



**Internet of Things** Catching the Next Big Wave

page 11

**Ransomware:** Things you need to know

page 15

**Big Data Analytics** in Flood Disaster Management in Malaysia

page 7

# Table of **CONTENTS**

From Editorial Desk	2
SoCT Research Centres and Activities	3
Spotlight on APCA	5
Big Data Analytics in Flood Disaster Management in Malaysia	7
Spotlight on CREDIT	9
Internet of Things – Catching The Next Big Wave	11
Spotlight on Fsec	13
Ransomware - things you need to know	15
Competition Summary	17
Alumni	21

The logo for 'TECHIE world' is displayed on a yellow rectangular background. The word 'TECHIE' is written in a large, bold, black, sans-serif font. Below it, the word 'world' is written in a smaller, black, sans-serif font, with a black globe icon replacing the letter 'o'.

## **Editorial Board**

### Editorial Team

*Assoc. Prof. Dr. Geetha Kanaparan  
Supriya Singh  
Dr. Imran Medi*

### Contributors

*Amad Arshad  
Dr. Maryam Shahpasand  
Dr. Tan Chye Cheah  
Manoj Jayabalan  
Mohamad Firdaus Che Abd Rani  
Nor Azlina Abdul Rahman*

### Layout & Design

*Mohamad Firdaus Che Abd Rani*

### Suggestions / Enquiries

[techieworld@apu.edu.my](mailto:techieworld@apu.edu.my)

# from EDITORIAL DESK

---

Welcome one and all to the inaugural edition of the School of Computing and Technology's brand new newsletter. We, the Editorial Board, hope that this publication will over time become an essential part of your University experience and serve as key conduit through which to keep abreast of what's happening in and around your School.

We have designed this newsletter specifically for people like YOU! (and us too). For those who may not normally pay much attention to the conventional newsletter periodically published by a school.

We want it to be engaging and inclusive, yet most of all informative...and before you say it... we realise we are setting the bar very high indeed but as our Jedi master Yoda once said.. DO or Do not.. There is no try!! So here we are doing just that! Providing you with a quality publication befitting the School and most importantly YOU, the amazing student body that makes the School what it is.

Inside this, and hopefully every issue, you will find a mixture of School news as well as articles pertaining to current and future trends rippling through the Computing and Technology domains. For this inaugural edition however, we feel we should get to know each other a little better! That's why you'll find much of the focus placed upon the research currently underway within the School and the locus of this activity in the form of the various research centers active within SoCT.

We sincerely hope you enjoy this first issue, please do endeavor to provide us with as much feedback (positive or negative) as possible so we can, to paraphrase Gotham's Commissioner Gordon, make this the newsletter SoCT deserves, as well as the Newsletter SoCT needs!!

**The School of Computing and Technology** is engaged in far more than the delivery of modules and assessment of students. As is expected of any notable institution of higher learning, the University is actively engaged in both the creation of new knowledge and its dissemination to subsequent generations of students. Whilst we take the latter very seriously, and this is most likely what your academic experience has thus far primarily encompassed, your University, and SoCT in particular are actively engaged in the development of new knowledge to address the needs of the broader world around us. As you may be wondering what the academic faculty get up to when not teaching, (re)introducing students (and maybe some staff as well) to the activities of these centres was the first thing we pencilled in when planning our first issue. We hope that by having a deeper understanding of these research centres you will be able to better align your FYPs and research to the key loci of industry. Oh, and hopefully be inspired to engage with one of the research centres too!

In order to keep you abreast of the research taking place within your school, we will be bringing you a series of articles from each respective research centre in this and the forthcoming newsletters. But first some introductions are in order:

At present, there are three research centres actively engaged in research in varying, yet pertinent areas relevant to industry and broader society: These centres are

- Asia Pacific Centre of Analytics (APCA)
- The Centre for Research and Development of IoT (CREDIT)
- Centre for Forensics and Cyber Security (Fsec)

### **Asia Pacific Centre of Analytics**

At the Asia Pacific Centre of Analytics (APCA) we work to one simple brief; to identify and develop solutions to problems that industry currently faces or is likely to face. The focus of your efforts is upon data, as data is changing our world. The field of data analytics is progressing at a rate beyond anything we have ever experienced. The field also presents enormous challenges, thanks to the increase in the volume, velocity, and variety of information ripe for mining and analysis. If we can tap into this wealth of information and make decisions based on it, we will transform the way our world works. Data analytics is a global trend and a serious investment by every organization – large or small. It has the potential to improve our approach to everything from transportation scheduling to medical diagnostics.

At APCA this is what we do. We are a joint group of researchers from various schools of study who –



have introduced data analytics in our respective faculties. We combine a depth of expertise in statistical modelling, data management, knowledge discovery, machine learning and much more to shape graduates in this field. We are in a unique position at the interface of academia and industry. The center is engaged in efforts to equip academicians and students with solutions reflective of this new data intensive era, for use in both research and academic studies. The research center is oriented towards the creation of expertise in data analytics and its introduction and integration into industry.

## The Centre for Research and Development of IoT

The Center for REsearch and Development of IoT (CREDIT) was established on November 15, 2016 at APU. This first of its kind IoT Center of Excellence in Malaysia will assist APU to create a multidisciplinary learning and research environment in the field of IoT and related disciplines, including Advanced Analytics, Cloud Computing, Mobile Development and Embedded Systems. CREDIT aims to provide students and academic staff the opportunities to access IoT-related knowledge and know-how through various activities. It also acts as a hub to support commercialising potential solutions resulting from R&D projects. Additionally it allows students to be engaged in a current key requirement sector which will increase employability rates. As a result, it has a lot of potential in terms of developing skills set and collaboration which in turn could benefit the university.



## Centre for Forensics and Cyber Security

The importance of research conducted by the Centre for Forensic Cyber Security (Fsec) has been forced home by the fallout from recent the WannaCry global ransom attack. In the data-centric world, where information technology and associated communications' networks and services pervade every aspect of our daily lives, the protection of digital assets and activities in cyberspace are of critical importance. On this basis, the Centre's principle purpose is to develop skills set pertaining to the forensics and cyber security in order to meet the demands of the future in new trends, governance, regulation, partnerships, skills, and tools

There is an urgent need for creative thought leading to the next generation of forensics and cyber security capability. Current approaches are simply not able to meet the demands of a global society growing in cyberspace on the current trajectory of security breached events. Success will necessarily require an ability to anticipate, deter, detect, resist and tolerate attacks, understand and predict cyber risks, and respond and recover effectively at all levels, whether individual, enterprise, national or across international markets



# Activities



## Why Big Data Matters

The talk on 'Why Big Data Matters' on 28<sup>th</sup> February 2017 drew in an auditorium filled room of students interested to find out more and meet industry experts.



## Rapid Miner Workshop

On 11<sup>th</sup> March 2017, APCA initiated a workshop by Mr. Giam Kai Yi, an Analytics Specialist at Quandatics and Certified RapidMiner Analyst attended by Data Science, IT (Database Administration) and Software Engineering students.



### The Data Science Team: Where do you fit?

A talk by Professor Khong Kok Wei from SAS User Group Malaysia on 25<sup>th</sup> April 2017 for the students who are interested in a career in data science, but not sure where to start.



### CIMB Data Science Challenge Workshop 2017

Hands-on workshop and assessment has been conducted on 17<sup>th</sup> May 2017 for shortlisted challenge participants.



### Machine Listening: Emerging Opportunities in Audio Analytics

On 18<sup>th</sup> May 2017, APCA organized a talk by Dr. Shyamala Doraisamy, an Associate Professor at Department of Multimedia, Faculty of Computer Science and Information Technology, University Putra Malaysia (UPM).

# Big Data Analytics in Flood Disaster Management in Malaysia

Image source: <http://www.malaysia1news.my>



Current risk management, flood mitigation and early warning systems have not been comprehensive in tackling major disasters such as the Flood on 15 December 2014 – 3rd January 2015, which killed 21 people, more than 200 000 people impacted economically with lost accounting over 500 million. The data obtained for analysis is focused to the main affected areas such as region surrounding Kelantan River, Pahang River, Perak River, Johor River and the water catchment area. The solution integrates real-time and past data via cloud storage: Rainfall Data, River & Dam water level Data, Population Census, Land & Flood Plane Spatial Data, Access Route & Transportation. Other relevant data would be added based on needs of validation and impact factors

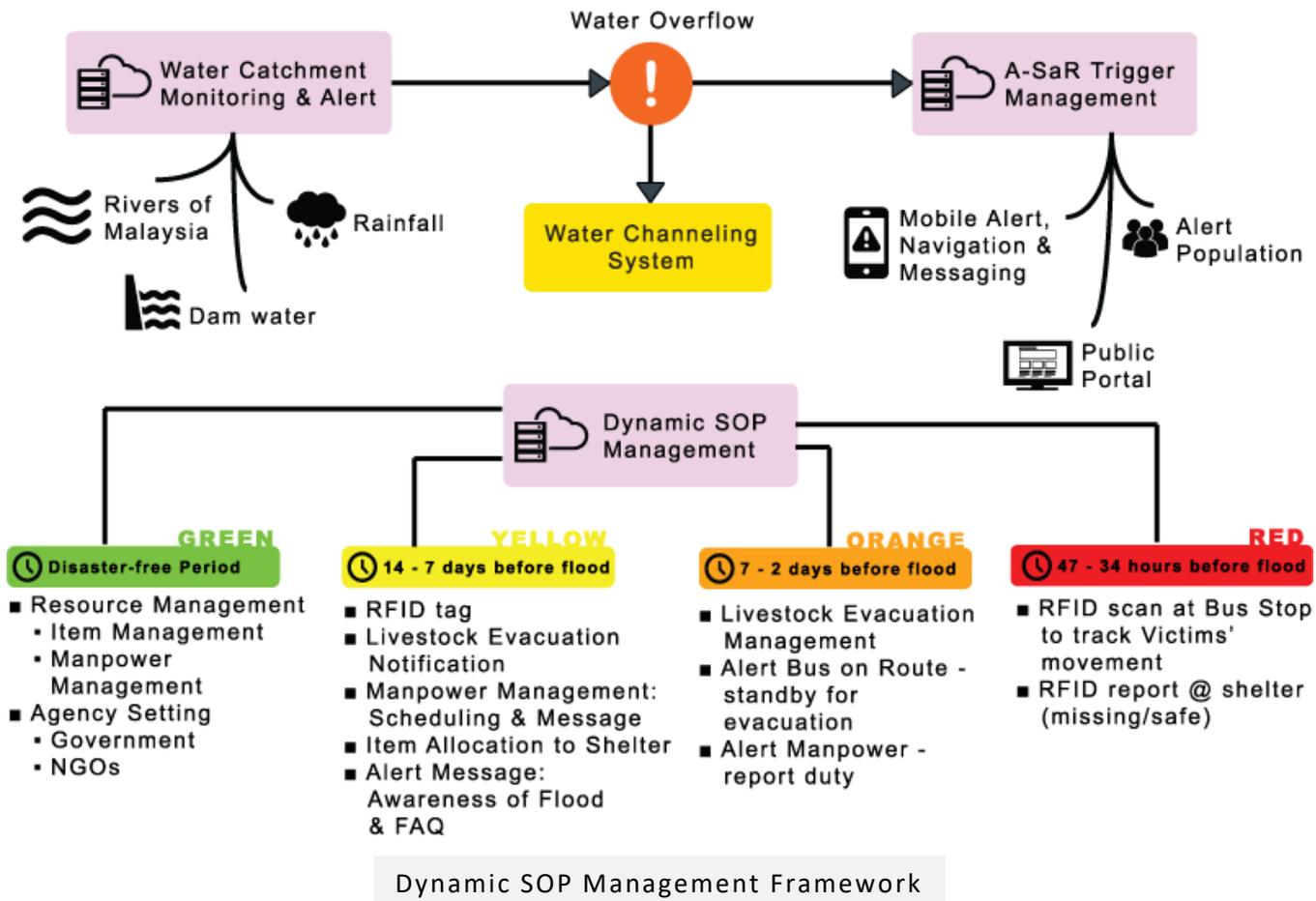
The aim of the solution is to enhance preparedness and response by improving coordination and enhancing the capability of those organizations involved in flood rescue via early detection and integrated communication using ICT. The suggested solution will provide an organizational capability and structure to enable the delivery of a coordinated national response

to flooding incidents, such that organizations can work together to minimize the loss of life and injury and to reduce the physical and financial effects of consequential loss and collateral damage.

The organizations involved in Flood Rescue will have additional capabilities and capacity to respond to major flooding incidents so that they will be able to:

- Deal with the consequences of major flooding, by having the appropriate operational capability ready.
- Maintain the capability over the long term so that it is available whenever required.
- Deploy resources swiftly once a flooding incident occurs.
- Command, control and communicate at major flooding incidents, from assessment and initial response, through to the management of recovery and reestablishment of preparedness
- Introduce national mutual aid and standards such that the organizations can communicate and coordinate information via single channel.

# Big Data Analytics in Flood Disaster Management in Malaysia



## Suggested Solution

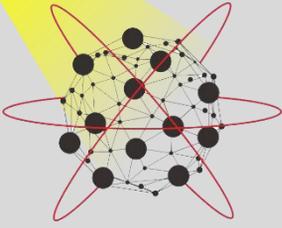
The solution components are divided in two parts, a Web Portal and an associated mobile interface, both of which are underpinned by tailor made Standard Operating Procedures (SOPs). The web portal provides an interface through which key stakeholders/users can engage in planning both before and during a flood whereas the mobile application focus in allowing users to receive push notifications sent from the server.

This solution is incomparable to any existing solutions as it is customized to manage Flood disaster in Malaysia, focusing on specific region. Nevertheless, the solution is developed dynamically to manage all key users, locations, and basic functional areas in all flood disaster management. Thus, it is capable of expansion of

use in other regions in Malaysia or can evolve as a benchmark for any flood Search and Rescue (SAR) worldwide (refer Dynamic SOP Management Framework).

## Conclusion

We cannot prevent the flood disaster; however we make better use of the current web and mobile technologies and promote future advances. As mobile devices become more common nowadays, the authorities has the chance to provide first responders and citizens with the tools necessary to save lives before, during and after the threatening event.



# Activities

## IBM Watson IoT hands-on workshop

As a part of the collaboration with IBM, IBM Watson IoT hands-on workshop was organised on the first week of August 2016 to introduce the Watson IoT capabilities. At the workshop, Ms. Gayathri Srinivasan from IBM US provided an insight into IoT application development from a practical point of view.



## MDeC IoT Train-the-Trainer Workshop

Dr. Tan Chye Cheah and Suresh Gobee attended the STM32 IoT Workshop organized by MDEC & IoT Labs in the final quarter of 2016.



## IoT Tech Forum

Dr. Qazi Mamoon and Mr. Mu Pathma were invited to talk about IoT infrastructure and IoT startups on 29<sup>th</sup> May 2017. Dr. Qazi Mamoon is the associate senior researcher at TM and Mr. Mu Pathma is the CEO at Promosys Technology.



## IoT Innovation Day 2017

It is a full-day event on 11<sup>th</sup> July 2017 to bring together various industry experts to give talks on a wide range of IoT-related subjects, to foster learning, inspiration and provoke IoT innovation. This event was supported by MaGIC Malaysia and it is part of the 'Road to GEC' events. It received about 200 participation from the students and industry professionals.





# Internet of Things – Catching The Next Big Wave

## What is IoT

You may have heard the term ‘the Internet of Things’ or its acronym IoT bandied about a lot quite recently. Whilst IoT is rapidly becoming a focal point for both governments and organisations of all forms, the ubiquity of the term belies a certain ignorance as to what the phenomenon actual means and what it entails. In simple lay terms, IoT is the connecting of any device or object to the Internet and vice versa. This includes anything from cellphones, cars, washing machines, televisions, lamps, wearable devices and almost anything else you can think of. Quite literally everything and the kitchen sink!!

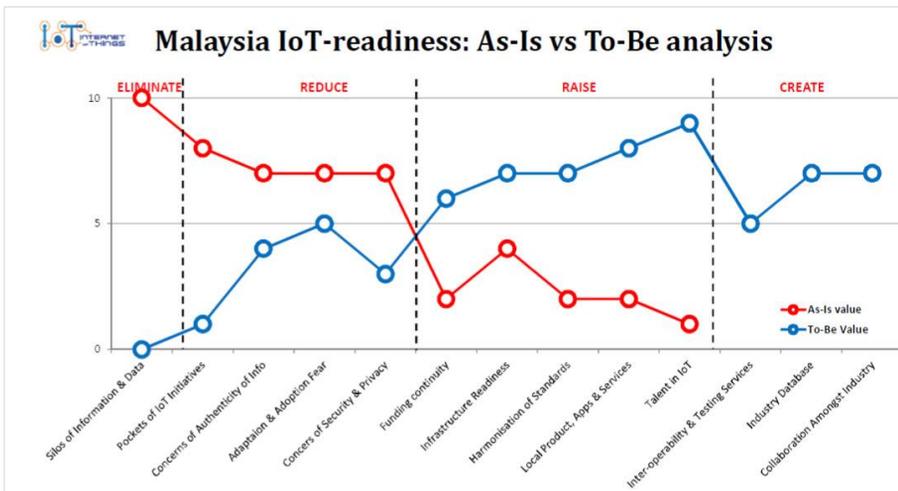
Broadband Internet has become more widely available, the cost of connecting is decreasing, more devices are being created with Wi-Fi capabilities and sensors built into them, technology costs are going down, and smartphone penetration is skyrocketing. All of these things are creating a "perfect storm" for the IoT. Kevin Ashton, digital innovation expert who is credited with coining the term, defines

the Internet of Things in this quote:

“If we had computers that knew everything there was to know about things—using data they gathered without any help from us—we would be able to track and count everything, and greatly reduce waste, loss and cost. We would know when things needed replacing, repairing or recalling, and whether they were fresh or past their best.”

The journey to an inter-connected world of data enabled objects began in earnest nearly 30 years ago, with the cornerstone first laid by the unveiling of an Internet connected toaster in 1990. In the intervening years developments in networking technologies and Internet connected toaster in 1990. In the intervening years developments in networking technologies and Internet infrastructure has made a world of interconnected objects sharing data a tantalisingly close reality. What would it be like to live in this reality? Well, here is just one possibility:

Say for example you are on your way to a



Malaysia IoT-readiness: As-Is vs To-Be analysis

meeting. Your car could have access to your calendar and already know the best route to take. If traffic is heavy your car might send a text to the other party notifying them that you will be late.

This is but a simple example of what is extensibly a much broader and significant concept. IoT is usher us into the age of smart living! We therefore stand on the threshold of something much greater, with IoT facilitating smart grids, smart manufacturing, entire smart cities, to name but a few.

### Are we ready for IoT, the next big wave?

In July 2015, Malaysia’s Ministry of Science, Technology and Innovation (MOSTI) together with its applied research agency, MIMOS launched the National Internet of Things (IoT) Strategic Roadmap, a document that serves as a guideline for IoT implementation in Malaysia. It highlights several challenges and barriers, as well as enablers and catalysts to the growth of the ecosystem for the IoT industry in Malaysia. One of the important factors to be considered is the continuous supply of IoT-specific talent.

Development of IoT services & solutions is a complex multi-discipline domain. It involves embedded development, electronics, web and

mobile application development, as well as cloud computing expertise. These skills are lifeblood of the IoT industry. Currently, there is a deficient of IoT talent as highlighted in the National IoT Strategic Roadmap5.

The IoT market is expanding faster than we think. If we do not catch the wave, we could miss out on the huge opportunity that is coming our way. In order to stay ahead, APU has established the first of its kind IoT Center of Excellence in Malaysia and launched a dedicated IoT centric degree programme - BSc (Hons) Information Technology with Specialism in IoT.

Security is a big issue that is often brought up. With billions of devices being connected together, what can people do to make sure that their information stays secure? Will someone be able to hack into your toaster and thereby get access to your entire network? The IoT also opens up companies all over the world to more security threats. Then we have the issue of privacy and data sharing. This is a hot-button topic even today, so one can only imagine how the conversation and concerns will escalate when we are talking about many billions of devices being connected. [This will be featured in our next edition of the SoCT newsletter.]

# Activities

## FSecure 2017

Competition F-Secure 2016 and 2017 APU students get the first level of F-secure competition and winner trophy is with us for three years.



## KPMG Cyber Security Challenge

A team-based competition for local public and private university students. The competition tests the cyber security skills and knowledge of the participants in reverse engineering, steganography, cryptography, programming, network analysis, infrastructure hacking, web application security, and digital forensics. APU had 8 teams and got third and fifth level.





## 4th High-Tech Exhibition

In this exhibition-with the registration of 593 technological plans knowledge-based companies products and technological and research centers and elites – the latest technological and innovative achievements in various fields were exposed to visit entrepreneurs , investors , experts , authorities and the people. The institutions and companies providing support services and technical facilities also. Attended in this exhibition in addition to knowledge-based companies and supplier of technological products.

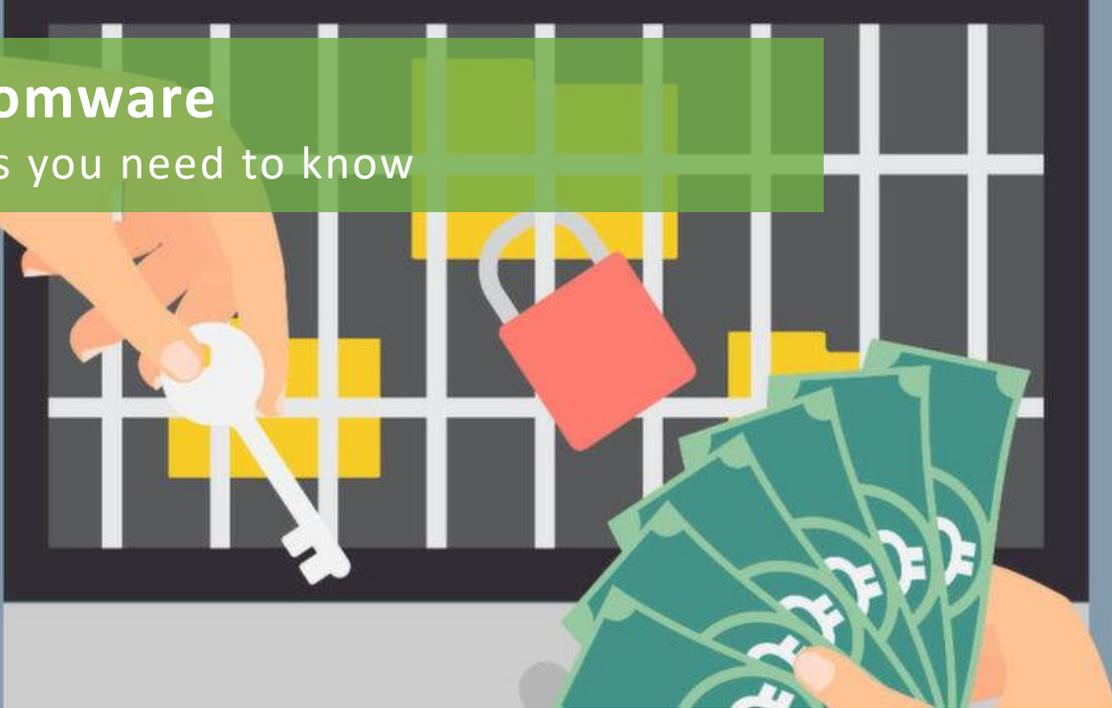


FSec collaborated on innovation section in Second international conference on Science and Technology Development in Islamic Countries. The conference conducted by Islamic countries on 18-21 October 2016 in Kuala Lumpur-Malaysia at PWTC conference hall.

# Ransomware

## - things you need to know

Image source: <http://www.nhsinfo.com.br/>



If ever there was an appropriate time to discuss Ransomware this must be it! May 2017 will be remembered in part for the chaos unleashed upon the digital world by the WannaCry ransomware. Whilst we here in Malaysia escaped relatively unscathed, countries such as the UK were not so lucky, with the Country's health service crippled by the attack. Ransomware is a particularly dangerous form of malware which can be tailored to attack a system to varying levels of granularity, from taking control of specific files to seizing outright control of an entire system.

Most forms of Ransomware have a fairly standard modus operandi. First, it will duplicate the user's files before erasing the originals and encrypting the duplicates. Once complete the perpetrators will contact the victim and demand payment for the release of the files or the unlocking of the seized system. The victim's files/system is thus literally held for ransom (hence the name). As the underlying motivation of the perpetrators is financial gain, ransomware attacks have shifted focus from individuals towards more financially lucrative targets such

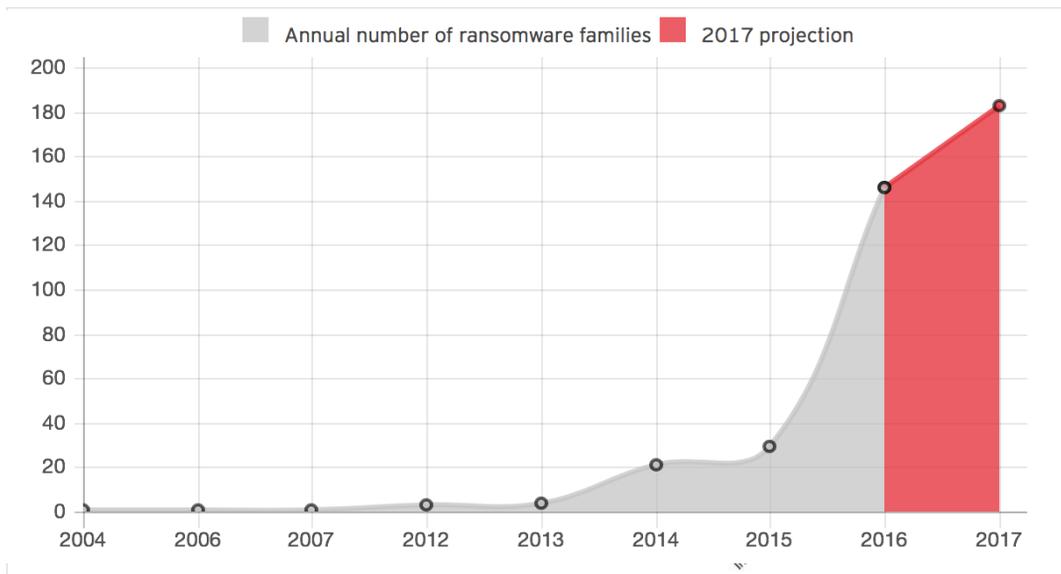
as small businesses, organisations, and even government.

Ransomware incidents have risen sharply over the last five years, attributed in part to the availability of ransomware exemplars release primarily for educational purposes which have subsequently been exploited for nefarious purposes. These exemplars have been used as a platform to create new iterations of malicious ransomware, as evidenced by the sharp escalation in the number of ransomware families identified since 2006 (TrendMicro, 2016).

Incidents of Ransomware fall within one of two categories:

- Locker Ransomware
- Crypto Ransomware

As the name suggests, Locker Ransomware aims to prevent the user from accessing his or her device, in effect locking them out until the perpetrators have been paid their ransom. Locker Ransomware has limitations in terms of its effectiveness, as it leaves the underlying system and files unaffected, thus allowing users



Annual number of Ransomware Families

to potentially circumvent its control.

Nevertheless, its effectiveness as a ransom tool increases significantly when applied to IoT and other devices data sharing devices. Applied in this context, Locker Ransomware has the potential cause serious disruption by limiting the extent to which a device can operate normally.

Crypto Ransomware is far more intrusive in nature, being designed to locate and encrypt the user's files. Crypto Ransomware utilises asymmetric cryptography to encrypt user data, after which victims are asked to pay the ransom to get the private key from the attacker. As the WannaCry incident has demonstrated, Crypto Ransomware has the capacity to cripple a system if either the private key is not provided or a kill switch not found. With the world's reliance upon information systems only likely to increase, the cat and mouse game between cybercriminals on the one hand and researchers and security specialists on the other has only just began!

## Several Ransomware Prevention

### 1. Keep all the software up to date

This is to eliminate any security loopholes that can be exploited by the attackers

### 2. Disable Macros

Malicious scripts can be executed to download or install ransomware when macros are enabled.

### 3. Show File Extensions

Windows OS by default will disabled the file extensions. Do not open or delete immediately if unusual file extension found such as .js

### 4. Install Antimalware Protection

Several anti-ransomware protection are available such as enSilo, HitmanPro.Alert, Zemana Anti-Malware, Malwarebytes Anti-Ransomware etc.

### 5. Always backup the file

If the computer is infected, you no need to be worried as you may restore the file.



The School of Computing and Technology (SoCT) has a proud tradition of competition excellence which our current students, along with their mentors, have continued to uphold. As this is the inaugural edition of the School's new newsletter, we here at NewsLetterHQ thought it would be appropriate to reflect on, and in turn celebrate, our recent successes. Hopefully recounting our recent glories will inspire those of you yet to taste the thrill and adrenaline rush of competition to pick up the gauntlet we are not so subtly throwing down! Here then is a timeline of your recent successes, long may it continue!!!!

**MAR  
2017**

In what proved to be a jam packed month of outstanding achievement, Wong Sai Khong and Liew Pei Pei brought home the silver and bronzes medals at the 4th Asian Youth Innovation Awards & Expo. Mentored by Dr. Tan Chye Cheah & Ms. Nor Azlina Abd Rahman, both students excelled at the competition despite this being their first (of hopefully many!) foray into an external competition.





MAR  
2017

Elsewhere, the FameLab Malaysian heats concluded with one of our diploma students, Kho Zhi Yuen aka Summer, securing a final spot and entry to the grand final in May. In total six students, all at various stages of their diploma, made it through to the final heats and faced off against postgrads and industry professionals for a place in the coveted final. The level of competition makes Summer's achievements all the more noteworthy, with particular praise directed towards her mentors Ms' Aida and Vino.





APR  
2017

Endurance and mental stamina were pushed to their limits during Malaysia's largest hackathon, HACK2HIRE. Two teams from SoCT battled it out against 118 other final year IT students, facing a series of technical challenges of the course of the competition. The teams comprising of final year students Tan Bee Lan, Teh Chun Jay, Leong Sen Fong, Raymond Nathan, Prethpal Singh Dhubb and Dayallen A/L Karunakaran emerged with distinction following an intense 32 hours to secure two of the top eight places in the main hack challenge. (White) hats off to the teams and their mentor, the irrepressible Ms. Vino Kasinathan.

Tally counter In the spirit of the forthcoming SEA games, we end our recap with our very own medal table quantifying our success as of this first newsletter:

- Gold: 1
- Silver: 3
- Bronze: 5

That gold medal looks a little lonely so here's to us beating this tally by the time our next newsletter rolls around!!!





**JUL  
2017**

Our students bagged two prizes in the Openet Cash4Code KL 2017 competition held at Tunku Abdul Rahman University College KL Main Campus on 4th July 2017 from 8.00 – 5.00 pm. This competition aimed to find the best developers of JAVA codes to solve tricky problems in relatively short amount of time. The students mentored by Dr. Kadhar Batcha Nowshath have demonstrated outstanding teamwork and perseverance at the competition, thus they walked away with the following prizes:

- Chau Ting Feng won the First Prize - Champion in the coding competition.
- Yau Zhi Yung, one of the team member won the Best Teamwork award.





## ALUMNI

We would like to proudly present some of our alumni who have made an indelible mark in their respective fields and are a source of great pride to the University. Their stories and achievements tell us about their passion, dedication, hard work and most of all the solid foundation that they received as academic professionals whilst studying at APU/APIIT.



### **Krishna Rajagopal**

*Group CEO of AKATI Consulting Group*

Krishna Rajagopal is a recognized expert in the IT industry focusing on security, forensics and training. He has been involved in the Information Technology field for close to two decades after graduating in the field of Internet Technology from APIIT and Staffordshire University, UK. Krishna as

he is fondly known as, holds more than 50 various professional certifications and is recognized internationally as one of the best in the industry for IT Forensics / Computer Security. His professional certification includes Prince2 Certified Practitioner, CEH, CHFI, Microsoft Certified Professional (MCP), Microsoft Certified Systems Engineer (MCSE) and numerous others. To date he holds the record of being the youngest MCSE in the country and also holds the record for scoring a perfect 1000 marks on the final exam – Networking Essentials.

A distinguished and popular speaker, he has conducted training and given talks at numerous events around the globe. In 2014, Krishna has led his team to successfully conduct over 351 different Pen Tests across the globe (across different clients from Banking, Governmental, Enforcement, Military, Telecommunication, etc.) with a 100% success rate. He is responsible for developing, maintaining and publishing information security standards, policies, procedures and guidelines for the company's key clients. He is also an expert witness assisting various enforcement bodies across the globe and the Interpol.



### **Wan Hazmer Wan Abd Halim**

*Lead Game Designer, Final Fantasy XV*

Wan Hazmer, is a Malaysian game designer who has been working for Square Enix since 2010. He graduated from Asia Pacific Institute of Information Technology (APIIT) and was one of the several game designers on Final Fantasy Type-0 (2011) and one of several lead game designers on Final Fantasy

XV (2016). Before he embarked his career in Tokyo, he was working as a lecturer in APIIT teaching and developing modules in Computer Games Development programme.

After working on FINAL FANTASY TYPE-0 as a game designer, he now brings life to the exotic locales of FINAL FANTASY XV as lead game designer of the Culture Team, mixing the real and fantastic to achieve new levels of immersive gameplay. He is the man who is responsible to introduce the Malaysian very own Teh Tarik into Final Fantasy XV!



### **Azim Hulaimi**

*Visual Effects Artist, Co-Founder of Mira Digital*

Ever since he was small, Azim Hulaimi has always been a movie lover and daydreams of making it into Hollywood. After graduating from APIIT with Higher Diploma in Software Engineering in 2003 and Multimedia University with a degree in Film & Animation in 2008, he wasted no time working in post-production to gain more exposure.

Fortunate to work in Rhythm & Hues Studios for 2 years in Cyberjaya, he has learned a lot about the movie magic and the importance of teamwork. He managed to work with the best talented people in the world and worked on several Hollywood movies like Alvin & The Chipmunks 3, Seventh Son, Percy Jackson: Sea of Monsters, Django Unchained, and Academy Award for Best Visual Effects 2012 'Life of Pi'.

Now co-founder of Mira Digital Sdn. Bhd, he's ready to take on new challenges, implementing what he learned from the best and hopes to lead the visual effects industry in Malaysia.

**TECHIE**  
w  r l d