within the faculty. Sharing research finding is key to ensure that the research can benefit others and part and parcel of research activities.

We hope that this Research Bulletin will provide information to the readers on our current research activities and will stimulate further research and collaboration in relevant areas. Finally, I would to express my sincere gratitude to the Editor-in-Chief of this Research Bulletin, Dr. Dayang NurFatimah, the editorial team, and to all contributors to the content within the bulletin, for all your effort in making sure the successful publication of the FCSIT Research Bulletin 2017.

Associate Professor Dr Johari Abdullah
Dean
Faculty of Computer Science and Information Technology

Editor's Note

Dr Dayang NurFatimah Awang Iskandar, Deputy Dean (Postgraduate and Research)

The year 2017 have been very challenging in all aspects from teaching-learning, research, industry engagements and commercialisation. Nevertheless, my sincere and utmost congratulations to all members of FCSIT for achieving the KPIs set by UNIMAS. To mention some of the SF2 KPI (Excellence in Innovation Ecosystem), FCSIT publication and Principle Investigators KPI exceeded the targeted number. FCSIT, with its tagged line *"Focus on Individual Transformation"* will continue to strive in our future endeavours.

Within the pages of FCSIT Research Bulletin 2017, amongst many stories, you will read our outstanding project and invention which have won gold medal internationally at SIIF 2017. Not to forget, on the national level invention competition FCSIT also contributed a gold medal at ITEX'17. Apart from that, the best paper award abstracts were included as our publication highlight. This version of research bulletin is unique as it embeds augmented reality features for the readers to explore, which I encourage you to try.

Our flagship conference, CITA'17 celebrated its 10^{th} anniversary. As a conference chair, I know that the success for the conference depends ultimately on support from others. In particular, I thank CITA'17 advisors for their endless guidance; the reviewers for their thorough and timely reviewing of the papers; and all committee members who have all worked extremely hard for the details of important aspects of the conference programs and social activities. Special appreciation to our gold sponsors—the State Service Modernisation Unit, Sarawak Chief Minister's Department that has always been supportive for CITA since 1999.

FCSIT played active roles and involvement in activities related to UNIMAS 25 years. We had continuously participated in all innovation expo through the year. This year's InTEX, FCSIT showcased 61 projects, winning 11 gold medals, 17 silver medals and 22 bronze medals. We were also involved in realising the Sarawak Digital Economy initiatives. FCSIT aims to be one of the main player for Industrial Revolution 4.0 in Sarawak.

I would like to take this opportunity to thank all the editorial team members who had contributed their time and effort. The FCSIT activity writers, ISITI and IMAST also had a significant role in providing the information needed, without them, this research bulletin is impossible.

FCSIT Research Bulletin @ 2017

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Advisory:
Assoc. Prof. Dr Johari Abdullah

Editor-in-Chief:
Dr Dayang NurFatimah Awang Iskandar

Members:
Dr Sze San Nah
Dr Suriati Khartini Jali
Ahmad Hadinata Fauzi
Mohd Johan Ahmad Khiri

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Front Page Design

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Editorial Policy

The FCSIT Research Bulletin is an annual publication of the Faculty of Computer Science and Information Technology, UNIMAS. The purpose of FCSIT Research Bulletin is to disseminate information that represent the current state of the research activities, publications, research findings, training, conferences and seminar conducted by the academicians in the faculty.

Credits

FCSIT Research Bulletin@2017 was written using paperTEX and typeset using the LaTeX 2_ε document preparation system. We thank ISITI, IMAST and all authors who had contributed their writings.

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BRING IMAGES IN THIS RESEARCH BULLETIN TO LIFE USING

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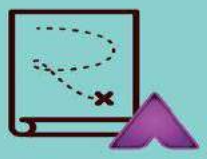

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TRY YOUR FIRST FCSIT RESEARCH AURA WITH US

Scan the picture on the left here and you'll be introduced to **"What is Industrial Revolution 4.0?"**

4 UNIMAS Research Cluster

1. Engineering and Technology
2. Natural Sciences
3. Arts, Humanities & Management
4. Medicine and Life Sciences

FCSIT Research Clusters

AUA

Affordable Ubiquitous Access

Network Security, Wireless Sensor & Communication Technology

COMO

Computational Modelling

Computational Epidemiology, Computational Mathematics, Operation Research

SEW

Software Engineering Workbench

Integrated Software Modelling
Crowd Behaviour Modeling and Simulation

KT

Knowledge Technology

Knowledge Engineering, Knowledge Management, Service Learning, Human-Centered Computing, Biometrics, Gamification, Medical Image Processing, Analysis and Visualization

FCSIT Research Groups

Affordable Ubiquitous Access (AUA)

Network Security Research Group aim is to carry out network security related research as a group encompass both Network Security as well as Information Security.

Wireless Sensor & Communication Technology (WiSeCT) Research Group conducts interdisciplinary research and development in the following research areas: Wireless sensor communication protocols and technologies; Wireless Ad-hoc and Sensor Networks (WASNs); Wireless Mobile Ad-hoc Sensor Networks (MASNETs); Vehicular Ad-hoc Sensor Networks (VASNETs); Internet of Things (IoTs); and Fault Tolerant System (FTS).

Software Engineering Workbench (SEW)

Integrated Software Modelling Research Group works on the integration of different software models (NL, OO, FM) via standard internal representation (XML). To enable the communication between these three different models. It is necessary to understand the syntax and semantics of formal model(FM), natural language(NL) and object-oriented modelling language.

Crowd Behaviour Modeling and Simulation (CBMS) Research Group focuses on studying and explore the crowd behaviour i.e. pedestrian movements during evacuating process from crowded spaces via crowd modelling and simulation.

Knowledge Technology (KT)

Knowledge Engineering Research Group (KE) aim to aggregate all researchers in the related disciplines or crossed disciplines to collaborate to solve pressing problems in knowledge engineering. The ultimate goal of KER is addressing problem of knowledge extraction, representation, and generation of new knowledge.

Knowledge Management Research Group (KM) conduct research related to techno-centric with a focus on technology, ideally those that enhance knowledge sharing and creation; organisational with a focus on how an organisation can be designed to facilitate knowledge processes best; and ecological with a focus on the interaction of people, identity, knowledge, and environmental factors as a complex adaptive system akin to a natural ecosystem.

Human-Centered Computing Research Group aim is to investigate how we can improve the quality of interaction and experience between humans and technology.

Biometric Research Group study the methods and algorithms to improve detection, feature extraction, identification, authentication and recognition of human, animals, plants and other non-living objects, that uses attributes such as face, retina, behaviour, fingerprints, patterns and composition, distinct features and etc.

Gamification Research Group exploits multidisciplinary expertise including game-based learning, design and computational thinking, creative thinking, social informatics and pedagogy. We have recently received funding from NEWTON UK-SEA programme and will be building a lab suited as well for gamification. Existing collaborations are with Disruptive Media Learning Lab and Coventry University, United Kingdom.

Medical Image Processing, Analysis, and Visualization Research Group covers the processing, quantitative analysis, semantic interpretation and visualization of medical images. The aim of this group are to develop computational methods and algorithms to analyze and quantify biomedical data; apply information analysis to biomedical research problems; and develop tools for analysing biomedical data to support the discovery and advancement of biomedical knowledge.

Service Learning Research Group engages in collaborative research in the area of Service Learning. This group will work closely with other research groups to address developments in subject-related Service Learning in mentioned research areas as above, and incorporating the ability to engage the organisations and the community in responding to their needs towards achieving a sustainable community.

Computational Modelling (COMO)

Computational Modelling Research Group aims to establish research collaboration with industry on topics motivated by industrial applications and to provide assistance to industry. The research areas include but not limited to disease modelling, pollution dispersal, thread annular flow, main power scheduling and statistical modelling. The research works will serve as a bridge that connects computing and mathematics technology with the sciences.

Computational Epidemiology Research Group aims to complement the investigation of disease outbreaks by utilizing mathematical computational approaches to understand the epidemiology trend and to provide useful epidemiological data for public health management of the outbreak.

Associate Professor Dr Jane Labadin

Field of expertise

Mathematical and Computational Modeling

Contributions

- Pioneered the Computational Science Undergraduate Programme
- Proving Bipartite Network Model for Mosquito-Borne Disease Hotspot Detector
- Preferred reviewer for Disease Modeling research field
- Published close to 100 research articles
- Supervised PhD and MSc research students
- External examiner for postgraduate students

UNIMAS 25 years of commitment towards excellence
UNIVERSITI MALAYSIA SARAWAK 1992-2017

Associate Professor Dr Tan Chong Eng

Field of expertise

Broadband Wireless Access, Rural Long Range Communications and Green ICT Architecture

Contributions

- Pioneered the first long range wireless extension system for the famous eBario telecentre connecting 7 nearby villages in 2009 and thereafter designed the Power Self-sufficient Long Range Wireless Relay Station in 2010 for eBario 2.0.
- Initiator of the Virtual Telecentre concept for the next generation rural telecentre implementation, to achieve greater cost effectiveness and deployment mobility.
- Leading the Green ICT telecentre design solution for supporting the Telecentre Program for Orang Asli project that deployed 4 rural telecentres in remote Orang Asli villages in Peninsular Malaysia.
- Supervised more than 30 postgraduate students at various postgraduate programs including PhD and MSc.
- Published close to 100 research articles in the areas of communication networks and computing systems.

Gold Medal for the "Library-in-a-Box" Project at Seoul International Invention Fair 2017.

Researchers: AP Dr. Johari Abdullah, Nurul Zawiyah Mohamad and Japri Bujang Masli

AP Dr Johari at the SIIF 2017 UNIMAS booth at COEX.

This year the 13th annual of Seoul International Invention Fair - SIIF 2017 - initiated on 30 November 2017 and lasted for four days until 3rd December 2017. As one of the world's largest international invention fairs, SIIF 2017 showcases a total of 630 pieces of inventions from 30 participating countries including Poland, Malaysia, France, the USA, Bosnia and Herzegovina, Yemen, Ghana, Japan, Lebanon, China, Egypt, Germany, Vietnam, Singapore, Russia, Croatia, India, Iran, Taiwan, UAE, Thailand, Indonesia, Mexico and Uzbekistan. As in the previous editions, SIIF 2017 was organized by the Korea Invention Promotion Association (KIPA) under the patronage of World Intellectual Property Organization (WIPO) and International Federation of Inventors' Associations (IFIA). This year, UNIMAS submitted a total of six projects for SIIF and managed to obtained 2 Gold, 2 Silver, and 1 Bronze medals.

One of the project that managed to bag the Gold Award is the "Library in a Box" (LiaB) project, led by Associate Professor Dr Johari Abdullah from the Faculty of Computer Science and IT, UNIMAS, together with another 2 team members, Mdm Nurul Zawiyah Mohamad from FCSIT and Mr Japri Bujang Masli from Pustaka Negeri Sarawak (Sarawak State Library).

The main objective of LiaB is to bridge the knowledge divide especially in the areas of Sarawak by providing low cost, robust, portable, low power and scalable solution that are able to provide access to reference and reading material in digital format. The target users for the LiaB is mainly school children and also teachers but can also be used by any member of the public within the area.

For the past 20 years, there are various projects and implementation were deployed in Malaysia to address the issue of digital divide mainly in rural areas especially in Sabah and Sarawak. A few notable and successful projects are the eBario project, eLamai, and eBedian, implemented by the Institute of Social Informatics and Technology Innovation (ISITI)[1] of Universiti Malaysia Sarawak (UNIMAS). Various government agencies and also from the private sectors, plus NGOs have deployed their own initiatives such as the Pusat Internet 1 Malaysia (PI1M) by SKMM[2] , 1BestariNet by Ministry of Education Malaysia, and others. Although these telecentre projects in general have addressed the issue of digital divide, there are still many areas, especially in Sabah and Sarawak, which still do not have access to the world, and left out from the benefits of connected world through Internet. At the same time, there are other technical challenges for existing telecentre projects such as: (1) slow speed of Internet connection, and (2) loss of connectivity due to power failure, insufficient power, and factors that affect connectivity for satellite connection. These issues can in turn negatively affect the experience of the end users and might deter them from further using the services. Furthermore, the current physical libraries located in rural areas is not cost effective and logistically challenging (physical space, maintenance, and transportation of the books). Due to these factors, the number of books is limited, and are not updated to the latest ver-

[1] http://www.isiti.unimas.my/
[2] Suruhanjaya Komunikasi dan Multimedia Malaysia http://pi1m.skmm.gov.my/PJL_FAQ.htm

sion or content. This in turn creates knowledge divide in the affected community.

The LiaB platform consist of three main components: (1) the hardware component consist of low power and low cost Single Board Computer in the form of Raspberry Pi, and (2) software component consists of the web server and other software, and (3) content, which can be customized to the needs of the end users and community. The content mainly curated from open access content without any charges such as the Wikipedia for Schools project, Khan Academy videos, Great Books of the World which focuses on well-known English literatures and many more. The usage of the LiaB unit is very simple, upon booting the unit through a portable power supply, it will take approximately 30 to 50 seconds for the unit to fully booted up. After that, any users with portable digital devices with WiFi access such as smartphone, tablet, and laptop can connect to the LiaB unit through WiFi connection. After connected to the unit, a user can open any web browser, key in the url of the local website in the unit and can immediately access the content within the local website. There is no Internet connection required since the content is hosted locally in the LiaB unit and can support up to 20 users at any one time. The system has been tested at a village in Telok Melano, Sarawak and also during the EBKF 2017 with good feedback from the users. Further pilots will be conducted in several areas within Sarawak and also telecentre projects in Peninsula Malaysia.

As a conclusion, the proposed LiaB platform is able to addressed the issues with the current implementation of telecentres, or a new site in rural areas, where there is a need to provide offline access to reading and reference material especially for children. It is hoped that this solution will be able to reduce or eliminate the knowledge divide in the rural areas and improve the rural community standard of living.

AP Dr. Johari with the Gold Medal Award for the Library a Box project.

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Library in a Box

LOW COST, PORTABLE, AND SCALABLE OFFLINE DIGITAL LIBRARY SOLUTION

"BRIDGING THE KNOWLEDGE DIVIDE"

INTRODUCTION

- There are still many areas in Sabah and Sarawak located in rural areas.
- Access to reading/reference material, especially in remote/rural areas in Sarawak.
- Basic needs for teaching/learning activities.

CHALLENGES

FOR PHYSICAL LIBRARY

- COST
- LOGISTIC
  - PHYSICAL SPACE
  - MAINTENANCE
  - TRANSPORTATION
- HUMAN RESOURCE

FOR CURRENT TELECENTRES

- COST
- SCALABILITY
- COVERAGE
- SPEED
- CONTROL

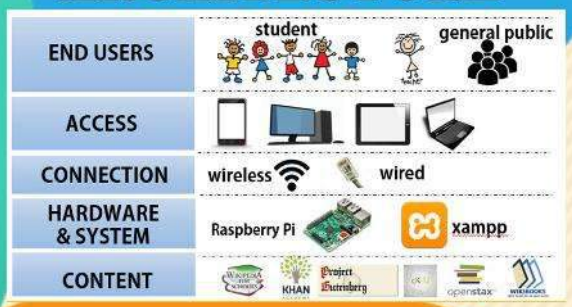
CONSEQUENCES

- Unable to provide wider coverage in term of reading material (not scalable).
- Limited number of titles.
- Knowledge Divide.

OBJECTIVE

Provide offline reading/reference material through electronic medium using Raspberry Pi as the hardware platform

SYSTEM ARCHITECTURE



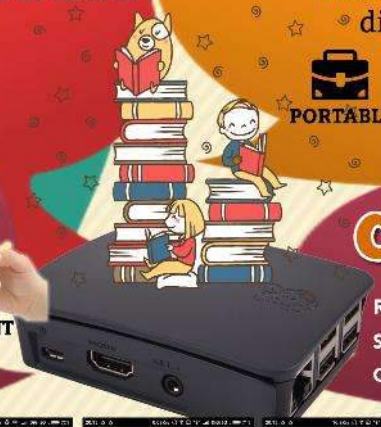
SOLUTION

Need solution in disseminating information and knowledge in digital format which is:

PORTABLE OFFLINE LOW-COST SCALABLE

INNOVATION

HARDWARE ⊕ WEB PORTAL ⊕ CONTENT



COMMERCIAL

RM60,000 INNOVATION FUND FOR REPLICATION
SOCIAL ENTERPRISE MODEL
GOVERNMENT DEPLOYMENT

RESEARCHERS

JOHARI ABDULLAH
PROJECT LEADER/ASSOCIATE PROFESSOR
FACULTY OF COMPUTER SCIENCE & IT
UNIVERSITI MALAYSIA SARAWAK
EMAIL: ajohari@unimas.my
MOBILE: +60 16 878 9914

NURUL ZAWIYAH
LECTURER
FACULTY OF COMPUTER SCIENCE & IT
UNIVERSITI MALAYSIA SARAWAK
EMAIL: nnzawiyah@unimas.my
LANDLINE: +6082 583767

JAPRI BUJANG MASLI
HEAD OF LIBRARY SERVICE
SARAWAK STATE LIBRARY
EMAIL: japribm@sarawak.gov.my
LANDLINE: +608 442000

UNIMAS InTex'17 Gold Winner

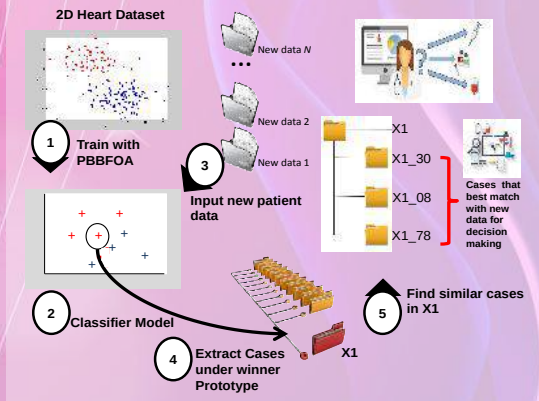
Prototype-Based Bacterial Foraging Optimization Algorithm Classifiers for Medical Datasets

Description

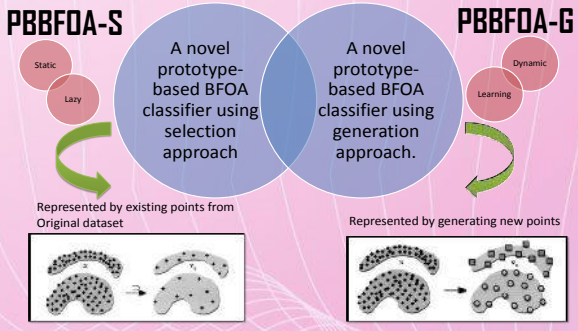
This project proposes two Prototype-Based Bacterial Foraging Optimization Algorithm classifiers for medical data classification by manipulating the global search capability of BFOA. To the best of our knowledge, no work has been done to fully utilize BFOA as a prototype-based classifier for medical datasets.

Commercial/Potential

Potentially applied as a clinical decision support system by combining **Prototype-Based Bacterial Foraging Optimization Algorithm classifier** with **case based reasoning** to **support decision making**



Novelty/Invention



Experimental Results

Classifiers / Datasets	Average Accuracy (%)/ Prototype			Average Time Complexity (sec)		
	PBBFOA-S	PBBFOA-G	GA	PBBFOA-S	PBBFOA-G	GA
WDBC (569)	89.98 / 12	96.66 / 10	85.40 / 17	200.4	28.0	469.2
WOBC (699)	96.00 / 16	97.86 / 10	93.42 / 20	161.9	16.2	296.1
WPBC (198)	58.16 / 13	77.18 / 10	46.87 / 16	62.0	9.9	67.5
HEART (270)	75.56 / 12	84.07 / 10	66.30 / 16	44.6	7.8	63.2
HEPA (155)	67.88 / 14	89.67 / 10	63.46 / 13	32.4	5.3	31.1
LIVER (345)	54.76 / 12	70.40 / 10	46.67 / 17	49.5	8.0	64.4
PARKINSON (195)	78.92 / 13	89.76 / 10	67.18 / 15	44.0	7.4	50.3
PIMA (768)	72.52 / 18	78.64 / 10	65.49 / 23	185.6	19.0	308.2
SPECT (267)	73.05 / 12	84.62 / 10	62.22 / 16	90.9	10.1	89.7
SPECTF (267)	72.31 / 12	83.87 / 10	66.67 / 16	113.5	16.9	166.5
BREAST1 (106)	51.64 / 16	72.64 / 18	45.55 / 16	15.1	4.0	9.3
DERMA (366)	54.90 / 12	96.18 / 28	48.63 / 17	122.2	43.3	192.8
HEARTC (303)	60.75 / 12	56.15 / 23	50.56 / 17	50.3	15.9	65.9
NTHYROID (215)	81.88 / 13	98.18 / 15	81.88 / 18	21.5	5.5	21.7
Average	**70.59 / 13**	**83.99 / 13**	**63.59 / 17**	**85.3**	**14.1**	**135.4**

Researchers:


Dr. Mohammad Bin Hossin (Leader, UNIMAS)


Dr. Stephanie Chua Hui Li (UNIMAS)


Faizol Mohd Suria (UNIMAS)

Acknowledgement:
This research project is fully funded by MoHE (FRGS/ICT02/(01)1145/2014(12)) and Universiti Malaysia Sarawak

UNIMAS InTex'17 Gold Winner

Smart Garbage Bin Using Internet of Things

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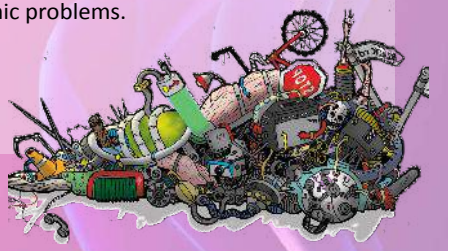
Domestic Waste / Garbage

In Malaysia, an estimation of **30,000 to 33,000 tonnes of waste are produced daily.** It can lead to surface water contamination, soil contamination, disease, global warming and so on, if these are not well managed.

These garbage bins are cleared by local waste collector periodically according to a pre-defined schedule.

What is the problem?

- Not efficient as the garbage collectors cannot determine the best time or the places that require the most urgent garbage collection.
- Overflow and late-to-be-cleared garbage bin can create hygienic problems.



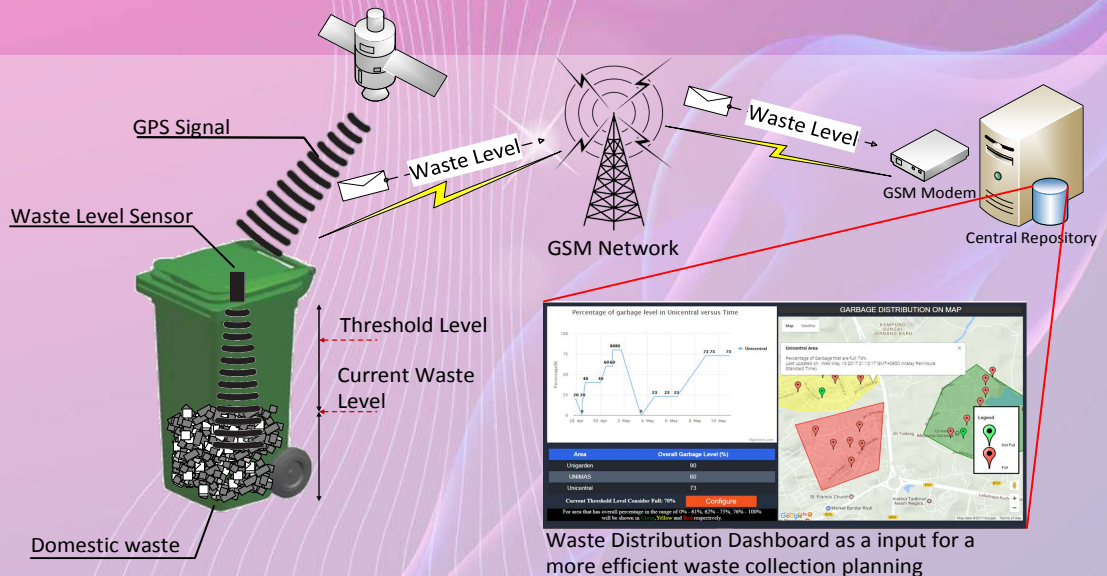
Novelty/Invention

1. Has not been used by any garbage collector company in Malaysia.
2. Able relay garbage information even without Internet connection.
3. Able to keep track the exact location of garbage bin

Commercial/Potential

1. Applicable to garbage collector companies.
2. Serve as input for a better waste collection schedulling.
3. Improve the effieciency use of man power for waste collection.

How it works?



Waste Distribution Dashboard as a input for a more efficient waste collection planning

Researchers:
Lau Sei Ping & Eric Wong Ing Koh
Faculty of Computer Science & Information Technology
Universiti Malaysia Sarawak

UNIMAS InTex'17 Gold Winner & PECIPTA 2017 Bronze Medal

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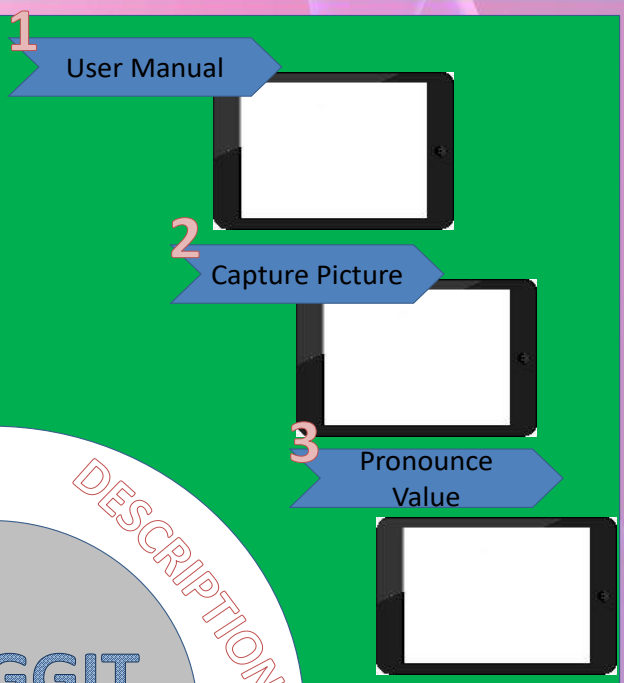
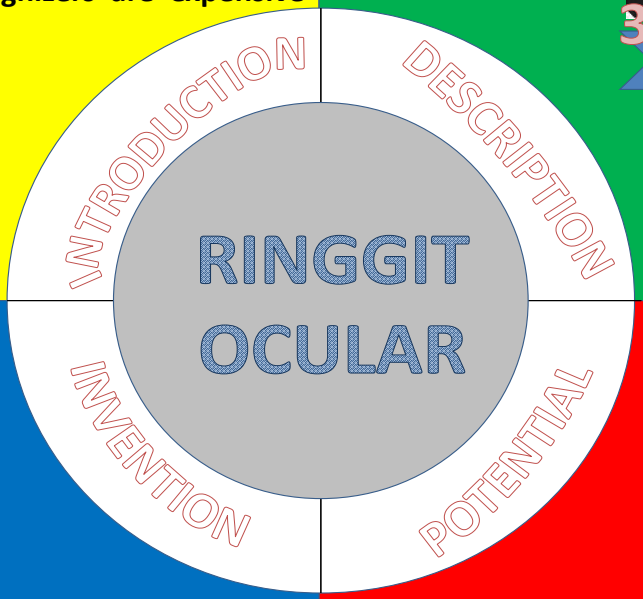
RINGGIT OCULAR
A Ringgit Note Recognizer for Visually Impaired People

- Money is a basic necessary for all, including visual impaired people
- New Ringgit notes posse difficulties for visual impaired people
- The braille marking is hard to be identified
- It is difficult and time consuming for visual impaired people to check their changes after each transaction
- Existing note recognizers are expensive and bulky





- Is the only app that able to recognize Ringgit
- Employ sophisticated image processing algorithms for note recognization through specific features
- Able to extract the exact value of each note and report their sum through text to speech

- According to a study of Dr Sunder in 2017, one in 10 children in Malaysia has an undiagnosed vision problem.
- According to a study of National Eye Survey, 41,300 Malaysia above the age of 50 were living with vision problem

Researchers:
Bong Chih How, FSKTM, UNIMAS
Ng Kar Chee, FSKTM, UNIMAS

Acknowledgement:
FSKTM, UNIMAS
RMIC, UNIMAS

UNIMAS InTex'17 Gold Winner

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MalZeroML

MALWARE BEHAVIOUR ANALYSIS USING MACHINE LEARNING

PRODUCT DESCRIPTION

Introduction

- Malware is a major cyber security threat
- 390,000 samples daily on average

Problem Statement

- Malware is becoming more complex and growing exponentially
- Malware labelling not standardised using CARO naming convention

Objective

- To research and develop an automated malware behaviour analysis framework
- Develop a module for standardised malware labelling

Collaboration

- F-Secure Anti-Malware Lab KL

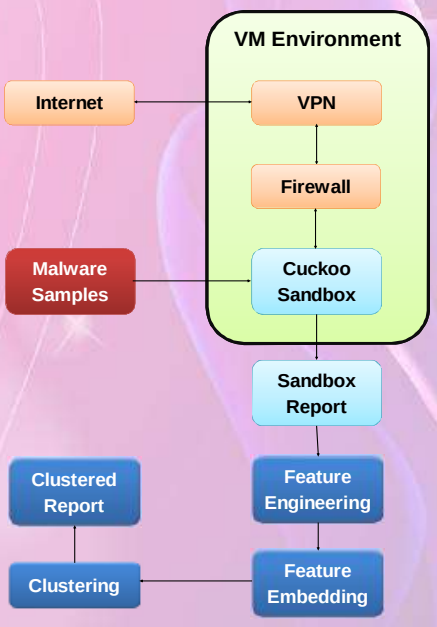
Publication

- Hierarchical Density-based Clustering of Malware Behaviour (2017)

NOVELTY / INVENTION

- Efficient clustering & anomaly detection of novel malware classes & variants
- Standardised malware labelling, attribution & characterization

Framework



Result

Algorithm	Precision	Recall	F-Measure
Hierarchical	0.921	0.913	0.917
DBSCAN	0.932	0.927	0.930
HDBSCAN	0.960	0.955	0.961

COMMERCIAL POTENTIAL

- Online automated malware behaviour analysis service

RESEARCHERS

Dr. Johari Abdullah
Senior Lecturer
Faculty of Computer Science & IT
UNIVERSITI MALAYSIA SARAWAK
Email: ajohari@gmail.com
Mobile : +6013 8769914

Navein Chanderan
MSc Computer Science
Faculty of Computer Science & IT
UNIVERSITI MALAYSIA SARAWAK
Email: Navein@hotmail.com
Mobile : +60 12-885 5477

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UNIMAS InTex'17 Gold Winner & PECIPTA 2017 Bronze Medal

COMPUTERIZED OPERATION THEATER DOCUMENTATION SYSTEM (COTDS)

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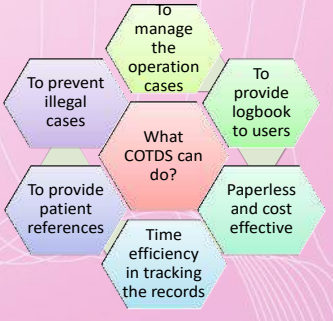
Product Description

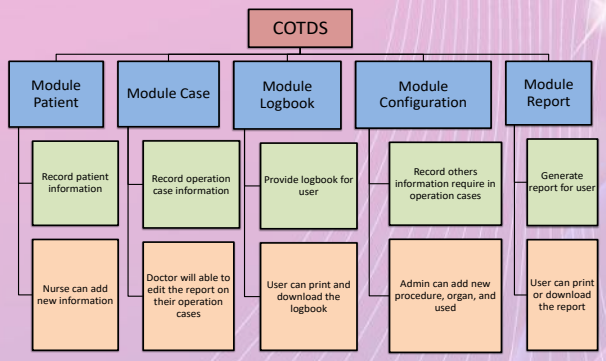
Record management system is very important to store information especially on operation cases. Sarawak General Hospital (SGH) is one of the organisation that still using manual approach in managing their records for the operation theatre records. Due to illegal cases happen in the operation theatre, thus, Computerized Operation Theatre Documentation System (COTDS) is developed.

- Objective: is to record the operation cases including surgery and anaesthetic in SGH by generating the report and log book of the cases.

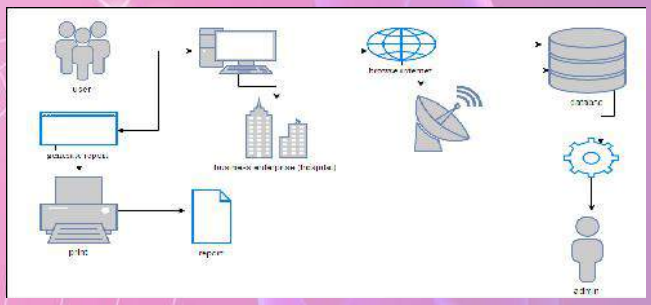


Novelty/Invention

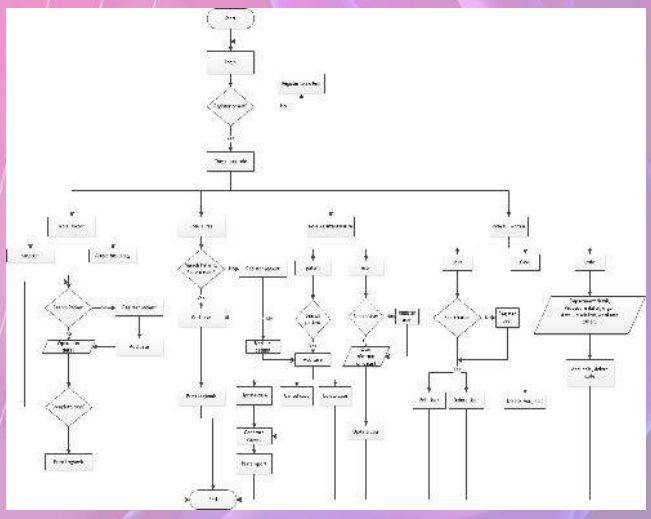
COTDS is a web-based system that provides five main modules for users to record the operation cases in SGH:



System Diagram



Flow Chart of COTDS



Commercial/Potential

COTDS will be used by the whole departments in SGH that providing Operation Theater service. Also suitable for:

- private/ government hospitals
- private/ government clinic
- any system that requires to manage records for Operation Theater cases

Researchers:

Suhaila binti Saee, Bessieca Anak Go, Dr Dayang Hanani binti Abg Ibrahim, Dr Johari Abdullah, Faiza Fuzannee binti Ibrahim

Acknowledgement:

ICT Department and Departments involved in Operation Theater of Sarawak General Hospital.

UNIMAS InTex'17 Gold Winner

"A VASNET FRAMEWORK TO SUPPORT DEVICE-TO-DEVICE (D2D) COMMUNICATION IN DISASTER MANAGEMENT SYSTEM (DMS)"

INTRODUCTION

The implementation of wireless technologies based on the Vehicular Ad-hoc Sensor Network (VASNET) may provide support to the Search And Rescue (SAR) team to operate effectively in natural disaster events, such as landslide, earthquake, flooding, and tsunami. VASNET has been suggested as an appealing communications technology that deals with the unexpected condition emerging during or after the disaster.

PROBLEM STATEMENT

The operations of SAR team are very challenging in such events due to the possible damages of the existing telecommunication infrastructures. The existing deployment of the cellular communications infrastructure may be partially or completely destroyed after the occurrence of these natural disasters. Thus, the current VASNET infrastructure must be able to support the infrastructure-less network by integrating other green wireless technologies that can benefit the SAR team, which can indirectly save more human lives and reduce the number of casualties.

OBJECTIVE

- To investigate the requirements to integrate green wireless technologies and VASNET.
- To design the heterogeneous framework for data dissemination in SAR operation based on VASNET and the selected wireless technologies
- To evaluate the suitability and functionality of the proposed framework in Disaster Management System (DMS).

METHODOLOGY

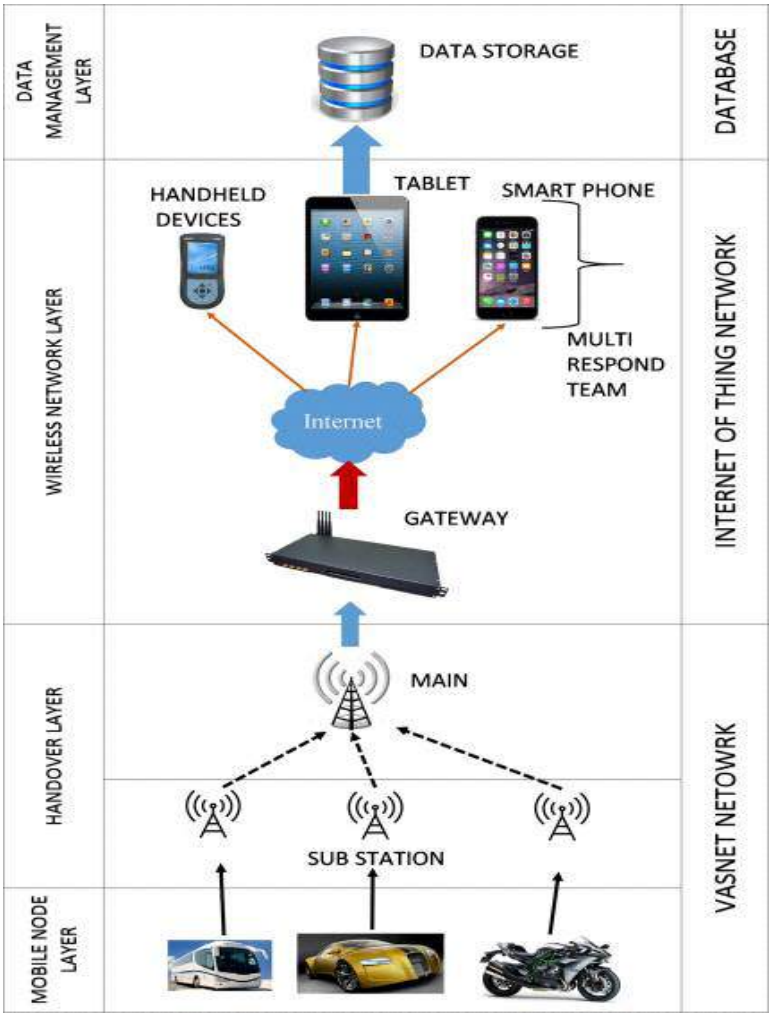
Through the extensive review of the existing VASNET framework and the investigation of the requirements for the integration of VASNET & wireless technology.

OUTCOME

The proposed integration of green wireless technologies and VASNET is to form a heterogeneous framework for data dissemination in SAR operations.

CONCLUSION

The proposed VASNET framework based on VASNET and wireless technologies are feasible to be applied on the real-time situation to reduce the number of casualties during the natural disaster. The use of the right mobile devices or smartphones within the IoT network on the proposed framework seems to be crucial in achieving the objective. Therefore, an open solution is required to combine the efforts of the SAR team members in such critical situation.



RESEARCHERS:
Dr. Mohamad Nazim Jambli, Sia Chiu Soon
Mohd Khairun Nasir Saadi, Sinarwati Mohamad Suhaili

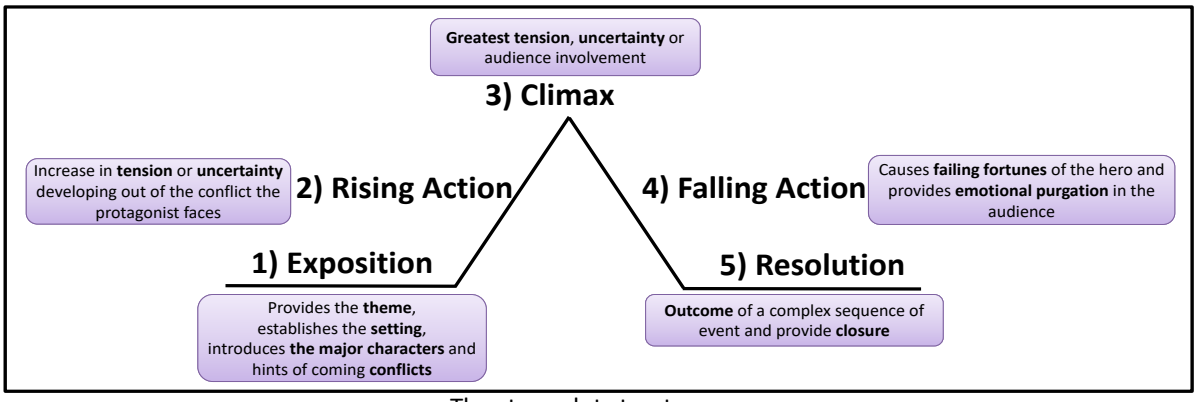
UNIMAS InTex'17 Gold Winner

A NOVEL TEXT SUMMARIZATION BASED ON STORY PLOT STRUCTURE

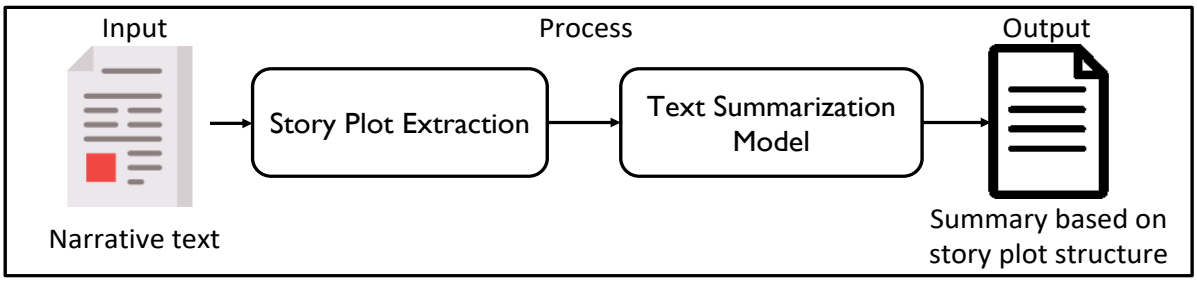
UNIVERSITI MALAYSIA SARAWAK

Product Description

This project proposes a new method of summarizing narrative text based on story plot structure. A story plot structure consists of five components which are exposition, rising action, climax, falling action and resolution. This structure is used as the basis to generate a summary. A reader's knowledge of a story is organized by a sequence of events based on the plot in a story. Therefore, this story plot summarizer will assist the interested reader to get the gist of the text in an effective way. A summary of a narrative text which reflects the way a reader understands a story can be generated.



The story plot structure



The proposed framework

Novelty/Invention

- First exploration of using story plot structure to summarize text
- Generate a summary based on five story plot components

Commercial/Potential

- Education - Summarize lengthy educational texts to reduce students' reading time
- News media - Deliver compact news stories to readers

Researchers:
Dr Stephanie Chua, AP Dr Bali Ranaivo-Malançon, Prof Dr Narayanan Kulathuramaiyer, Hazimah Iboi

Acknowledgement:
Funded by MoHE (F08/FRGS/1489/2016)
Faculty of Computer Science and IT, UNIMAS

UNIMAS InTex'17 Gold Winner

Augmented Reality Visualization of Flood for Kampung Git, Kuching, Sarawak

Product Description

- AR smart phone app to visualize different flood levels
- Creating realistic flood visualization
- Users are immersed within the flood environment
- The tool is interactive:
  - Users can interact with the app for the different level of rain and visualize the level of flood
  - Users can "walk" around the flood environment to have a clearer view and feel of the flood disaster
  - Users would be able to experience the flood disaster during day time and night time
- Besides AR mode, the app also provides a normal mode
  - Users can "walk" around the environment without the AR maker using touch screen

Novelty/Invention

- No flood visualization tool using AR in Malaysia yet
- No flood visualization tool that allows detailed "walk" through of the environment
- Flood disaster preparedness of public:
  - Ability of responders to react improve due to the familiarity of the similar scenarios
- Incorporate realistic audio-visual stimuli to convey more realistic environment

Commercial/Potential

- The prototype would be a valuable tool for research institutions, government agencies, besides public :
  - Flood disaster preparedness, disaster response training, policies makers
- Planned enhancement to the tool:
  - Real terrain data
  - Real rainfall density
  - Historical flooding data
  - Whole Kuching city or Malaysia

Researchers:
Chai Soo See (Leader), Wang Yin Chai, Wang Hui Hui, Narayan K.

Acknowledgement: PRGS/SG07/(01)/1327/2015(1)

Developers:
Betty Yii Siew Chi, Koo Zhong Hao, Lee Chung Hong, Liang Ming Zhan, Yap Chun Hoong & Yap Chia Li

UNIMAS InTex'17 Gold Winner

UNIMAS
UNIVERSITI MALAYSIA SARAWAK

New Technique for Cardiac Oedema Identification

The Idea & Motivation

Through in-depth research, we reached a solution for automatic oedema detection and prediction of oedema volume using CMR-LV short axis images.

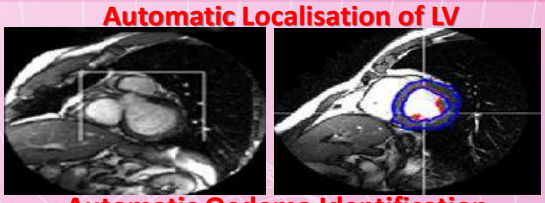
This work contributes to the social impact and has a very high potential for commercialisation.

Methodology

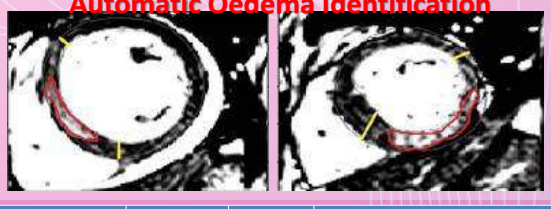
Input Patient's CMRIs → LV Localisation → LV Wall Detection and Segmentation → Oedema Detection and Assessment

Experiment Results

Automatic Localisation of LV



Automatic Oedema Identification



Patient ID	Gander	Age	Oedema	
			Ground-truth	Proposed
Patient-A001	Male	57	43	42.26
Patient-A002	Male	46	17	24.20
Patient-A003	Male	58	30	32.14
Patient-A004	Male	Nill	37	39.36
Patient-A005	Male	34	33	33.34
Patient-A006	Male	54	54	57.73
Patient-A007	Male	75	44	46.33
Patient-A008	Male	63	32	32.53
Patient-A009	Male	66	48	48.61
Patient-A010	Female	48	29	34.54
Mean Average	-	-	40.12	39.10

Novelty

- First fully automatic solution, which give prediction of cardiac function and oedema volume for clinical purposes.
- Reduce assessment time and effort.
- Robust algorithm in automatic LV contours segmentation, automatic oedema identification and assessment.

Publications & Awards

D.N.F Awang Iskandar and Hamimah Ujir, 2015, Spatio-Temporal Semantic Representation of Cardiac MRI in Heart Attack Patients, in the Proceedings of the Ninth International Conference on Information Technology in Asia 2015 (CITA 2015), pp. 1-5 (Best Paper Award, indexed in IEEExplore and SCOPUS).

Amjad Khan, D.N.F Awang Iskandar, Hamimah Ujir and Wang Yin Chai, 2016, Automatic Segmentation of CMRIs for LV Contour Detection, in the 9th International Conference on Robotics, Vision, Signal Processing & Power Applications, pp. 313-319. (indexed in ISI Web of Science database).

D.N.F. Awang Iskandar, A. Khan, P.C. Lim and Wang Yin Chai, 2017, Automatic Segmentation Measuring Function for Cardiac MR-Left Ventricle (LV) Images, to be published in Journal of Telecommunication and Engineering.

Commercial/Potential

Diagnostic and medical imaging market is worth USD 33.42 Billion by 2020, Asia-pacific market is expected to grow at the highest compound annual growth rate (CAGR) of 7.2 % from 2015 to 2020.

Hospitals – supplementary diagnosis tool

Research community – Medical Image Computing and Computer Assisted Interventions (MICCAI)

This research project is part of the Exploratory Research Grant Scheme: ERGS/ICT07(02)/1019/2013(16)

Researchers:

Dr Dayang NurFatimah Awang Iskandar
Senior Lecturer
Faculty of Computer Science & IT
dnfaiz@unimas.my

Amjad Khan
PhD Candidate
Faculty of Computer Science & IT
Amjadkhan_cs@yahoo.com

Assoc. Prof Dr Asri Said
Faculty of Medicine & Health Science
Dr Nor Hanim Mohd Amin
Pusat Jantung Hospital Umum Sarawak

Acknowledgement:

- Ministry of Higher Education Malaysia
- Universiti Malaysia Sarawak

Silver and Bronze Winners

No.	Medal	Title	Principle Investigator	Members
1	Silver	D2D Group Rekeying Security Model for 5G Cellular Network.	Rajan Thangaveloo	Adnan Shahid Khan
2	Silver	Golf Putting Motion Profiler (GoPuMo)	Irwandi Hipiny	Hamimah Ujir, Syahrul Nizam Junaini, Ali Hashim Malihi
3	Silver	Eye Clinic Record Management System	Dayang Hanani bt Abg Ibrahim	Mohd Zainal Bin Udin, Suhaila binti Saee, Johari Abdullah
4	Silver	A Methodology for Implementation of Service Learning in Higher Education Institution: A case study from Faculty of Computer Science and Information Technology, Universiti Malaysia Sarawak	Nadianatra Bt Musa	Dayang Hanani Bt Abang Ibrahim, Johari Bin Abdullah, Suhaila Bt Saee, Abdul Rahman Bin Mat, Fathihah Ramli, Mohamad Johan Bin Ahmad Khiri
5	Silver	MY First Responder	Stephanie Chua	Chew Keng Sheng, Chee Ghee Min
6	Silver	PAL: PERSONAL ASSISTANT SYSTEM FOR LOW-COST COMPUTERS	Sarah Samson Juan	Melanie Louisa Khong Fui Yee, Hamimah Ujir
7	Silver	Mobile Attendance and Management System	Seleviawati Tarmizi	Tang Mun Lok, Eaqerzilla Phang
8	Silver	Radiology Information System	Suhaila binti Saee	Elizabeth Anak Jonathan Simbing, Dayang Hanani bt Abg Ibrahim, Johari Abdullah
9	Silver	Crime Awareness and Safety Mobile Application (CASMA)	Johari Abdullah	Chan Vi Vian
10	Silver	Formal Platform for Assessing Quality of Heterogeneous Software Requirement Derive from Open Innovation	Edwin Mit	Cheah Wai Shiang, Noor Hazlini Bt Borhan, Wei Bui Lin, Jonathan Sidi, Elly anak Stephen
11	Silver	Energy Efficient Protocol in 5G Heterogeneous Network	Adnan Shahid Khan	Abdul Qahar, Johari Abdullah
12	Silver	My Walking Partner: A Smart Walking Aid	Bong Chih How	Evelyn Teo
13	Silver	DysApp	Emmy Dahliana Hossain	Nurizzati Rohim

No.	Medal	Title	Principle Investigator	Members
14	Silver	Personal cloud server storage	Adnan Shahid Khan	Muhammad Amirul bin Asnan
15	Silver	Queue management solution using IoT for bank and office	Adnan Shahid Khan	Ahmad Afif bin Che Mohamad Nor
16	Silver	MAPORY: Digital Augmented Reality Board Game for UNIMAS Freshmen	Dayang NurFatimah	Yap Chun Hoong
17	Bronze	UNIMAS TRANSIT	Mohamad Nazim Jambli	Khairilzamrie Rosle, Mohd Roffizal Romali, Sinarwati Mohamad Suhaili
18	Bronze	Kalaka: A Mobile Application for Collecting Speech and Text	Sarah Flora Samson Juan	Suresh Ramachandran, Jennifer Fiona Wilfred Busu
19	Bronze	Smart Mosquito Terminator using IoT	Ahmad Hadinata bin Fauzi	Dayang NurFatimah binti Awg Iskandar, Muhammad Kasyfil Azim Mhd. Ramzam
20	Bronze	Classification of Skin Burn Depth in Human	Stephanie Chua	Ehfa binti Bujang Safawi, Wang Hui Hui, William Tiong Hok Chuon, Kuan Pei Nei
21	Bronze	Patients' Diagnostic and Discharge Summary System	Suhaila Saee	Noramirah Norazman, Dayang Hanani Abg Ibrahim, and Johari Abdullah
22	Bronze	Extracting Natural Language Descriptions for Making Sense of Images	Narayanan Kulathuramaiyer	Lim Phei Chin, Dayang NurFatimah Awang Iskandar, Chiew Kang Leng, Zaharin bin Yusoff
23	Bronze	Project Zeus:Power Consumption Monitoring System	Abdul Rahman Bin Mat	Edwin Simon Enjup, Hamizan Binti Sharbini
24	Bronze	Smart Mobile Transaction (SMoT)	Rajan Thangaveloo	Tan Lim Shen, Ahmad Hadinata Bin Fauzi
25	Bronze	Feline Breed Recognition	Hamimah Ujir	Mu'adzam Shahril Marjuki, Irwandi Hipni Mohamad Hipiny
26	Bronze	Nuk Penurat	Emmy Dahliana Hossain	Sarah Flora Samson Juan Jane Labadin Prisillica Agas
27	Bronze	Question Answering using Social Information Retrieval	Lee Jun Choi	Yu-N Cheah
28	Bronze	Production Information System (POIS) for Monitoring Equipment	Abdul Rahman Bin Mat	Hardyson Arthy Anak Robin Azlina Binti Ahmadi Julaihi
29	Bronze	Hotspot Visualizer via Heat Map	Jane Labadin	Huiggy Kuan, Kok Woon Chee
30	Bronze	Efficient Classification using Artificial Bee Colony based Feature Selector	Norfadzlan bin Yusup	Siti Hazemah Hassan Dayang Nurfatimah bt Awang Iskandar
31	Bronze	Pineapple Classifier	Wang Hui Hui	Chai Sze Ye
32	Bronze	Voter Tracking System	Suhaila binti Saee	Dayang Hanani Abang Ibrahim, Johari Abdullah, and Zamahari Hj Saidi
33	Bronze	FETCH: Non-Profit Ride Sharing for Women in UNIMAS	Nurul Zawiyah binti Mohamad	Norazian Mohd Hamdan, Jennifer Fiona Wilfred Busu, Izzatul Nabila Sarbini
34	Bronze	GMTSCADA SOFTWARE	Adnan Shahid Khan	Ibrahim Erel
35	Bronze	Assistive and Interactive Reading Tool of Old Malay Text	Dayang Hanani Abang Ibrahim	Dr Ranaivo-Malan?on, Nadianatra Musa, Nur Afifah Junaideh

No.	Medal	Title	Principle Investigator	Members
36	Bronze	Detection of Flood in Malaysia using Twitter Data Mining	Stephanie Chua	Sonia Frances Gopal
37	Bronze	A Foundation Sponsorship Application System for UCTS	Abdul Rahman Bin Mat	Radhika Anak Rahman Azlina Binti Ahmadi Julaihi
38	Bronze	K-Stat : Small Kiosk Management Systems and Sales Analysis Tool for UNIMAS	Nurul Zawiyah binti Mohamad	Eaqerzilla Phang Sachin Christian Gopal Lim Yi Swen

MTE Malaysia Technology Expo 2017

No.	Medal	Title	Principle Investigator	Members
1	Silver	Automated Heuristic-based Examination Scheduler	Sze San Nah	Teo Mei Gie, Phang Min Hui, Chiew Kang Leng, Tiong wei King, Noor Alamshah Bolhassan
1	Bronze	Two Modified Frameworks of Bacterial Foraging Optimization Algorithm for Data Classification	Mohammad bin Hossin	Faizul Mohd Suria, Stephanie Chua

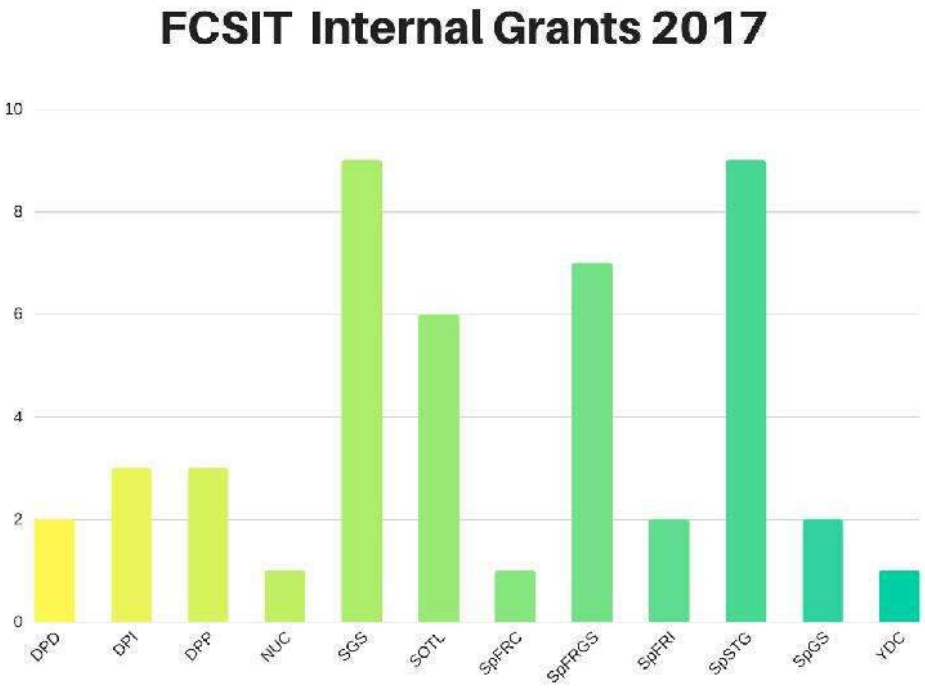
ITEX '17 MALAYSIA 28TH INTERNATIONAL INVENTION, INNOVATION & TECHNOLOGY EXHIBITION

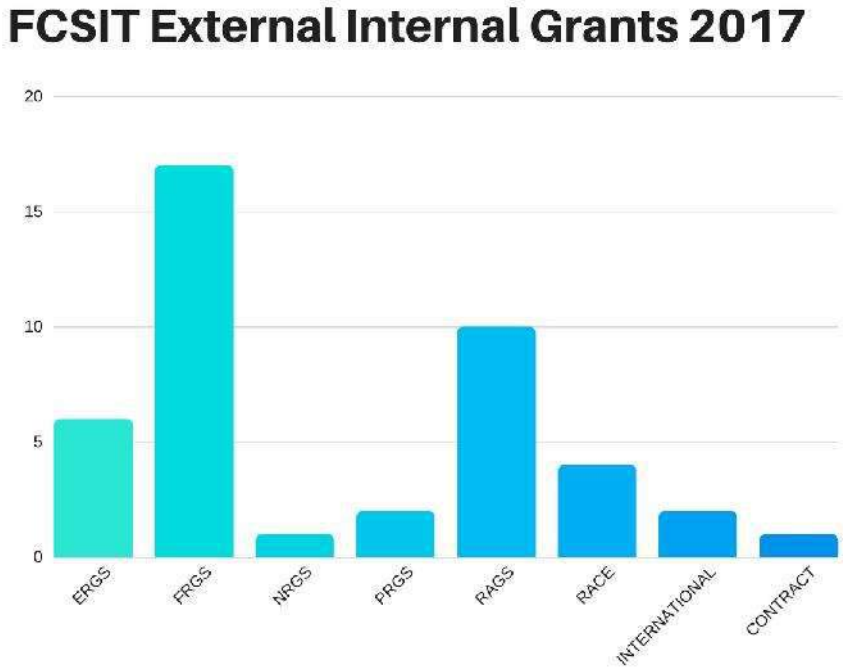
No.	Medal	Title	Principle Investigator	Members
1	Gold	From Grid- to Solar-Powered Streetlights: A Distributed TrafficAware Lighting Control Scheme with Energy-Neutral and Predictive Behaviour	Lau Sei Ping	Geoff Merrett, Alex Weddell, Neil White
2	Silver	The Effective election of Next Hop Node Based on Mobility Prediction for Habitat Monitoring in MASNETs	Mohamad Nazim Jambli	Dzulfikar Radziman Kamal, Sinarwati Mohamad Suhaili, Wan Balkis Wan Hashim
3	Silver	ProColony: Automatic Colony Counting on-the-go	Jacey Lynn Minoi	Tin Tze Chiang, Abdul Hafiz Abdul Karim, Azham Zulharnain
4	Silver	Localization of Scratch Programming Environment in Raspberry Pi	Stephanie Chua	Thaun Kai Yuan

Pecipta '17

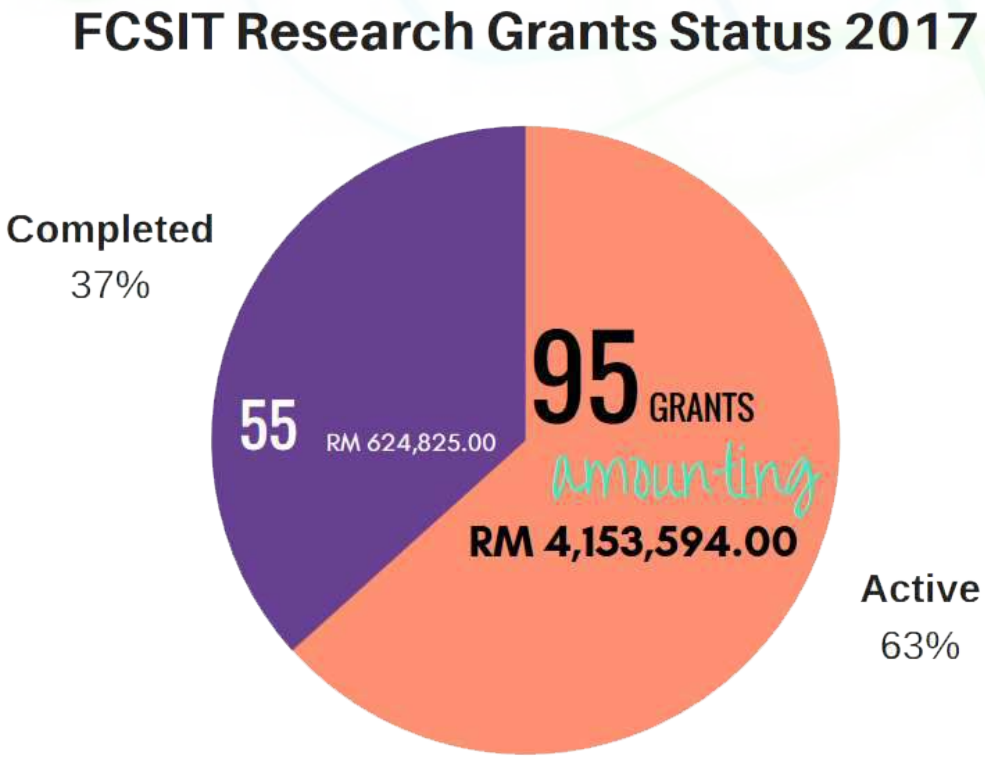
No.	Medal	Title	Principle Investigator	Members
1	Bronze	Computerized Operation Theater Documentation System (COTDS)	Suhaila Saee	Bessieca Anak Go, Dayang Hanani bt Abg Ibrahim, Johari Abdullah
2	Bronze	Ringgit Ocular: A Bank Note Recognizer	Bong Chih How	Ng Kar Chee

FCSIT RESEARCH GRANTS





Fund Type	Full Name
DPD	Postdoctoral Fund
DPI	Dana Principle Investigator
DPP	Dana Pelajar PhD
NUC	Nusantara Chair
YDC	Yayasan Dayak Chair
SGS	Small Grant Scheme
SoTL	Scholarship of Teaching and Learning Grants
SpFRC	Special Funding for Research Centres
SpFRGS	Special FRGS 2016 Cycle
SpFRI	Special Funding for Research Institutes
SpGS	Special Grant Scheme
SpSTG	Special Short Term Grant
ERGS	Exploratory Research Grant Scheme
FRGS	Fundamental Research Grant Scheme
NRGS	Niche Research Grant Scheme
PRGS	Prototype Research Grant Scheme
RAGs	Research Acculturation Grant Scheme



FCSIT RESEARCH GRANTS RECEIVED IN 2017

PI	Members	Project Title	Duration (month)	Amount (RM)	Fund Type
Dr Mohamad Nazim bin Jambli	AP Dr Johari, Dr Mohamad Imran, Dr Suriati Khartini, Abdul Rahman Mat, Sinarwati Mohamad Suhaili	ICT & Technopreneurship for Agrobusiness (ICT4Agro) Project 2017	12	493,000.00	Contract Research
Dr Wang Hui Hui	Prof Dr Wang Yin Chai, Dr Chai Soo See, Dr Dayang NurFatimah Awang Iskandar, Wee Bui Lin	Semantic Extraction Algorithms for Traffic Density Analysis	24	20,000.00	SpFRGS
Dr Cheah Wai Shiang	Prof Madya Dr Chen Chwen Jen (FSKPM), Dr Hamimah Ujir, Nurfauza Jali, Hamizan Sharbini	A novel cost analytic framework to measure the financial sustainability of rural ICT projects	24	20,000.00	SpFRGS
Dr Dayang NurFatimah Awang Iskandar	Prof Madya Dr Asri bin Said, Dr Nor Hanim Mohd Amin (KKM), Lim Phei Chin, Dr Hamimah Ujir	A New Artificial Neural Network Model to Predict Left Ventricle Remodeling for Clinical Decision and Treatment Strategies	24	26,875.00	SpFRGS
Dr Mohamad Nazim bin Jambli	Dr Halikul Lenando, Dr Azman Bujang Masli, Sinarwati Mohamad Suhaili	A Lightweight Routing Algorithm to Support A High Mobility Nodes for Data Hovering in Distributed Sensor Networks	24	20,500.00	SpFRGS

FCSIT RESEARCH GRANTS RECEIVED IN 2017

PI	Members	Project Title	Duration (month)	Amount (RM)	Fund Type
Dr Dayang Hanani bt Abang Ibrahim	Dr Dayang NurFatimah Awang Iskandar	A New Service Learning Framework to Integrate Technologies in Managing Service Learning in Computer Science Domain	24	20,000.00	SpFRGS
Dr Chiew Kang Leng	Dr Tiong Wei King, Dr Sze San Nah	Enhancing Pharming Attack Detection Model	24	20,000.00	SpFRGS
Assoc. Prof Dr Jane Labadin	Prof. Dr David Perera, Terrin Lim	Computational approach to predicting the spread of Dengue	24	20,000.00	SpFRGS
Assoc. Prof Dr Tan Chong Eng	Dr Lau Sei Ping, Dr Kismet anak Hong Ping, Dr Martin Anyi, Dr Mohamad Imran Bandan	Intelligent power switching algorithm for rural hybrid renewable energy system	24	20,000.00	SpGS
Hamizan binti Sharbini	Prof Madya Dr Noor Alamshah Bolhassan, Dr Cheah Wai Shiang, Azlina Ahmadi Julaihi, Chiu Po Chan	Simulating Crowd Behaviour in Emergency Evacuation Situation using Modified Social Force Model	24	20,000.00	SpSTG
Dr Lau Sei Ping	Prof Madya Dr Tan Chong Eng, Dr Mohamad Imran Bandan	Investigating the Performance of Flooding Protocol in Distributed Traffic-Aware Lighting Scheme Management Network (TALiSMaN)	24	20,000.00	SpSTG
Prof Dr Wang Yin Chai	Dr Sajid Ullah Khan	A Computational Approach for Airport Dual Energy Baggage X-ray Image Enhancement	24	10,000.00	DPD
Dr Dayang NurFatimah Awang Iskandar	Dr Lim Phei Chin	Predicting Left Ventricle Remodelling	24	10,000.00	DPD

FCSIT 2017

Publications

Journals

1. Anifowose, FA; Labadin, J; Abdulraheem, A. (2017). Ensemble machine learning: An untapped modeling paradigm for petroleum reservoir characterization. Journal of Petroleum Science and Engineering, 151, pp.480-487.
2. Kok W.C., Labadin J. (2017). Quantifying critical parameter in disease transmission, Journal of Telecommunication, Electronic and Computer Engineering, 9, pp. 163-168.
3. Ling U.L., Saibin T.C., Labadin J., Aziz N.A. (2017). Preliminary investigation: Teachers perception on computational thinking concepts, Journal of Telecommunication, Electronic and Computer Engineering, 9, pp. 23-29.
4. Stephen E., Mit E. (2017). Framework for measuring the quality of software specification , Journal of Telecommunication, Electronic and Computer Engineering, 9, pp. 79-84.
5. Iskandar D.N.F.A., Khan A., Lim P.C., Wang Y.C. (2017). Automatic segmentation measuring function for cardiac MR-Left Ventricle (LV) images, Journal of Telecommunication, Electronic and Computer Engineering, 9, pp. 165-171.
6. Salam M., Iskandar D.N.F.A., Ibrahim D.H.A. (2017). Service learning support for academic learning and skills development, Journal of Telecommunication, Electronic and Computer Engineering, 9, pp. 111-117.
7. Iskandar D.N.F.A., Lim P.C., Said A., Amin N.H.M., Khan A., Ujir H. (2017). Preliminary experiment results of left ventricular remodelling prediction using machine learning algorithms, Journal of Telecommunication, Electronic and Computer Engineering , 9, pp. 119-124.
8. Lenando H., Lau A. (2017). A new zigbee backoff approach for home healthcare devices, Journal of Telecommunication, Electronic and Computer Engineering, 9, pp. 173-177.
9. Mathew K., Issac B., Tan C.E. (2017). Evaluation of signal attenuation for bluetooth, zigbee and sound in foliage, Journal of Telecommunication, Electronic and Computer Engineering, 9, pp. 43-48.
10. Yong Y.-T., Tan C.E., Zen K.B.H. (2017). The Influence of k-Constant to Delay Performance of RI-MAC Protocol for Wireless Sensor Networks, Wireless Personal Communications, pp. 1-16.
11. Ibrahim D.H.A., Musa N., Leng C.K., Labadin J., Abdullah J., Sulaiman S. (2017). Achieving reproducibility incorporating service versioning into provenance model, Journal of Telecommunication, Electronic and Computer Engineering, 9, pp. 131-138.
12. Fauzi A.H., Khan A.S. (2017). Threats advancement in primary user emulation attack and Spectrum Sensing Data Falsification (SSDF) attack in Cognitive Radio Network (CRN) for 5G wireless network environment, Journal of Telecommunication, Electronic and Computer Engineering, 9, pp.179-183.
13. Musa N., Ibrahim D.H.A., Abdullah J., Saee S., Ramli F., Mat A.R., Khiri M.J.A. (2017). A methodology for implementation of service learning in higher education institution: A case study from faculty of computer science and information technology, UNIMAS, Journal of Telecommunication, Electronic and Computer Engineering, 9, pp. 101 -109.
14. Musa N., Clift B. (2017). Internal control and standard operating procedures in Malaysian corporations, Journal of Telecommunication, Electronic and Computer Engineering, 9, pp. 25-31.
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CITA'17 Best Papers

Evaluating Layout and Clustering Algorithms for Visualizing Named Entity Graph

Ibrahim K.[1], Ranaivo-Malançon B.[1], Lim T.[1], Cheah Y.-N.[2]
[1] Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.
[2]School of Computer Sciences, Universiti Sains Malaysia, 11800 USM, Penang, Malaysia.
khairunnisaibr@gmail.com

Abstract–Steganography is the art of hiding a secret message in different kind of multimedia (image, voice or video), such that the secret message is not detectable. In this paper, we propose two new algorithms, first one uses the spatial domain for steganography, where the host image is converted into blocks of bit-planes to insert the secret information. The algorithm divides the image into 8 bit planes and then the bit planes are further divided in to N x N blocks. The hidden message is inserted based on a chaotic sequence. We intend to find the most optimum bit plane to insert the hidden information, keeping high imperceptibility in terms of the human visual systems. The algorithm shows relatively good Mean Structural Similarity and Peak Signal to Noise Ratio values. The second algorithm is applied in the frequency domain where the host image is converted using the discrete wavelet transform. Then at second and third level of the transform, the secret information is inserted. The proposed algorithm divides wavelet level divide in to M x M blocks. The hidden message is inserted based on chaotic sequence in to the blocks. This algorithm shows better imperceptivity in terms of the human visual system and PSNR.

Block Based Image Steganography in Spatial and Frequency Domain

D.N.F Awang Iskandar[1], Abdulmalik Bacheer Rahhal[1,2] and Wadood Abdul[2]
[1]Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.
[2]Department of Computer Engineering, College of Computer and Information Sciences,
King Saud University, Riyadh, Kingdom of Saudi Arabia.
dnfaiz@unimas.my

Abstract–Steganography is the art of hiding a secret message in different kind of multimedia (image, voice or video), such that the secret message is not detectable. In this paper, we propose two new algorithms, first one uses the spatial domain for steganography, where the host image is converted into blocks of bit-planes to insert the secret information. The algorithm divides the image into 8 bit planes and then the bit planes are further divided in to N x N blocks. The hidden message is inserted based on a chaotic sequence. We intend to find the most optimum bit plane to insert the hidden information, keeping high imperceptibility in terms of the human visual systems. The algorithm shows relatively good Mean Structural Similarity and Peak Signal to Noise Ratio values. The second algorithm is applied in the frequency domain where the host image is converted using the discrete wavelet transform. Then at second and third level of the transform, the secret information is inserted. The proposed algorithm divides wavelet level divide in to M x M blocks. The hidden message is inserted based on chaotic sequence in to the blocks. This algorithm shows better imperceptivity in terms of the human visual system and PSNR.

A Methodology for Implementation of Service Learning in Higher Education Institution: A case study from Faculty of Computer Science and Information Technology, UNIMAS

Nadianatra Musa, Dayang Hanani Abang Ibrahim, Johari Abdullah, Suhaila Saee, Abdul Rahman Mat, Mohd Johan Ahmad Khiri, Fatihah Ramli
Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.
nadianatra@unimas.my

Abstract–Service learning is a teaching and learning approach that includes an aspect of community service within an academic course with instruction and reflection, with the objective to enrich students' learning experience. This is in line with the aspiration of the Malaysian government to produce well-rounded and holistic graduates and included in Shift 1 of the Malaysia Education Blueprint 2015-2025 (Higher Education). There are various challenges in the implementation of a service learning program, with the involvement of many stakeholders and local culture and nature of the specific community. Therefore, this paper proposed a methodology for the implementation of a service learning program, within an academic course, taking into consideration of various stakeholders and the needs of the community. This paper also presented the case study based on the application of the methodology at the faculty. Having a sound methodology has minimised the issues during the implementation, and could be applied by other interested parties.

Population Game Model for Epidemic Dynamics with Two Classes of Vaccine-induced Immunity

Phang Piau[1,2], Benchawan Wiwatanapataphee[1] and Y-H.Wu[1]
[1] Department of Mathematics and Statistics, Curtin University, Perth, Australia. [2]Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.
pphang@unimas.my

Abstract–Behavioural factors play a key and pivotal role in the success of a voluntary vaccination programme for combating infectious diseases. Individuals usually base their voluntary vaccination decisions on the perceived costs of vaccination and infection. The perceived cost of vaccination is easily influenced by the degree of protection conferred by vaccines against infection, also known as vaccine efficacy. Although certain vaccines have a decrease in its effectiveness in specific duration of time, they do offer a reduction of transmissibility and faster recovery for vaccinated infected individuals. These additional characteristics of imperfect vaccines are well-captured in an epidemic model with two classes of vaccine-induced immunity. In this paper, the interplays between these characteristics of vaccines, the dynamics of vaccination uptake and epidemics are investigated in the vaccination population games framework. Specifically, we study to what extent the population- and individual-level vaccination rates are influenced by these characteristics of vaccines at equilibrium state.

USJC2017 Best Papers: ICCT cluster

Real-Life Faculty Examination Timetabling to Utilise Room Used

Sze San Nah, Phang Min Hui and Chiew Kang Leng
Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

Abstract–Examination timetabling is an important and yet tedious task to do in every semester. The large number of courses and students increase the difficulty of developing a good examination timetable. Furthermore, the examination timeslots and rooms are very limited in this case study. Therefore, an improved version of two-stage heuristic is proposed and developed a web-based prototype (Faculty Examination Scheduling System, FESS 2.0) to solve faculty examination timetabling problem at Universiti Malaysia Sarawak (UNIMAS). The prototype has been practically used starting from Semester II, 2016/2017. The main objective of the proposed solution is to maximise the room utilisation and minimise the number of rooms for a splitting examination. The outcome of research not only outperform the previous prototype FESS 1.0 but also enhance the services given by faculty management.

Applying Bipartite Network Approach to Scarce Data: Validation of The Habitat Suitability Model of A Marine Mammal Species

Chin Ying Liew and Jane Labadin
Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

Abstract–This paper presents the validation of the bipartite habitat suitability network (BiHSN) model formulated for a marine mammal. The model formulation published earlier resulted in the ranking of location nodes of the concerned area of possible habitats. Thus, the validation of the model is achieved by comparing the result produced by the BiHSN Model with the result acquired i) using another sample of actual data; and ii) from an ecological survey conducted by another researcher. Spearman's Rank Correlation Coefficient (SRCC) is used to quantify the similarity of the comparison where a threshold value of at least 0.70 is set in order to signify an acceptable validation analysis. In the former validation analysis, this study reports an SRCC of 0.976 whereas the later validation analysis reports an SRCC of 0.914. Due to the high values of SRCC obtained, we conclude that the BiHSN Model is thus validated.

Mobile Application for Improving Speech and Text Data Collection Approach

Sarah Samson Juan and Jennifer Fiona Wilfred Busu
Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

Abstract–This paper describes our work in developing a mobile application for collecting language data. The application is built to assist linguists or researchers in simplifying their tasks in data collection who of native speakers living in remote interiors. Researchers rely on numerous apparatus to carry out their tasks to capture audio or text from far to reach places, but with this mobile application, they would only need to carry one device, which can ease their logistics troubles. The mobile app, named as Kalaka, is designed for users to store details of native speakers,

record speech and insert speech transcript all in one platform. Kalaka is built on Android and it can send recordings and texts that are collected using the mobile device to a real-time database using WiFi networks. Usability tests performed in respondents shows, all participants in the evaluation are able to use the application to record their voices and save texts. We also received positive feedbacks on the mobile application from our survey, with more than half of the respondents gave their confidence using Kalaka and they would use the system frequently.

USJC2017 Best Paper Awarded by JTEC

Vehicle Classification and Counting for Vehicle Census

Dellas Su Chieng Chan and Yin Chai Wang
Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

Abstract–Vehicle classification has been significantly important to vehicle census as it provides traffic count information to reflect the traffic density of a particular roadway. However, it has been a time consuming and sophisticated task to classify different vehicles into the desired category. Besides, the hardware-based technique used for classification leads to high cost of implementation and maintenance. Thus, we proposed an image processing based solution to extract the features of each vehicle in the traffic scene. The proposed framework incorporates a combination of detection, tracking and classification of vehicle to ensure high accuracy and performance for vehicle census. Experimental results show that our proposed framework can be applicable in real world applications.

A Comparative Study of Features Extracted in The Classification of Human Skin Burn Depth

Pei Nei Kuan, Stephanie Chua and Ehfa Bujang Safawi
Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

Abstract–The first burn treatment provided to patient is usually based on the first evaluation of the skin burn injury by determining the burn depths. In this paper, the objective is to conduct a comparative study of the different set of features extracted and used in the classification of different burn depths by using an image mining approach. Seven sets of global features and 5 local feature descriptors were studied on a skin burn dataset comprising skin burn images categorized into three burn classes by medical experts. The performance of the studied global and local features were evaluated using SMO, JRIP, and J48 on 10-fold cross validation method. The empirical results showed that the best set of features that was able to classify most of the burn depths consisted of mean of lightness, mean of hue, standard deviation of hue, standard deviation of A* component, standard deviation of B* component, and skewness of lightness with an average accuracy of 77.0% whereas the best descriptor in terms of local features for skin burn images was SIFT, with an average accuracy of 74.7%. It can be concluded that a combination of global and local features is able to provide sufficient information for the classification of the skin burn depths.

International Journal of Business and Society (IJBS) Outstanding Paper Award

A Dynamic Seipr Model for The Spread of Hand, Foot and Mouth Disease in Sarawak

Chan Sze Jan, Jane Labadin and Yuwana Podin
Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

Abstract–In Sarawak, a series of hand, foot and mouth disease (HFMD) outbreaks since 1997 started to catch the public attention. Feared and worried among society in the region had arisen followed by the unusual fatalities cases. Some clinical researches and mathematical models regarding HFMD were produced. Clinical researches revealed that there exist the incubation period and post-infection virus shedding period which are not captured together in any mathematical models so far. In this study, the SIR (Susceptible-Infected-Recovered) model is being improved by building a simple deterministic SEIPR (Susceptible-Incubation(Exposed)-Infected-Post infection virus shedding-Recovered) model. By adding the incubation and post-infection virus shedding as parts of the compartments into SEIPR model, the number of infected cases is predicted. The simulation result shows rapid spreading of HFMD viruses through cohort and the ability of the model to predict the outbreak behaviour pattern in the first ten weeks. Comparison between the SEIPR model and SIR model verified SEIPR model. Validation of the model is done by comparing the simulation with the actual data in 2006. Basic reproduction number, computed was 2.15 which suggesting the highly contagious HFMD is likely to spread fast. The threshold value analysed can allow the possible interventions based on the minimum proportion of the population which create the liability of disease spreading. We hope that this model can help the public health personnel to reduce the burden of the disease by planning an effective manner of intervention during the outbreaks.

FCSIT EXPERTISE

1. Prof. Dr Narayanan A/L N. Kulathuramaiyer
   Artificial Intelligence & Knowledge Management
2. Prof. Dr Wang Yin Chai
   Spatial Data Analysis & Image Processing
3. Assoc. Prof. Dr Jane Labadin
   Mathematical Modeling
4. Assoc. Prof. Dr Tan Chong Eng
   Wireless Communication, Broadband Access network & Green ICT architecture.
5. Assoc. Prof. Dr Edwin ak Mit
   Formal Methods & OO Modeling
6. Assoc. Prof. Dr Noor Alamshah B. Bolhassan
   Web Development, Mobile Computing & Virtual Environment
7. Assoc. Prof. Dr Johari bin Abdullah
   Trusted System, Uncertainty Tolerance, Malware & Penetration test
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   Wireless Sensor Network & Mobile Sensor Network
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   Image Processing and recognition, CBIR & Semantic Technologies
10. Dr Sze San Nah
    Operational research & Scheduling
11. Dr Halikul bin Lenando
    Mobile P2P Network Communications & Social Network
12. Dr Dayang Hanani bt Abang Ibrahim,
    Knowledge Management Analytics & IS in Organisations and Community
13. Dr Bong Chih How
    Natural Language Processing & Computational Semantics
14. Dr Nadianatra binti Musa
    IT/IS Security Governance & IS in Organisations and Community
15. Dr Stephanie Chua Hui Li
    Data, Text and Image Mining, Machine Learning
16. Dr Mohammad bin Hossin
    Data Mining Optimisation & Educational Learning Technology
17. Dr Azman Bin Bujang Masli,
    Formal Methods, Software Verification, SE for IoT & Temporal logic
18. Dr Irwandi Hipni Bin Mohamad Hipiny
    Image Processing, CBIR & Computer Vision
19. Dr Cheah Wai Shiang
    Mobile Agent Knowledge Engineering, Ontology Engineering & Software Process

20. Dr Wang Hui Hui
Image Processing & CBIR

21. Dr Chai Soo See
Image Processing GIS Artificial Intelligence & Remote Sensing

22. Dr Jacey Lynn Minoi
Image Processing and Recognition, Facial Recognition & Statistical Discriminant Methods

23. Dr Suriati Khartini Binti Jali
Serious Game, Game-based Learning, User Interaction (UI) and User Experience (UX)

24. Dr Adnan Shahid Khan
Network Security, Cognitive Radio Networks & Wireless Sensor Networks

25. Dr Lau Sei Ping
Wireless Sensor Network & Power Optimization

26. Dr Mohamad Imran bin Bandan
Reliability & Fault Tolerant System

27. Dr Mohamad Nazim bin Jambli
Mobile Wireless Sensor Networks

28. Dr Chiew Kang Leng
Information security

29. Dr Tiong Wei King
Nonlinear waves

30. Dr Shapiee Abdul Rahman
Industrial Statistics

31. Dr Hamimah binti Ujir
Computer Vision & 3D Face Analysis

32. Dr Nuha binti Loling Othman
Free Boundary Problem, Variational Inequality, Mathematical Analysis

33. Dr Sarah Flora Anak Samson Juan
Speech Processing, Language Modelling, Mathematical Modelling

34. Dr Phang Piau
Mathematical Epidemiology, Ordinary Differential Equations

35. Dr Sze Jeeu Fong
Operational research & Scheduling

36. Seleviawati bt Tarmizi
Mobile Ad-Hoc Networks & Trust Management

37. Rajan Thangaveloo
Device to Device Communication, Network Security & 5G Future Cellular Network

38. Azlina binti Ahmadi Julaihi
Mobile Ad-Hoc Networks & Trust Management

39. Ahmad Hadinata bin Fauzi
Network Security & Cognitive Radio Networks

40. Terrin Lim
Bioinformatics - Data Mining

41. Jennifer Fiona anak Wilfred Busu
Educational Learning Technology & Requirements Elicitation

42. Mohamad Nazri bin Khairuddin Yap
Knowledge Management & Information Trustworthiness

43. Rosita binti Mohamed Othman
Educational Learning Technology & Knowledge Management

44. Inson Binti Din
IT Audit & Community Based Research

45. Lee Jun Choi
Text Processing & Intelligent System

46. Chiu Po Chan
Artificial Intelligence & Human Computer Interaction

47. Nurul Zawiyah bt. Mohamad
Educational Learning Technology & Ontology Engineering

48. Suhaila Binti Saee
Computational Linguistics & Natural Language Processing

49. Emmy Dahliana Binti Hossain
Natural Language Processing & Big Data

50. Fatihah binti Ramli
Semantic Technology & Information Retrieval

51. Norazian Binti Mohamad Hamdan
Methodologies & Component Based Software Engineering

52. Jonathan anak Sidi
HCI & User Experience Design

53. Syahrul Nizam bin Junaini
Web Usability, HCI & Mobile Computing

54. Amelia Jati Anak Robert Jupit
Usability Design & Game-Based Learning

55. Hamizan binti Sharbini
Web Usability & Crowd Modelling Simulation

56. Nurfauza bt Jali
Language Technology, OO Modeling, Knowledge & Ontology Engineering

57. Abdul Rahman bin Mat
Formal Methods, Knowledge Engineering Software Process & Engineering

58. Eaqerzilla Phang
OO Modeling & Artificial Intelligence

59. Wee Bui Lin
Software Measurement

60. Yanti Rosmunie Binti Bujang
Usability Testing & OO Quality

61. Mohamad Johan bin Ahmad Khiri
Software Engineering & Verification

62. Muhammad Asyraf bin Khairuddin
Software Requirements & Engineering

63. Tan Ping Ping
Statistical Machine Translation & Assistive Technology

www.newsarawaktribune.com.my WEDNESDAY MAY 24, 2017

More than 100 partake in 10th CITA

DEPUTY Chief Minister Datuk Amar Douglas Uggah Embas together with Datu Dr. Sabariah Putit (third left), Prof. Mohd Fadzil Abdul Rahman (fourth left) Dato Dr. Mohd Amin Khan (second right), Datu Dr. Hatta Solhi (right) and Dr. Dayang Nurfatimah Awang Iskandar cutting the CITA'17 cake while others look on. PHOTO: RAMZI SUBARI

BY DOREEN LING

KUCHING: Over 100 participants took part in the 10th edition of the 'International Conference On IT In Asia' (CITA) which was held at Hilton Hotel here yesterday.

Organised by the Faculty of Computer Science and Information Technology from Universiti Malaysia Sarawak (UNIMAS), the conference saw 54 papers that were presented.

The conference was declared open by Deputy Chief Minister Datuk Amar Douglas Uggah, who represented Chief Minister Datuk Amar Abang Johari Tun Abang Haji Openg and read from his text speech.

"Technology has a big influence in all areas of our lives as proven by our dependence on the Internet, software, and electronic gadgets.

"This new wave of technology, the demand for Internet connections, and the rise of applications culture caused huge changes in lifestyle for both professionals and private spheres whereby work can be done within seconds rather than days," said Johari.

He said as a reflection of this, Sarawak is on the move to transform the state economy towards one that is digital in nature.

"Sarawak will set up the Sarawak Multimedia Authority (SMA) to regulate the development of ICT infrastructure and digital economy utilisation.

"Technology should add benefit to the whole society and to achieve the best results, all experts from many fields have to discuss to get the best outcome," he said.

After the officiating ceremony, there was also a Memorandum of Understanding (MoU) exchange between UNIMAS and F-Secure Corporation Sdn Bhd.

Also present were Deputy State Secretary Datu Dr Sabariah Putit (representing State Secretary Datuk Amar Haji Mohd Morshidi Abdul Ghani) and UNIMAS Deputy Vice Chancellor (Student Affairs and Alumni) Professor Mohd Fadzil Abdul Rahman (representing UNIMAS Vice Chancellor Professor Dato' Dr Mohamad Kadim Suaidi).

UNIMAS Offers ICT Related TVET Courses as part of Sarawak Digital Economy Initiatives

TVET has become a critical agenda for the state with two main goals. First, it is to provide required skills through human capital development programmes or certification for the Sarawak Corridor of Renewable Energy (SCORE). Secondly, it is to prepare and empower the people of Sarawak for the new upcoming initiatives and strategies such as the development of the Sarawak Digital Economy.

Sarawak TVET Initiatives 2017 is an effort by the Sarawak government in collaboration with Universiti Malaysia Sarawak (UNIMAS) and Tabung Ekonomi Gagasan Anak Bumiputera Sarawak (Tegas) to increase the number of competent skilled workers for the local labour market and readiness for the Sarawak Digital Economy initiative by providing competency and short-term courses. The programme received over 2,000 applications, of which only 444 were offered a place for one of the 20 TVET courses. The courses were conducted between April to May 2017 at the UNIMAS campus in Kota Samarahan. Out of the 20 courses being offered, 6 courses are ICT based courses which are: (1) Web Design and Development, (2) IT Networks, (3) E-Commerce, (4) IT Office Assistant, (5) IT Help Desk Service, and (6) Computer Operator (Office Tools and Automation). These courses are in-line with the aspiration of the Sarawak government to embark on the Digital Economy initiative for the state and also the Industry Revolution 4.0.

Prepared by: Dr Imran Bandan

Big Data Analytic using Spark and Python

This one-day course provide a hands-on introduction to the Big Data ecosystem, Hadoop and Apache Spark in practice. Through practical activities, the participants learnt how to apply Apache Spark on a range of real-world datasets to process and analyse data at scale. The workshop was attended by 50 participants comprising of industry, students and academicians. The trainer was Dr. Raoul-Gabriel Urma is the CEO and co-founder of Cambridge Spark, a leading learning community for data scientists and developers in UK.

Prepared by: Dr. Dayang NurFatimah Awg Iskandar

Digital Maker Program

FCSIT, UNIMAS has been chosen as one of the hub for MyDigital Maker (MYDM) CPD Center under the collaboration with Malaysia Digital Economy Corporation (MDec). The roles of MYDM CPD Center are to increase the readiness in digital knowledge through computational thinking (CT) and computer science (CS) teaching certificate program for teachers, outreach program based on digital making, programming and robotics for school students and as a reference point for Digital Maker in East Malaysia (Sarawak) zone.

From March until July 2017, 145 teachers had attended the Computational Thinking (CT) and Computer Science Teaching certificate program conducted by 4 lecturers from FCSIT. There are 49 primary schools' teachers and 96 from secondary schools. On the total of 145 teachers, 53 are the teachers from schools in urban area and 91 are from schools in rural area. Among the schools are SM Sains Kuching, SMK Siburan, SMK Pusa, SMK Spaoh, SMK Lanang, SMK Melugu, SMK Oya, SMK Selirik, SMK Ulu Balingian, SMK Kanowit, SMK Julau, SK Bario, SK Meranek, SK Sebandi Ulu and many more which cover the schools from Kuching to Lawas. This certification program required the teachers in to attend 40 hours face-to-face training at the center, followed by completing two assignments to measure their skills in applying CT in class and programming skills. This program is to give teachers recognition of teaching competence for new revised ICT Standard Curriculum for Primary School (KSSR) and Standard Curriculum for Secondary School (KSSM) which has begun its implementation in 2017 for Year 1, Form 1 (Basic Computer Science subject) and Form 4 (Computer Science). On top of that, we also conducted the workshop to teachers on basic Scratch and Python programming on October 2017.

Prepared by: AP Dr Kartinah Zen

Disease Modeling Workshop

The 4th Disease Modeling Workshop was held from 24th-28th April 2017 at FCSIT, UNIMAS. The Department of Computational Science and Mathematics, Faculty of Computer Science and Information Technology, UNIMAS initiated the Disease Modeling Workshop back in 2014 with the aim to bring together researchers in Applied Mathematics, Computer Science and Public Health in one platform to share knowledge and current research activities mainly in facilitating the eradication and control of infectious diseases. Since then, the founding chairman of the workshop, Associate Professor Dr Jane Labadin ensured that the workshop become an annual event not only for sharing knowledge but also to gauge research collaboration.

The arrangement of this 4th Workshop differed from the previous workshops in that it is an intensive hands-on workshop whereby the participants were grouped in four and they worked on a problem to be solved using the tools that they learned during the workshop. Two parallel hands-on trainings that are applicable to modelling disease were lined up. The R Programming exposed the participants to a programming environment that illustrates several ways to describe disease progress over time. Our French research collaborator from the Institute of Research for Sustainable Development (IRD), Dr Marc Choisy have facilitated the R session. This is the third time Dr Choisy have assisted us with DMo workshops. The other session is the GAMA Platform, which was facilitated by Prof Alexis Drogoul, the current Director of IRD (Vietnam & Philippines) and his co-researcher, Damien Phillipon. The GAMA software is a modeling and simulation development environment for building spatially explicit agent-based simulations.

There were twenty participants from research students to budding researchers and public health specialists, attended the workshop and they went through series of relevant lectures in the first three days and then in the next 48 hours they worked on epidemiological problems of which on the final day they presented their findings. Associate Professor Dr David Perera and Professor Dr Narayanan Kulathuramaiyer have also came to share their views on the current research work in disease modeling.

Prepared by: Dr Sarah Flora Samson Juan

Community Training on Digital Entrepreneurship for Youth

The Usahawan Belia E-niaga Programme conducted by Tuan Haji Syahrul Nizam Junaini benefited 34 youths here during its implementation last November 2017. This programme was supported by a community research grant under Dewan Bandaraya Kuching Utara (DBKU). In his closing speech, DBKU Commission Mayor, Datuk Haji Abang Abdul Wahap Haji Abang Julai said that the training about digital entrepreneurship is aligned with Sarawak's aspiration to develop the state through the digital economy. He praised FCSIT for the initiative and hope that the project could benefit the local youth community especially in Samariang.

Prepared by: Tuan Haji Syahrul Nizam Junaini

ICT4AgroBiz 2017

Currently, the digital economy has created the entirely different business which challenges the traditional model of doing business. Therefore, the local entrepreneurs in Sarawak need to transform the way they do business in order to gain a competitive advantage and increase their business' profit by using ICT. The main aim of this programme is to contribute to the attainment of a net monthly income of RM 4000 per household by providing the ICT and entrepreneur's knowledge and skills to agropreneurs in marketing and promoting their agricultural based products. This programme is consist of 5 modules; Business Plan Proposal, Online Business Marketing I (Business Blog Development), Online Business Marketing II (Business Website Development), Product Promotion through Multimedia I (Promotional Animated Video Creation) and Product Promotion through Multimedia II (Promotional Video Clip Creation). The following are the main objectives of this programme: 1) To provide and strengthen the knowledge and skill of the agro food entrepreneurs on the use of ICT in promoting and marketing their product; 2) To equip agropreneurs with sufficient ICT and entrepreneurship skills and knowledge to gain competitive advantage in agrobusiness; 3) To encourage and facilitate the transfer of appropriate agricultural and agro food technologies to the extension staff, agro food entrepreneurs and agricultural community; 4) To inculcate the spirit and expertise amongst agricultural community in making agricultural and agro based industry as a profitable business.

At the end of this programme, the participants are expected to use their ICT skills and entrepreneurship knowledge that they have gained to increase their level of income, living standards and socio-economic status which indirectly will improve their maturity and global visibility. In addition, with such valuable knowledge and skills, the agropreneurs can gain a competitive advantage to gain profit in the agrobusiness.

Prepared by: Dr. Mohamad Nazim Jambli

Cashless Community Initiatives

On 21st November 2017 memorandum of understanding was signed between FCSIT, UNIMAS and FAS Holdings Sdn Bhd for the cashless community initiatives in the areas of E-commerce literacy, packaging, labelling and marketing, education, certification and training, talent development, upskilling entrepreneur development, service learning, culture heritage preservation and business start-up. The aim of the project was to reach and widely accepted by all communities using mVISA PREPARID with tagline "SHARING THE FUTURE OF SARAWAK WITH THE COMMUNITIES". Currently UNIMAS is already involved in a project related to gathering data and learning skills for cottage business owners, small and medium businesses, which are all constituent of N8 Satok. However together with FAS HOLDINGS (SARAWAK) the project was expanded to include working mobile applications, payment gateway and service learning development package into a complete E-Commerce ECOSYSTEM using raw data obtained from UNIMAS hence creating more added value to UNIMAS initial project.

Prepared by: Dr Nadianatra Musa, Dr Dayang Hanani Abang Ibrahim, AP Dr Noor Alamshah Bolhassan and AP Dr Johari Abdullah.

Service Learning Networking, Research & Experience Sharing Visit with Hong Kong Universities

On 10th April 2017 until 13th April 2017 a delegation of four lecturers from the Faculty of Computer Science and Information Technology consisting of Dr Nadianatra, Dr Dayang Hanani, Dr Dayang NurFatimah and Tn Hj Hadinata attended a service learning session with Lingnan University, The Chinese University of Hong Kong and Hong Kong Polythenic University. The aim was to exchange knowledge and experience in the area of Service Learning with these well-known Hong Kong Universities and to establish a network with Service Learning Asia Network (SLAN). During the visit the team also explored opportunities to collaborate in research with the Hong Kong's Service Learning experts.

Prepared by: Prepared by: Dr Nadianatra, Dr Dayang Hanani, Dr Dayang Nurfatimah & Tn Hj Ahmad Hadinata.

Service Learning Workshop on "Website Management"

On 4th April 2017 a group of students from the Faculty of Computer Science and Information technology, UNIMAS 2017 conducted a service learning project workshop at the Faculty of Computer Science Lab In University Malaysia Sarawak on Website Management with the head village and Information Technology bureau for all villages in the area of N8 Satok. A total number of 30 participants attended the project. The aim was to give exposure on the methods to manage personal websites.

Prepared by: Prepared by: Dr Nadianatra, Dr Dayang Hanani, AP Dr Noor Alamshah

World Software Testing Programme

WSTP is a training program for all final year IT and Computer Science students from Public Universities in Malaysia. This program is under KPT's Dana Kebolehpasaran Graduan (GE). At the end of the program they will be given an attendance certificate which is equivalent to the corporate level standard.

The programme consist of several modules: Testing Basics-Introduction of concept relating to Software Testing; Think like a Tester; Mobile Application Testing; Cloud Based Testing; HP Unified Functional Testing (UFT); HP LoadRunner (LR); and HP Application Lifecycle Management. This programme was successfully conducted with the participation of 30 FCSIT undergraduate students and four lecturers.

Prepared by: Prepared by: Dr Dayang NurFatimah Awg Iskandar

Community Development Programme (CDP) Kampung Pinggan Jaya, Kuching

FCSIT lecturers and internship students had conducted a community project at Kampung Pinggan Jaya (KPJ), Kota Samarahan Sarawak. The project has been funded by Yayasan Sejahtera with collaboration from other faculties in UNIMAS. Yayasan Sejahtera (SEJAHTERA) was designed as a poverty alleviation programme registered on 7th August 2009. The main aim of this NGO is to help poor communities in Malaysia to sustainably break out of the poverty cycle by providing tools, skills, infrastructure and opportunities.

FCSIT has been given the opportunity to conduct two projects on ICT literacy awareness (for children and adult) and e-Commerce Programme. The projects headed by Dr Cheah Wai Shiang and Mr. Lee Jun Choi. The overall objective of these projects is to educate the local communities on the latest ICT technologies and to help them by applying ICT in their daily works.

Both the projects have successfully ended on October 2017 after 10 months of executions. All of the participants have expressed their satisfaction and thanking UNIMAS and Yayasan Sejahtera for organising such programs.

Prepared by: Prepared by: Dr Cheah Wai Shiang and Mr. Lee Jun Choi

UNIMAS App Challenge

In the efforts to encourage students to apply their computational skills in solving a real world problems. With the support of the faculty, a group of students under the advisory of Dr Cheah Wai Siang and Mr Lee Jun Choi have organized the first ever UNIMAS App Challenge in FCSIT. The App Challenge was in conjunction with the FCSIT IT Week Event for 2017. A total of 18 students have participated the events. The event is a 48 Hours Hackathon, where participants are required to form group and develop a prototype to solve a real world problems. In the event, 5 different ideas were developed by the participants during the 48 hours challenge. At the end of the event, the prototype and business plans for each of the idea is presented to the judges. The team BorrowMe won the event with their application that allow people to lease-out their unused accessories at home through online platform.

During the events, three separate workshops are also conducted to increase the knowledge of participants in prototyping, business model and also the art of pitching. The workshops session were conducted by invited industrial speaker, Microsoft Student Partner and FCSIT lecturer. The event was a success, especially in grooming the local talent and potential startup among the students.

Prepared by: Prepared by: Dr Cheah Wai Shiang and Mr. Lee Jun Choi

CyberSafe Training

A short half-day cyber security training conducted for all local HRDF contributors. The course covers three learning units, which includes "identifying the need for security", "securing devices and "using the Internet securely. In particular, this training takes the trainee through the essentials of identifying the need for security, effectively securing their devices and understanding how to navigate through the Internet and email securely. The training is recognised by CyberSecurity Malaysia.

Prepared by: Prepared by: Dr Chiew Kang Leng

The Digital Image Processing with Scilab Workshop

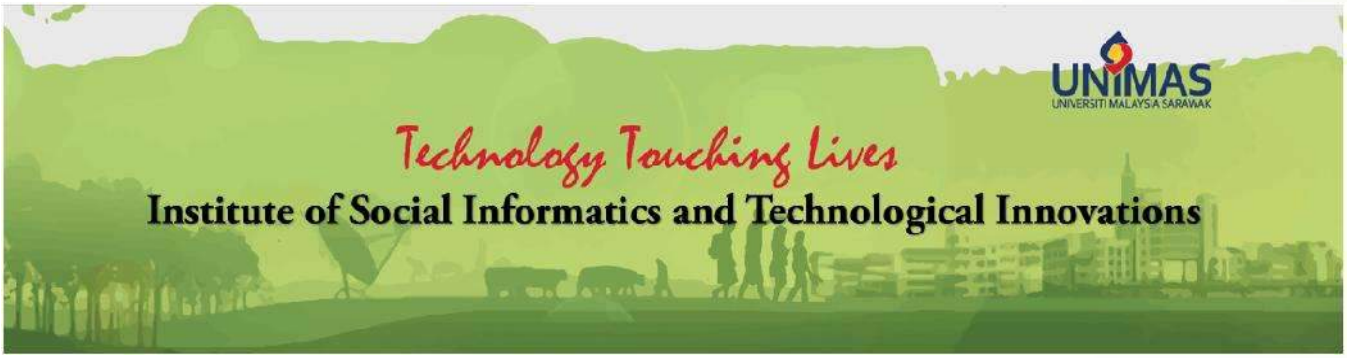
The Digital Image Processing with Scilab workshop on 18th October 2017 at UNIMAS Microsoft Lab is the follow up of the Nummerical Computational and Visualization with Scilab which was carried out in 2016. The intention of the workshop is to promote the use of open source numerical tool, Scilab in research, learning and teaching. In the workshop, all the participants are experienced on their first hand different many functions to perform image processing task with Scilab. This workshop is participated by both students and academic staff from FSKTM, FK and FSKPM.

Prepared by: Prepared by: Dr Bong Chih How

D'Pepper Grading Machine, My Kampung My Future

An introduction programme for the pepper planters was conducted by Dr Dayang NurFatimah at Kampung Staas, Bau. The event was attended by 45 pepper planters. The Mini Pepper Grading Machine, namely D'Pepper was demonstrated to the villagers and it will be handed-over to them. **To know more on the event, please scan the Aura below**.

Prepared by: Dr Dayang NurFatimah Awg Iskandar



ISITI Research Projects

(1) Community Opportunities & Needs Supported Through Networked Entrepreneurship, Innovation & Communication Technology Strategies (Connects) Program

PI: AP Dr. Jane Labadin
Researchers: Dr Tariq Zaman

(2) Corpus Building for a Multilingual Automatic Speech Recognition System

PI: Dr Sarah Flora Ak Samson Juan.
Researchers: Mdm Suahila Saee, Mdm Rosita Bte Mohamed Othman and Ms Jennifer Fiona Ak Wilfred Busu.

(3) Implementation of Telecentre for Orang Asli Programme

PI: AP Dr. Poline Bala
Researchers: Prof. Dr Alvin Yeo, AP Dr. Edwin Mit, AP Dr. Jane Labadin, AP Dr. Wan Azlan Wan Zainal Abidin, Prof. Dr Al-Khalid Othman, AP Dr. Tan Chong Eng, AP Dr. Fitri Suraya Mohamad, AP Dr. Hushairi Haji Zen, Dr Parveen Kaur, Dr Zamri b Hj Hassan, Dr Sharifah Sophia Wan Ahmad, Dr Nwanesi Peter Karubi, Dr John Phoa Chui Leong, Dr Mohd Faisal Syam bin Abdol Hazis, Dr Nur Afifah Vanitha Abdullah, Dr Mohd Danial Ibrahim, Dr Juna Liau, Dr Martin Ayi, Dr Wong Swee Kiong, Dr Ahmad Nizar Yaakub, Dr Ashley Edward Roy, Dr Goy Siew Ching, Yuen Kok Leong, Nurul Huda Marwan, Nicholas Gani Mohd Farid Bin Atan, Kiky Kirina Bt Abdillah, Siti Khatijah Bt Zamhari, Siti Fateha Dolhadi, Bemen Wong Win Keong, Christopher Perumal, Claudia Jiton, Dayang Aizza Maisha Abang Ahmad, Dayang Hajyrayati Binti Awg Kassim, Jamali Bin Bujang Sanawi, Jayapragas Gnaniah, Tracy Ak Peter Samat.

(4) Technopreneurship, Innovation and Enterprise Development (TIED) Program

PI: AP Dr. Jane Labadin
Researchers: Dr Tariq Zaman.

(5) Creative and Participatory Transcultural Practise and Problem Solving Through Game Design and Computational Thinking (Creative Culture)

PI: Dr. Jacey-Lynn Minoi .
Researchers: AP Dr Fitri Suraya Mohamad & Mr. Terrin Lim

(6) Handicraft Development for Penan Artisans in Tegulang Resettlement, Murum

PI: Project Leader: AP Dr. June Ngo Siok Kheng.
Researchers: Prof. Dr Narayanan Kulathuramaiyer, Dr John Phua, Dr. Tariq Zaman & Prof. Dr Alvin W. Yeo.

(7) The Workflow for TACIT Knowledge Transfer Across Service Learning Offerings

PI: Prof. Dr. Narayanan Kulathuramaiyer.
Researchers: Dr Stephanie Chua Dr Dyg. Hanani, Nurul Zawiyah, Dr Roger Walton Harris .

(8) Building Machine Readable Dictionaries by Unifying the Structures of Indigenous Language Dictionaries Using Formal Grammal and XML

PI: AP Dr. Ranaivo-Malançon Balisoamanandray
Researchers: Suhaila Saee, Rosita Bte Mohamed Othman, Jennifer Fiona Ak Wilfred Busu.

(9) Cornell University Project (Service Learning)

PI: Dr Tariq Zaman
Researchers: Prof. Dr Narayanan Kulathu Ramaiyer, Dr Alvin Yeo Wee, Dr Roger Walton Harris.

(10) Training, promotions, awareness and community engagement for 6 sites PI1M at Perlis

Researchers: Dr Tariq Zaman, Jaya Laxshmi Meenatchisundaram, Farina Osman, Ismail Jolhip , Franklin George.

(11) Dissemination and Promotion of Indigenous Penan Language Oroo' Project

PI: Dr. Tariq Zaman.

(12) Study of Socio-Cultural Characteristic of Indigenous People to Harness Knowledge for Community Resilience to Climate Change

PI: Dr Amit Pariyar.

(13) Capacity to Organize Massive Public Educational Opportunities in Universities of Southeast Asia (COMPETEN-SEA)

PI: Prof. Dr. Narayanan Kulathuramaiyer
Researchers: AP Dr. Poline Bala, AP Dr. Johari Abdullah, Mr. Chuah Kee Man

(14) Penambahbaikan Kualiti Bekalan Air Dan Sistem Sanitasi Untuk Masyarakat Penan di Long Lamai

PI: Ir Dr Leonard Lim Lik Pueh.
Researchers: Prof. Dr Alvin Yeo Wee, Dr John Phoa Chui Leong, Dr Ivy Tan Ai Wei, Dr Charles Bong Hin-Joo, IR Dr Ting Sim Nee, Dr Cheah Whye Lian.

ISITI ACTIVITIES, EVENTS & TALKS

Majlis Hari Terbuka Program-Program Telecentre untuk eSinderut, eLenjang, eBalar dan eGob (TPOA) di Telecentre Pos Sinderut, Pos Sinderut, Kuala Lipis, Pahang

After a successful implementation of the eBario project and its replication to four other sites in Sabah and Sarawak, the Institute of Social Informatics and Technological Innovations (ISITI), has been once again tasked with the expansion of the telecentre model to four Orang Asli sites in West Malaysia through the TPOA project. Four selected Semai and Temiar Orang Asli settlements were identified to be part of the project, namely in Pos Sinderut and Pos Lenjang in Kuala Lipis, Pahang and Pos Gob and Pos Balar in Gua Musang, Kelantan. The project, which started with a needs analysis of the communities at the chosen sites in 2013, has now seen the completion of the infrastructure delivery phase which is built on ISITI's homegrown optimised telecentre model. The telecentres at all four sites will now play the role as knowledge centres, which is crucial towards the continued sustainability of these telecentres within the communities.

With the availability of the infrastructure and facilities at these sites, the programme teams will now work hand-in-hand with the community in the upcoming phase of delivering six programmes which have been specifically designed to meet with the needs of the communities. This open day ceremony marks the move to this crucial phase whereby all the stakeholders will need to be engaged towards ensuring the promised deliverables of this project will come into fruitation. It is hoped that through this initiative, the empowered community will now fully exploit technology to bring about a meaningful impact in their lives.

University-Community Partnership for Indigenous Community Resilience

This forum, which was a joint effort by Sarawak Development Institute (SDI) and ISITI together with Cornell University, highlights on the University-Community partnership that ISITI, UNIMAS and Cornell have shared with the Long Lamai community members. The forum also brought to attention the efforts that both universities and community have shared in addressing the impacts of climate change through the implementation of the Global Citizenship and Sustainability (GCS) service learning programme.Some of the main issues that were brought to attention included the need to increase research on the benefits of working together with communities, the inclusion of indigenous communities when formulating policies, community engagement as well as the issue of urban migration.

The forum also served as a platform to provide insight on how University-Community partnerships can contribute to the goals for resilience-oriented development among underserved communities, the benefits of service learning not only for the students but also members of academia and also how to stimulate research that can have real-world impact beyond academia.

Electricity Access for Indigenous Communities in Sarawak

Universiti Malaysia Sarawak, through the Institute of Social Informatics and Technological Innovations (ISITI), has worked closely with the University of Cambridge towards conducting research on understanding community preferences to ensure that electrification schemes are congruent with the communities' specific development pathways. The results of the research were discussed during the recent forum on "Electricity Access for Indigenous Communities in Sarawak" which was held at Wisma Bapa Malaysia, Kuching. The forum, which was organised by Sarawak Development Institute (SDI) and ISITI together with the University of Cambridge focused on providing access to electricity services to remote, indigenous communities through decentralised generation technologies.

Bengkel Pelan Strategik Bersama Felo Penyelidik ISITI 2017-2022: Sustainability for Diverse and Dispersed Communities

A two-day workshop was organised with all the research fellows at ISITI at Rumah Universiti, UNIMAS. This workshop was conducted in order to review the past research activities undertaken by ISITI as well as to plan the future directions of the institute, especially with regards to sustainability for the communities with whom ISITI works closely with.

Gatuman Ileh Knowledge Connector

ISITI recently took the first steps towards rebranding the eBario Telecentre towards becoming a knowledge hub in the Kelabit highlands of Bario. With the introduction of Gatuman Ileh Knowledge connector, the role of the telecentre has moved from being a center for technology towards managing the knowledge that this technology makes increasingly accessible. By positioning Gatuman Ileh as the center that will facilitate the exchange of ideas to propel innovation, eBario will take on the transformation into becoming a knowledge management hub. One of the plans that have been put into play is the construction of the community museum, which is located adjacent to the telecentre. eBario now has a new role of digitizing Kelabit culture and traditions for the benefit of future generations, alongside with Radio Bario which will be taking on the role of preserving the Kelabit language.

UNIMAS International Summer Programme 2017

A group of 12 participants of the UNIMAS International Summer Programme 2017 visited ISITI as part of their programme. The participants were introduced to the various research initiatives spearheaded by ISITI and were also given a detailed explanation on the impacts that the research conducted by the institute had on the communities involved. The participants were also asked to provide their own insight on the issues of sustainability of developmental projects for rural communities as well as to share their experiences and thoughts on any research projects that they had either participated in or were keen to pursue in the future.

Flag Off Palapes to Long Lamai

ISITI participated in the flag-off of the UNIMAS-PALAPES team to Long Lamai as not only was this the first time

that PALAPES was involved in an ISITI-related activity, but also this was a unique collaboration between UNIMAS and PALAPES in conducting a community project. The UNIMAS-PALAPES team sent construction material and completed the construction of the NBOS project via the UCTC, MoHE to improve the water supply and sanitation system for the Penan community in Long Lamai. The project components consisted of a rainwater harvesting system, biochar reactor and dry composting toilet in effort to enable the sustainable development of Long Lamai in the long term.

Presentation to Ministry of Foreign Affairs application to be registered Patronage of MTCP Programme

In an effort to further introduce Information and Communication Technology for Development (ICT4D) projects that have been undertaken by ISITI to a wider audience in Malaysia, ISITI recently presented its intention towards becoming registered as a Training Institute (TI) under the patronage of Malaysian Technical Cooperation Programme (MTCP) to the Ministry of Foreign Affairs. Having been involved in ICT4D projects since 1998, through the Bario project and after being acknowledged both internationally and nationally through the numerous awards received, ISITI is now ready to undertake training programmes in the area of ICT for Development (ICT4D), Engaged Learning and Rural Informatics.

Launching of 'The eBorneo Knowledge Fair'

ISITI recently launched the first book commemorating the 'eBorneo Knowledge Fair' during the opening ceremony of the UNIMAS Silver Jubilee Conference 2017. The book was officially launched by the Malaysian Minister of Higher Education, YB Dato' Seri Idris bin Jusoh. The 'eBorneo Knowledge Fair' book captures the experiences that ISITI has had with the highland communities in Sarawak with regards to the usage of ICTs in ways that are relevant to them, the many milestones that ISITI has achieved over the years of working closely with these communities as well as the journey ahead for ISITI together with these communities.

Sixth eBorneo Knowledge Fair

ISITI has accomplished yet another huge milestone on its path to transforming social communities into a knowledge-based society with the conclusion of the sixth eBorneo Knowledge Fair 2017 (eBKF6 2017). Popularly known as the eBario Knowledge Fair, this rebranded three-day event took place from 25-27th October 2017 for the second time at Ba'kelalan, in the heart of Borneo. For the first time, the event introduced "Drive-Thru Workshop & Innovation Walk" which started as a road trip from Lawas to Ba'kelalan with a stopover at Long Semadoh for the participants to meet the residents and experience local food and culture. The main purpose of the Drive-Thru was to allow participants to experience the terrain and gain insight into the lives of communities from the highlands in Sarawak.

Globally acclaimed for showcasing the use of Information and Communication Technologies (ICTs) in development of isolated rural indigenous communities, this bi-annual event brought together ninety two participants, representing various stakeholders such as WWF-Malaysia, Forum Masyarakat Adat Dataran Tinggi Borneo (FORMADAT), researchers from UNIMAS, UPM, Cornell University, Cambridge and University of London, as well as members of the indigenous communities from Ba'Kelalan, Bario and Long Lamai. Also present were indigenous communities from Long Pa'sia, Pos Sinderut and Pos Lenjang (Pahang), Pos Balar and Pos Gob (Kelantan) as well as communities from Krayan, Indonesia.

Centre of Image Analysis and Spatial Technologies (IMAST)

Director: Prof. Dr. Wang Yin Chai

Established in 2007, IMAST is a forward looking Technology center which focuses on IT software development, business strategies planning and consultancy services. IMAST consultants and developers are highly trained professionally in order to meet clients' needs that are increasingly fickle and challenging. We have a proven track record in quickly understanding complex business requirements to be competitive and become the market leader in the Information Technology field. IMAST has a wealth of experience in Image Analysis and Spatial Technologies fields with several award winning products such as Content Based Image Retrieval Algorithm.

ON-GOING RESEARCH & CONSULTATION PROJECTS

- Spatial Based E-Biodiversity for Monitoring, Conservation and Substainbility of Biodiversity of Western Sarawak using Communities Participatory Approach.
- A Computational Approach for Airport Dual Energy Baggage X-ray Image Enhancement
- Development of a Decision-making App based on Android platform for classification of wood classification

Collaborators

FCSIT Memorandum of Understandings and Agreements

New Memorandum of Understandings

1. Qurtuba University of Science and Information Technology
2. F-Secure Corporation (M) Sdn Bhd
3. Ketua Masyarakat dan Ketua Kaum N8 Satok
4. Tallinn University of Technology (TTÜ), Estonia
5. Peoplelogy Development Sdn Bhd
6. FAS (Sarawak) Holdings Sdn Bhd

New Memorandum of Agreement

1. Ministry of Modernisation of Agriculture, Native Land and Regional Development Sarawak (MANRED)
2. Sarawak Leadership Institute

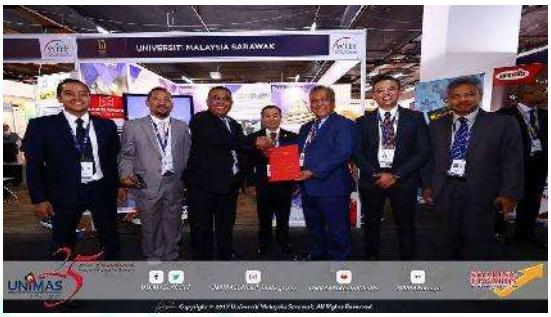
Active Memorandum of Understandings

1. Pustaka Negeri Sarawak
2. KURAMAE Service Shn Bhd (Malaysia)
3. Dev Sankriti Vishwavidyalaya (India)
4. AGOGO Asia
5. Sarawak Information System (SAINS)

Active Memorandum of Agreements

1. Malaysian Software testing Board (MSTB)

MoU signing ceremony with Ketua Masyarakat dan Ketua Kaum N8 Satok



MoU document exchange with FAS (Sarawak) Holdings Sdn Bhd

MoU document exchange with F-Secure Corporation (M) Sdn Bhd during CITA'17

New Sarawak Tribune
www.newsarawaktribune.com.my
SATURDAY SEPTEMBER 30, 2017
SARAW

Unimas, Estonia's TUT ink MoU

TALLINN: A Memorandum of Understanding (MOU) was signed yesterday between UNIMAS and Tallinn University of Technology (TUT) here that will pave the way for a strategic collaboration between Universiti Malaysia Sarawak (Unimas) and TUT to support Sarawak's transformation programme into a digital economy.

According to a statement from Unimas issued after ceremony, the MOU covers three technical areas of interest for immediate collaboration between Unimas and TUT, namely Research related to E-government (including using requirement engineering to model and evaluate the effectiveness of Digital Economy imitative for Sarawak; Research related to Cybersecurity and Blockchain technology, and Research related to Big Data and Analytics.

Present to witness the signing of the MoU were Chief Minister Datuk Patinggi Abang Johari bin Tun Datuk Abang Openg, State Secretary, Tan Sri Datuk Amar Mohamad Morshidi bin Abdul Ghani, the Ambassador of Malaysia to Finland, Latvia and Estonia, Puan Sri Blanche Olbery, the Honourary Consul of Estonia in Malaysia, Col. Dato'Harbans Singh, and heads of departments and agencies accompanying the Chief Minister during the study visit to Europe.

Meanwhile, another team led by Deputy Chief Minister, Datuk Amar Awang Tengah Ali Hasan visited a papermill called AS Estonian Cell located at Kundaabout 110 km from the Estonian capital.

GROUP photo after the MoU signing ceremony in Tallinn, Estonia yesterday.

The Unimas statement said the MOU also formalised cooperation between the two universities in areas of collaborative research activities, student project and internship, talk sessions for students and faculty members and development of curriculum and syllabus.

The cooperation was also extended to the exchange of academic staff or faculty members for research and teaching, participation in seminars and academic meetings by academic staff and faculty members and short term academic programmes.

The MoU was signed by Professor Datuk Dr Mohamad Kadim Suaidi, Vice Chancellor of Unimas and JaakAavikso, Rector of TUT.

"In addition, Proffesso rKuldar Taveterof TUT has also been offered a visiting Professor post at Unimas as part of the collaboration between the two institutions.

"It is hope that with the MOU between Unimas and TUT, will further strengthen the relationship between both institutions of higher learning in areas of interest to both parties, and provide support to the state's Digital Economy initiative," the statement said.

Earlier, the Chief Minister and members of his delegation met with Mrs Urve Palo, Estonia Minister of Entrepreneurship and Information and later in the afternoon with key officials of the Estonian Chamber of Commerce and Industry.

FCSIT Lecturers Commercial Projects

Assoc. Prof. Dr Jane Labadin

- Community Opportunities & Needs supported through Networked Entrepreneurship, innovation & Communication Technology Strategies (CONNECTS) program, with ISITI
- Technopreneurship, Innovation and Enterprise Development (TIED) Program, with ISITI.

Dr Dayang NurFatimah Awang Iskandar, Tn Hj Ahmad Hadinata Fauzi & Nurul Zawiyah Mohamad

- i-Easy: Institute Event Attendance System

FCSIT Postgradute Student Society Activities 2017

This year, PGSociety made changes in how it organises activities. Due to the decreasing number of postgraduate students, we have organised our activities by inviting some undergraduate students to join, to give them exposure to PGSociety, and also slowly expose them about researches done in the faculty. To date, due to the small number of postgraduate students and the hectic schedule of research students, we have managed only three activities, which are;

1. Recreational trip to Mount Santubong;
2. Research paper writing workshop; and
3. Hari Raya open house.

The Mount Santubong trip has been a success, as we have managed to gain some interest from undergraduate students. The result of it is the creation of a cyber security student club. The research paper writing workshop was a good one, exposing students on how to write their paper for various kinds of journals and conferences. It was really an eye opener for a lot of us. The Hari Raya open house was planned to include postgraduate students and faculty's staff, in order to create a stronger bond among faculty members. Although it was done during the semester break, quite many people attended, and it was a fun session meeting up other student, as usually everyone will be busy with their own work.

There are more activities planned in the near future, and we hope that more people will come join us, and that we can attract more undergraduate students to come and do research in this faculty.

Call for Papers

For the first time, Universiti Malaysia Sarawak (UNIMAS) will be the host for the 11th Malaysian Software Engineering Conference (MySEC2018). Initiated by the Malaysian Software Engineering Interest Group (MySEIG), the Faculty of Computer Science & Information Technology in UNIMAS will be organizing this event in Kuching, Sarawak from 7-9 August 2018.

The objective of the MySEC Conference is to promote and encourage all aspects of software engineering and its associated technologies, applications, and tools. All accepted papers in MySEC2018 will be published in JTEC (SCOPUS indexed) special issue.

MySEC2018 welcome contributions that address any software engineering topics of interest including but not limited to the following:

Theme: *Transforming Society through Sustainable Digital Economy*

Software Process and Measurement

- Requirement Engineering
- Software Architecture
- Testing, Verification and Validation
- Quality, Metrics and Measurement
- Maintenance and Evolution
- Security, Safety and Reliability

Software Approach

- Agile Software Development
- Emperical Software Engineering
- Object and Component Based Software Engineering
- Cloud Based Software Engineering

Web Based Software Engineering

Agent Based Software Engineering

Distributed and Parallel Software Engineering

Knowledge Based Software Engineering

Intelligent Software Engineering

Software Reuse

Formal Methods

Context-Aware and Adaptive System

Mobile and Ubiquitous Software System

Application for Priority Sectors

Society

Algriculture

Tourism

Smart City

Industry 4.0

Big Data Analytic

Virtual and Augmented Reality

Cybersecurity

Image Processing

Software Tools and Environment

Project Management

Data Warehouse

CASE tools

Standard and Legal Issues

All accepted papers, will be published in a special issue of Journal of Telecomunication, Electronic and Computer Engineering(JTEC – ISSN 2180-1843, e-ISSN 2289-8131). JTEC is currently abstracted and indexed in SCOPUS, Google Scholar , Index Copernicus, Ulrichsweb Global Serials Directory, Malaysian Journal Management System (MYJurnal) and Malaysian Citation Index (MYCite).

JTEC has received Malaysian Citation Index (MYCite) Impact Factor of 0.122 for 2013 and ranked no 3 out of 63 Engineering and Technology Journals.

Faculty of Computer Science & Information Technology

Universiti Malaysia Sarawak
94300 Kota Samarahan
Sarawak, Malaysia
+6082 583 775
dnfaiz@unimas.my

http://www.fcsit.unimas.my