RESEARCH CAREERS FOR A BETTER WORLD
Interviews with EIE graduates who become international renowned scholars

Department and Alumni News

Appointment as IEEE Circuits and Systems Society Distinguished Lecturer (P.7)

Robotic Activities (P.18)

2017 IEEE International Conference on Multimedia & Expo (P.17)

Champion of B4B Big Data for Business Challenge (P.29)
CONTENTS

01  FOREWORD
02  INTERVIEW
06  ACHIEVEMENTS
16  DEPARTMENT NEWS
28  ALUMNI NEWS
Welcome to another edition of EIE Network. This is the fifth of our annual magazines aimed to keep you informed about the new development and achievements of the Department.

As you may know, the Department was established in 1974. During these 44 years, the Department has trained up many electronic and information engineering professionals. Many of them have made significant achievement in the industry or academia. In this issue of EIE Network, the cover story is about three PhD graduates of the Department who have made a mark on the advancement of electronic and information engineering technologies. They have impacted the world through their research works in video technology, bio-medical robotics as well as power electronics. Their stories truly reflect the attributes of our graduates, who are always hardworking and innovative.

In 2017/18, the Department organized a few major events. In July 2017, the Department organized one of the flagship conferences of IEEE namely, 2017 IEEE International Conference on Multimedia & Expo (ICME 2017). Over 500 experts in the area of multimedia technologies from 23 countries joined the conference. To promote STEM education in Hong Kong, the Department organized the Robotic Challenge Junior 2017: Robot Hunter and the Robotic Challenge 2018: VR Robot Hunting in July 2017 and January 2018 respectively. The competitions were sponsored by many industrial partners including Alibaba Cloud, Avnet, Samsung, etc. Over 400 secondary and primary school students from more than 30 schools joined the events. The competitions were well reported in the local media. For academic programme, the Department launched a new specialism in Internet of Things (IoT) for our MSc in Electronic and Information Engineering programme. The Programme has received a great response from the society as we see a record high number of applications for admission comparing with last few years.

Our colleagues and students also received a number of international and local awards in 2017/18. Just to name a few of them. In December 2017, Prof. Michael Tse was appointed as the Distinguished Lecturer of IEEE Circuits and Systems Society. In November 2017, Dr Gang Li was again named as one of the Highly Cited Researchers in the Materials Science and Physics categories by the Clarivate Analytics. Our Robocon team also achieved good result last year. They won the first runner-up award and was the only team who could fulfill the goal of the game. In June 2017, Dr Frank Leung guided two BEng in Electronic Engineering students who won the excellent prize in the Silk Road Robotics Innovations Competition 2017 held in Xi’an Jiaotong University. There are many other awards which I am not going to mention them one-by-one here. All these achievements and awards show the recognition of external professional bodies to the excellent works of our colleagues and students. Congratulations to all of them!

Last but not the least, the Department has recently renovated the PolyU-Huawei Joint Laboratory for Optical Interconnection Network and Advanced Computing System. It now occupies a space of 130 square meters and will be equipped with the latest optical communications and advanced computing systems. It will soon be another landmark of the Department.

We hope you find the EIE Network interesting and informative. As always, we welcome any comments and suggestions to help us improve the content.
Over the years, the Department of Electronic and Information Engineering (EIE) of The Hong Kong Polytechnic University has seen its graduates embarking on different career paths. Among them, a small percentage remain in the academia. This small group of elite researchers are working on things that will have impact on the world. The editor has talked to three of them recently and tried to understand their work.

Dr Lap-Pui Chau
IEEE Fellow
Associate Professor
School of Electrical & Electronic Engineering
Nanyang Technological University

Dr Lap-Pui Chau is the Department’s PhD graduate in 1997. Now an IEEE Fellow and an Associate Professor in Nanyang Technological University in Singapore, his research interests include visual signal processing algorithms, light field imaging and video analytics. His current projects range from deepwater monitoring system to intelligent transport systems, from small dataset learning to big data analytics.

To Dr Chau, his knowledge in signal processing is like a tool, a basic skill to solve problems. A live example is that data collected from cameras mounted along highways will be processed into information for road users to opt for faster routes and for transport authorities to improve transportation systems and road networks.
Dr Hak-Keung Lam is the Department’s PhD graduate in 2000. After working in the Department for five years as Post-Doctoral Fellow and Research Fellow, he has joined King’s College London as a Lecturer and is now a Reader in Intelligent Control and Computational Intelligence there. His current projects have a lot to do with robotics and quite a number of them are in bio-medical applications.

For Dr Lam, it has all started with his fuzzy control experiments for a power converter since his PhD studies. By applying control theory to robotics, an epilepsy patient can be put to an exact level of sleep by using the right concentration of drugs, bolt-tightening for wind turbines can be done to the prescribed accuracy and so on.
When talking about their research, all three show passion on what they are doing. Dr Lam envisions that in a smart city where communities and hospitals are connected by hi-speed networks, control theory can be used in emerging applications. In a smart home, for example, body parameters can be collected for machine deep learning in which health problems such as seizures can be predicted and prevented. He is happy that he can apply his theoretical work into practice and bring impact to society.

In Australia, the government’s roadmap is to increase the generation of renewable energy to 23.5% of total energy consumption in 2020. Several of Dr Iu’s projects are related to promoting renewable energy. In addition, with his work on improving power grids, he hopes to help bring down the cost of electricity (which is rather expensive in the country) and to help ensure more reliable power supply to people. His work will also contribute to a cleaner environment.

The youngest among the three interviewees is Dr Herbert Iu. He is also a PhD graduate in 2000. After a short stint at the Department, he has joined The University of Western Australia. He is now a Professor at the University’s School of Electrical, Electronic and Computer Engineering.

Starting his research in power electronics since his doctoral studies, Dr Iu has expanded his scope into renewable energy, nonlinear dynamics and chaos, current sensing techniques and memristive systems. Many of his projects are in power systems that will raise the efficiency of power grid and involve clean energy.
A new series of sensors that have been introduced around eight years ago marks the beginning of Dr Chau's research into human motion analysis. These sensors have made the identification and analysis of human motion (based on human skeleton movement) more easily and accurately. Even so, there are problems to be addressed each time. A particular example is the deepwater imaging research project. Since sunlight cannot penetrate into the bottom of the sea, imaging can only be done by active light sources carried by vehicles. The luminance of which is far lower than sunlight. Objects could not be seen clearly, and studying them is like working in darkness.

But to Dr Chau, venturing into the unknown is the most exciting part about doing research. “You don’t know what’s the most challenging or difficult part in the project until you do it” and “a new capability is being learned” in each new project.

Dr Lam holds a similar view. He thinks that the most interesting part of a research career is the “creation of knowledge”. Unlike undergraduate or postgraduate studies, “no one will tell you how to do it”. A researcher “develops advanced theory, puts theory into practice or applications” and in some other cases, “merges different disciplines into your own theorem”.

Dr Iu also echoes that a researcher has to identify areas of interest on his own because “no one will tell you what to do”. This means that there is much freedom in the daily routine. At the same time, this also means that a researcher has to be independent and efficient enough to deliver. But life in the academia is not that lonely or boring. Dr Iu enjoys the interaction with his students, especially those pursuing their PhD degrees. He likes supervising their projects which “will bring something good” to themselves and the companies / government they work with.

In Singapore, researchers do not work as loners either. A lot of Dr Chau’s projects are done with industrial partners or are supported by government funding. In the UK and EU, Dr Lam sees a trend in the academia to bring research into society. Many of his current projects are for bio-medical applications in which the health sector can provide data to support the theoretical research they are undertaking.

Although some researchers have gone into business and have their own “start-ups”, our three interviewees have not done so yet. While Dr Iu says that his university allows staff to run business operations upon passing an approval process, a common thought among him and his colleagues is that commercialization is difficult since it probably requires a different personality and entrepreneurial spirit.

Passion for the Unknown Territory

A Good Supervisor, a Good Topic, Impact to the World

For those who wish to consider a career in the academia, finding a good supervisor is the top answer from all three interviewees. Dr Lam mentioned that a good supervisor will point you to the right direction, while Dr Iu expressed that a good supervisor will also provide the network with other researchers and institutions for study and work. To them, the EIE has a good culture and network to start with and helpful supervisors who assist them along the way.
ACHIEVEMENTS
We are pleased to share that Prof. Michael Tse has been appointed as an IEEE Circuits and Systems Society Distinguished Lecturer for 2018-2019 by the IEEE Circuits and Systems Society (CASS) under the CASS Distinguished Lecturer Program (DLP). The Program is to serve the needs of the members of the CAS Society to enhance their professional knowledge and vitality by keeping them informed of the latest research results and their practical applications. Prof. Tse had also been appointed for this prestigious title by IEEE twice in 2005 and 2010.

Dr Gang Li has been named as one of the 2017 Highly Cited Researchers in the Materials Science and Physics categories by the Clarivate Analytics! Clarivate Analytics is an annual list recognizing leading researchers in the sciences and social sciences from around the world. The 2017 list focuses on contemporary research achievement which only

Highly Cited Papers in science and social sciences journals indexed in the Web of Science Core Collection during the 11-year period 2005-2015 were surveyed. Highly Cited Papers are defined as those that rank in the top 1% by citations for field and publication year in the Web of Science. This is the fourth consecutive year Dr Li has been selected to the list!
Chang Shuhao, a BEng in EIE student, won the Champion and the Most Innovative Award of the Microsoft Imagine Cup 2017 - Hong Kong together with two other team members from the Department of Computing. Microsoft Imagine Cup is a global student technology competition which gives students an opportunity to showcase their creativity and capability in making games and applications that can bring impact to the world. The winning mobile app “Sense+” is a cognitive application built on the Microsoft’s AI tools with cognitive service to enable the visually impaired to see, explore, get notified and search with ears. The team gained a chance to represent Hong Kong to visit Seattle, USA, in July 2017 to compete with more than 54 national teams worldwide.

Led by Dr Frank Leung, two BEng in Electronic Engineering students, Han Zhuangyu and Xiao Zidong, received the Excellent Prize in the Silk Road Robotics Innovations Competition 2017 held in Xi’an Jiaotong University on 4 June 2017. The competition was organized by Shaanxi Science and Technology Department and Xi’an Jiaotong University. 16 teams coming from different countries, including China, Italy, Russia, Egypt and the USA demonstrated their robots in this contest. It was a valuable opportunity for our students to exchange their technical ideas among the competitors from other regions.
Two BSc in Information Security Programme students, Chan Yiu Fung and Chau Tsz Ping, teamed up with another student from The Open University of Hong Kong won the First Runner-up of the Inter-tertiary-institution Capture the Flag Contest (CTF) 2017 on 10 June 2017. The Contest was organized by the Hong Kong Applied Science and Technology Research Institute (ASTRI) and iChunQiu.com. CTF is a globally recognized popular platform modelled as a series of simulated cyber-attacks that emulate what happens in the real-life digital space. This competitive platform and the Contest gauged the students’ skills in managing information security and deterring cyber-attacks.

First Runner-up in Inter-tertiary-institution Capture the Flag Contest (CTF) 2017

We are delighted to share that the EIE Robocon Team won the First Runner-up in the Robocon Hong Kong Contest 2017. The contest was organized by the Hong Kong Science and Technology Parks (HKSTP) on 18 June 2017. It aims to encourage the design and construction of robots, and to provide real experience for post-secondary students and future engineers. The winning team “Red Shadow” spent nearly a year for preparation and building the disc-throwing robot to compete with the other 12 teams coming from different post-secondary institutions. Their technical skills, team spirit and outstanding performance were highly recognized by the judges and audience in the contest. Congratulations to the following team members:

Third Place in DAC 2017 Hardware Security Contest

Congratulations to Mr Nandeesh Veeranna, our PhD student, on receiving the Third Place in the DAC 2017 Hardware Security Contest held in Austin, Texas, USA, between 18 and 22 June 2017. Participating teams in this contest were required to mimic the behavior of a malicious or secure-unaware CAD engineer. The objective was to show that reasonable modifications to CAD algorithms could have unintended security consequences. The winning project “Conspiring the semiconductor IP customer by infecting the obfuscated IP with hardware Trojan” was supervised by Prof. Francis Lau.

Best Presenter Award at the Ewha-Luce International Seminar (ELIS): Expanding Horizons 2017

Supervised by Dr Ben Cheng and Prof. Michael Tse, our PhD student, Ms Wang Jing, received the Best Presenter Award at the Ewha-Luce International Seminar (ELIS): Expanding Horizons 2017. The event was held at the Ewha Womans University, Seoul, Korea, from 26 June to 13 July 2017. Its aim is to promote equal opportunities for female graduate students from the USA and East Asia who are conducting researches in science, technology, engineering, and mathematics (STEM) fields. A total of 23 USA and East Asian female researchers pursuing their Masters or PhD degrees in STEM were selected for this seminar. Apart from presenting research work and exchanging ideas, the Seminar provided its participants with multiple workshops and various training programs in leadership development.
Three students from the BSc in Information Security Programme, Wong Wai Cheong, Leung Paak Tung and Ho Wai Lun William, won the Second Prize of the 2nd Wise Friends Competition 2017 organized by the BBPOS Limited in August 2017. The competition targets to encourage innovation and creative thinking among the new generation of potential mobile payment (mPOS) technology developers. The winning project “Mobile Electronic Payment System” developed a new payment model, which can reduce the transaction fee compared with the traditional payment system by bypassing the banking system and providing a more secure and reliable payment system through using the block chain technique.

Supervised by Prof. Kenneth Lam under the initiative of International Capstone Project, two BEng in EIE students, Feng Weixi and Zhang Jiawei, teamed up with the other students from the University of Technology Sydney and the University of New South Wales, won the Second Prize in the IEEE 2017 Video and Image Processing Cup in Beijing on 17 September 2017. The competition was organized by the IEEE Signal Processing Society. The goal of this challenge was to implement traffic sign detection algorithms that can robustly perform under challenging environmental conditions.
Prof. Francis Lau and Dr Tam Wai Man were awarded the Best Paper Award in the 2017 International Conference on Advanced Technologies for Communications (ATC) for the paper “Reducing the Bit-Mapping Search Space of a Bit-Interleaved Polar-Coded Modulation System” in Quy Nhon City, Vietnam, between 18 and 22 October 2017. The Conference is an annual conference co-organized by the Radio & Electronics Association of Vietnam and the IEEE Communications Society to foster an international forum for scientific and technological exchange among Vietnamese and worldwide scientists in the fields of electronics and communications. Prof. Lau received the Award Certificate from Prof. Ke Wu, ATC 2017 Technical Program Chair, President of IEEE MTT-S 2016 and Tier-I Canada Research Chair at Polytechnique Montréal.

Supervised by Dr Bonnie Law, our Engineering Doctorate student, Mr Law Sai Chung, won the Second Place of the Best Poster Video Award at the 2018 IEEE International Conference on Consumer Electronics in Las Vegas, USA, in January 2018. Their winning paper “PRNU-based Source Identification for Network Video Surveillance System” proposes a signal-based detection system using photo response non-uniformity (PRNU) for source verification in video surveillance systems. The effects of different aspects such as video resolutions, frame types and environmental conditions on the accuracy and reliability of the system have been tested and their results show that the signal-based approach is effective to verify the video source.
Winning in Cyber Security Competition 2017

The rapid technology advancement has made the use of the Internet a part of people’s daily lives. The Hong Kong Police Force and The University of Hong Kong jointly organized the Cyber Security Competition 2017 aiming at promoting “Cyber Security Starts From Youth”. Three BSc in Information Security Programme students achieved very good results in the Online Quiz Challenge and the Cyber Security Challenge of this competition! The Online Quiz Challenge was held between September and November 2017 asking participants about questions on cyber security and crime prevention. For the Cyber Security Challenge held on 10 February 2018, participating teams were required to work out solutions for the cyber security tasks in a specified timeframe.

Online Quiz Challenge (Tertiary Group)

<table>
<thead>
<tr>
<th>Champion</th>
<th>Fung Tsz Wa</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Runner-up</td>
<td>So Wai Sum</td>
</tr>
</tbody>
</table>

Cyber Security Challenge (Tertiary Group)

<table>
<thead>
<tr>
<th>Champion</th>
<th>Fung Tsz Wa</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Runner-up</td>
<td>So Wai Sum</td>
</tr>
<tr>
<td></td>
<td>Wong Hiu Hin</td>
</tr>
</tbody>
</table>

Outstanding Paper Award in 20th International Conference on Advanced Communications Technology

Prof. Francis Lau and his PhD student, Mr Sheng Jiang won the Outstanding Paper Award in the 20th International Conference on Advanced Communications Technology in Korea in February 2018. They presented a new method of evaluating the number of closed paths in a base matrix in the winning paper “An Approach to Evaluating the Number of Potential Cycles in an All-one Base Matrix”. Although they only give results up to length 10, results for longer paths can be readily derived and computed using similar principles. Compared with the traditional “tree method” which uses exhaustive searching, this method reveals the principle of closed paths and their duplicates and derives expressions for computing the number of closed paths. The results are useful when estimating the time resources required in optimizing and constructing low-density parity-check (LDPC) codes.
Sponsored by the RS Components Limited and the EGG Technologies Limited, the Department organized the EIE Microcontroller Application Design Contest (2017-18) for our undergraduate students between December 2017 and February 2018. The contest aims to enhance students’ knowledge in microcontroller-based electronic product design, creativity and presentation skills. 19 students grouped into 8 teams submitted their proposals in Phase I and all of them were qualified for entering Phase II of the contest. With the technical and financial support from EIE and the sponsors, the participants spent two months to build up their products and prepare for the final presentation on 28 February 2018. The following winners were selected by the judging panel!

<table>
<thead>
<tr>
<th>Award</th>
<th>Proposal</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Champion</td>
<td>Smart Bar</td>
<td>Chan Pak Yeung</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Luk Ming Chung</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yuen Lok Pang</td>
</tr>
<tr>
<td>Champion</td>
<td>Magnetic Door Lock</td>
<td>Law Shu Mei</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lee Wai Yip</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Siu Yeung Yik</td>
</tr>
<tr>
<td>1st Runner-up</td>
<td>Full Formula E</td>
<td>Chan Tai Wing</td>
</tr>
<tr>
<td></td>
<td>Electronic Control System</td>
<td></td>
</tr>
<tr>
<td>2nd Runner-up</td>
<td>i-Help</td>
<td>Li Haoyang</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Liu Chengyao</td>
</tr>
</tbody>
</table>
The PolyU Robocon Team attended the Robocon 2018 Hong Kong Contest Sponsorship Presentation Ceremony in the Hong Kong Science Park on 6 March 2018. Our Instructor, Mr Ivan Lau, and three team members, including Koo Chun Hin and Chan Tai Wing from EIE and Shum Chu Sammy from ISE, received two sets of NVIDIA Jetson Tx2 Developer Kit sponsored by the DynaSys Solutions Limited and NVIDIA during the ceremony. The developer kit is an embedded AI computing device which could enhance the performance of the robots designed for the contest.

With a view to recognizing the outstanding performance of academic staff members in securing external competitive research grants, the Faculty Research Committee has set up the Faculty of Engineering Research Grant Achievement Award since 2003. We are delighted to share that Dr Hu Haibo and Dr Mak Man Wai received this award in the Faculty Award Presentation Ceremony on 9 March 2018. Dr Mak also obtained the Faculty Award for Outstanding Performance/Achievement in Research and Scholarly Activities on the same occasion. Dr Hu was awarded two GRF grants and a funding from the National Natural Science Foundation of China (NSFC) in the past two years, while Dr Mak has successfully won a General Research Fund (GRF) for four years in a row. Congratulations to their achievement!
The 2017 IEEE International Conference on Multimedia & Expo (ICME 2017) was organized by the Department in PolyU and the Harbour Grand Kowloon Hotel between 10 and 14 July 2017. Over 500 experts in the area of multimedia technologies from 23 countries joined this conference. ICME has been the flagship multimedia conference sponsored by four IEEE societies since 2000. It serves as a forum to promote the exchange of the latest advances in multimedia technologies, systems, and applications from both the research and development perspectives of the circuits and systems, communications, computer, and signal processing communities. The theme of the 2017 conference was “The New Media Experience”, enabling next generation 3D/AR/VR experiences and applications, based on which various sessions and events were organized. An exposition of multimedia products, animations and industries was also held in conjunction with the conference.
Robotics Activities

Throughout the year, the Department has organized a range of activities for students of the Department, the Faculty and secondary school students who are fond of robot to enhance their interest and technical know-how in robotics:

The Department organized the “EIE Robotic Challenge Junior 2017: Robot Hunter” competition for 44 teams of secondary school students between May and July 2017. The competition was sponsored by the Propagation System Ltd., EGG Technologies Ltd., iot Solution Ltd, Samsung, Avnet, and ECCN.com. Four workshops related to 3D printing, hardware design and programming techniques were held for more than 150 participants to build up their technical skills before the final competition. The EIE Robotic Challenge Junior 2017: Robot Hunter Champion was GCCITKD Lau Pak Lok Secondary School. The winning team also represented Hong Kong to join the “EIE Robotic Challenge Junior for Greater China 2017: Robot Hunter” in the Hong Kong Computer and Communications Festival 2017 on 28 August 2017. The event successfully aroused secondary school students’ creativity, enhanced their problem solving skills and stimulated their interests in electronic engineering.
Visit to Karrie International Holdings Limited

Dr Frank Leung led the students of the FENG Robotics Club to visit several factory sites of the Karrie International Holdings Limited in Dongguan on 8 August 2017. The Karrie International Holdings Limited is principally engaged in the manufacturing and sale of metal and plastic products. The company has a long history of applying robots in production. Our students were able to get in touch with the latest robotic technology in different areas like re-industrialization, catering services and entertainment during this trip.

EIE Robotic Challenge 2017: Robot Hunter

In order to enhance students’ interest and technical knowledge in electronic product designs, the Department organized the “EIE Robotic Challenge 2017: Robot Hunter” competition for the EIE undergraduate students on 25 August 2017. The participants were required to design a robot to fight and take the opponents’ flags within a specified period of time. The competition was supported by the Propagation Systems Ltd. and EGG Technologies Ltd. who provided microcontrollers, Bluetooth modules and technical advice for students.

<table>
<thead>
<tr>
<th>Champion</th>
<th>Cheung Geoffrey Kai Laam Lui Shing Yuen Barrie</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Runner-up</td>
<td>Wang Haoyuan Xue Quan Zhang Jichen</td>
</tr>
<tr>
<td>2nd Runner-up</td>
<td>Chan Cheuk Hei Fan Yifei Lai Ho Tin Zang Wenshuo</td>
</tr>
<tr>
<td>Merit Award</td>
<td>Chung Hoi Ki Kwok Hoi Yan Leung Wai Lun Li Ka Yee Tsang Chi Long Wong Yuk Ching</td>
</tr>
</tbody>
</table>
Robotic Challenge 2018: VR Robot Hunting

The “Robotic Challenge 2018: VR Robot Hunting” was held by EIE, the EGG Technology Limited and the IOT Solution Limited in Cyberport on 20 January 2018. It is an extension of “Robotic Challenge Junior 2017: Robot Hunter”, targeting at primary school students and junior secondary school students. The competition was co-organized by the Hong Kong Association for Computer Education, the Hong Kong Association of China Business and the Cyberport, and sponsored by Alibaba Cloud, ECCN.com and the Hong Kong Federation of Invention and Innovation. More than 300 students coming from over 30 secondary and primary schools participated in this challenge. The champions of the junior secondary school division and the primary school division are Ying Wa Girls’ School and Canton Road Government Primary School respectively. The Department provided technical workshops and consultation about building robots to the contesters before the challenge. The students learnt different basic engineering skills including electronics, circuits and programming, etc. through this competition.
Dr Ben Cheng organized a Raspberry Pi Workshop for the HK SciFest 2017 hosted by the Hong Kong Science Museum on 8 April 2017. The HK SciFest aims to collaborate with scientific institutes and organisations to provide interesting scientific activities to elevate public awareness and interest in science and technology. 40 secondary school students joined this workshop to learn basic circuit theory and programming techniques to build an interactive booth game using programmable Raspberry Pi boards and some simple circuits. All the participants found this workshop interesting and felt it had enriched their scientific knowledge.

Dr Haibo Hu conducted a RGC Public Lecture titled “Beware of Your Location Privacy and Integrity in Social Networks” in the Hong Kong Science Museum on 7 May 2017. The Research Grants Council (RGC) has been supporting the Hong Kong higher education sector to undertake many exciting academic research projects over the years. RGC has been organizing regular public lectures to publicize the achievements of our researchers. In this RGC Public Lecture, Dr Hu explained to the audience that in Location-based services (LBS), there has been a growing necessity against location cheating and for location trustworthiness. He generalized these requirements to a new problem of “spatio-temporal attestation”, where a mobile user certifies to a service provider the genuineness of his/her input location against some spatio-temporal predicate, such as “being in a specific region during a time period”. At the end of the lecture he also introduced some novel solutions to spatio-temporal attestation while retaining location privacy.
Visit by Departmental Academic Advisor and Overseas Academic Advisor

The Departmental Academic Advisor (DAA), Prof. Jianping Yao, Professor and University Research Chair, School of Electrical Engineering and Computer Science, University of Ottawa, and the Overseas Academic Advisor (OAA), Prof. Gee-Kung Chang, Professor of Georgia Research Alliance and Byers Eminent Scholar Chair in Optical Networking, School of Electrical and Computer Engineering, Georgia Institute of Technology, visited the Department between 23 and 26 May 2017. They met with the Departmental Research Committee, the Departmental Learning and Teaching Committee, our academic staff members and industrial partners to review the Department’s work and provide valuable advice during the visit. They also conducted two seminars on 24 May 2017. Prof. Yao’s talk was entitled “Fully Reconfigurable Photonic Integrated Signal Processor”, while Prof. Chang’s was on “Fiber Wireless Convergence for 5G Mobile Data Communications”.

Visit from Zhejiang University

20 staff and students from the Zhejiang University paid a visit to the Department on 8 August 2017. Prof. Chao Lu and Dr Changyuan Yu received the delegation with an introduction of EIE and our postgraduate programmes. The delegates also visited the Interactive Multimedia Laboratory and the Optical Communications and Networking Research Laboratory to learn more about our undergraduate student projects and the research work in communications.
The Department organized the Research Student Gathering 2017 for more than 50 MPhil and PhD students on 8 September 2017. The gathering provided an excellent opportunity for research students to share their study experience and mingle with the other students in different EIE research areas. Prof. Francis Lau, the Departmental Research Committee Chairman, also gave a presentation to outline the research degree study requirements to the participants on this occasion.

Dr Mak Man Wai conducted a STEM Lecture on “How and Why AI will Revolutionise our Everyday Life” for the North District secondary school students on 9 February 2018. The lecture was held by the Secondary School Relations Section of PolyU in the Caritas Fanling Chan Chun Ha Secondary School for more than 100 participants to promote the STEM education. Dr Mak also introduced the programmes offered by the engineering departments under the Faculty of Engineering on this occasion. The lecture aroused the audience’s interest in artificial intelligence technologies and engineering study.
In order to provide an opportunity for our students, academic staff, alumni and industrialists to mingle with one another, the Department organized four High Table Dinners for more than 160 students from the BEng in EIE, BSc in IMT, BSc in INS and HD in EIE programmes in the PolyU Staff Club Restaurant in January and March 2018. Seasoned industrialists and alumni joined the dinners and shared their work and study experience with the participants. Topics including the prospects for electronic and information engineering, the current trend in digital entertainment and the demand of information security professionals, etc. were discussed during the dinners. It was an enlightening event for our undergraduate students to learn more about the industries and prepare themselves for their future study or career development.

**BEng in EIE High Table Dinner**

Ir Sheldon Yau, Senior Vice President, Wireless Networks Planning and Design, HKT, PCCW

Dr Winnie Chow, Cooperation Manager, South China & Asia-Pacific Area Cooperation, Technology Cooperation Department, Huawei Technologies Co. Ltd.

Dr Michael Leung, Director, Industrial Centre, The Hong Kong Polytechnic University

Ms Posy Yeung, Director / R&D Manager, RF Tech Ltd.

Dr H.L. Yiu, Head of Advanced Manufacturing, Hong Kong Science and Technology Parks Corporation

Mr Anson Ng, BEng in EIE alumnus

Mr Jason Tsui, BEng in EIE alumnus

**BSc in IMT High Table Dinner**

Mr Andrew Ko, Technical Consultant, Keysight Technologies Co. Ltd.

Dr Charleston Sin, General Manager, VMware Hong Kong and Macau

Mr Wilson Yuen, Founder & CEO, TFi Digital Media Ltd.

Mr Max Lo, BSc in IMT alumnus

Mr Paco Siu, BSc in IMT alumnus
### BSc in INS High Table Dinner

- Dr Joe Chan, CEO, Advanced Security Technology and Research Laboratory Company Ltd.
- Mr Henry Ng, Head of Consulting Services - APAC, Critical Information Systems & Cybersecurity, Thales Transport and Security (Hong Kong) Ltd.
- Mr Lo Chung Yin, BSc in INS alumnus
- Mr Tsoi Kam Fung Sam, BSc in INS alumnus
- Mr Wong Wai Cheong, BSc in INS alumnus
- Mr Wong Wai Ho, BSc in INS alumnus
- Ms Yu Wai Ling, BSc in INS alumna
- Mr Yuen Chun Ming, BSc in INS alumnus

### HD in EIE High Table Dinner

- Mr Johnny Lai, HD in EIE alumnus
- Mr Tony Li, HD in EIE alumnus
- Mr Felix Yu, HD in EIE alumnus
- Mr Rex Boo, HD in EIE alumnus
- Mr Chan Tak Chi, HD in EIE alumnus
- Mr Lai Chi Him, HD in EIE alumnus
- Mr Lee Ka Shing, HD in EIE alumnus
- Mr Leung Ki Fung, HD in EIE alumnus
- Mr Ernest Poon, HD in EIE alumnus
- Ms Winnie Wong, HD in EIE alumna
- Mr Yue Yat Chung, HD in EIE alumnus
The Department is strengthening the BSc in Information Security Programme by collaborating with VMware, Inc. and Fortinet, Inc. to provide cloud computing training and cybersecurity training to our students respectively.

VMware, Inc. is a global leader in cloud infrastructure and digital workspace technology. The VMware IT Academy Program supports the use of virtualization applications in teaching and research. The program provides both desktop and infrastructure software for personal use, whether as part of STEM classes, in research projects, or for gaining hands-on experience with VMware products. VMware software and eLearning materials are available free-of-charge now for all EIE staff and students.

Fortinet is a multinational corporation which develops and markets cybersecurity software, appliances and services. Under the Fortinet Network Security Academy (FNSA) Scheme, Fortinet offers its industry-recognized Network Security Expert (NSE) training and certification opportunities to students around the world. The FNSA training materials have already been incorporated into the curriculum of the BSc in Information Security Programme. As a supplement to cybersecurity fundamentals, our students will be able to familiarize themselves with the most up-to-date security challenges in the cyber world.

Delegation from Ngee Ann Polytechnic, Singapore

A delegation of 16 staff and students from the Ngee Ann Polytechnic, Singapore, visited the Department between 13 and 14 March 2018. Our Instructor, Mr Ivan Lau, organized a full-day workshop on “Electronic Embedded System Design Using Raspberry PI Module” for the students to learn the programming techniques and circuit theories for building wire loop games using programmable Raspberry Pi. The delegates also attended a talk delivered by Dr Daniel Lun about the Department and the electronic and information engineering field in Hong Kong. They toured the campus, including EIE laboratories, the Industrial Centre and the Student Halls, and joined the student exchange activities organized by the Electronic and Information Engineering Students’ Society (EIESS) at the end of visit.
Various seminars delivered by international scholars and experts were organized by the Department over the last year. These seminars provided an interdisciplinary platform for leading scientists to exchange and share the latest technologies, experience and research results with our academic staff and students.

<table>
<thead>
<tr>
<th>Date</th>
<th>Speaker</th>
<th>Institutions</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 April 2017</td>
<td>Prof. Zhan Xiaowei</td>
<td>Peking University, China</td>
<td>Efficient Fullerene-Free Organic Solar Cells</td>
</tr>
<tr>
<td>17 May 2017</td>
<td>Prof. Yang Yang</td>
<td>University of California, Los Angeles, USA</td>
<td>Strategies toward High Efficiency Organic and Perovskite Solar Cells</td>
</tr>
<tr>
<td>22 May 2017</td>
<td>Prof. Stavros Iezekiel</td>
<td>University of Cyprus, Republic of Cyprus</td>
<td>Microwave Photonics: An Introduction</td>
</tr>
<tr>
<td>8 September 2017</td>
<td>Dr Jiajia Chen</td>
<td>KTH Royal Institute of Technology, Sweden</td>
<td>Next Generation Optical Interconnection Network Architectures for Datacenters</td>
</tr>
<tr>
<td>9 September 2017</td>
<td>Prof. Liang Wang</td>
<td>University of Science and Technology of China, China</td>
<td>After 193: The Next Generation Nanolithography Methods</td>
</tr>
<tr>
<td>20 October 2017</td>
<td>Prof. Dan Wasserman</td>
<td>University of Texas Austin, USA</td>
<td>The Mid-Infrared as an Optical Playground</td>
</tr>
<tr>
<td>3 November 2017</td>
<td>Prof. Kunihiko Mitsubori</td>
<td>Takushoku University, Japan</td>
<td>Theoretical Analysis of One-Period Operation of Boost Converter by Mapping Method in Phase Space</td>
</tr>
<tr>
<td>8 December 2017</td>
<td>Prof. Kin Leung</td>
<td>Imperial College, London, UK</td>
<td>A Personal View on Research Assessment Exercise</td>
</tr>
<tr>
<td>13 December 2017</td>
<td>Dr James Hopgood</td>
<td>University of Edinburgh, UK</td>
<td>Topics in Audio, Chromatography, and Distributed Sensing</td>
</tr>
<tr>
<td>9 February 2018</td>
<td>Prof. Zheng Zheng</td>
<td>Beihang University, China</td>
<td>Dual-optical-frequency-comb generation from a single mode-locked fiber laser and its applications</td>
</tr>
<tr>
<td>16 March 2018</td>
<td>Prof. Mahesan Niranjan</td>
<td>University of Southampton, UK</td>
<td>Inference from Outliers</td>
</tr>
<tr>
<td>29 March 2018</td>
<td>Prof. Charles H. Lee</td>
<td>University of Southampton, UK</td>
<td>The Power of POD</td>
</tr>
<tr>
<td>26 April 2018</td>
<td>Prof. Jianping Yao</td>
<td>University of Ottawa, Canada</td>
<td>Microwave Photonics</td>
</tr>
<tr>
<td>24 May 2018</td>
<td>Prof. Ray K.J. Liu</td>
<td>University of Maryland, USA</td>
<td>Wireless AI: Deciphering our World with a New Sixth Sense</td>
</tr>
</tbody>
</table>
Congratulations to Mr Au Chi Chung, graduate of our BSc in Internet and Multimedia Technologies programme, who won the Champion (Individual) of the B4B Big Data for Business Challenge with two other teammates. The competition was held by Innobator, an incubation centre in Shanghai, and co-organized by Cyberport between November 2016 and March 2017. It aims to promote the development of a sustainable ecosystem for Big Data innovation in Hong Kong and to match talent and enterprises with an intensive accelerator program. By using Big Data and Artificial Intelligence technologies, Au’s team developed a Chinese kung fu training app “JabJabX” and body sensor devices which could analyse users’ fighting strength, speed and techniques. The award presentation ceremony was held on 6 April 2017.

The Hong Kong ICT Awards aims to recognize and promote outstanding ICT inventions and applications. Our BEng in Electronic Engineering alumnus, Co-Founder & CEO of the CHEARS Technology Company Ltd., Mr Wen Zhihui, has obtained the Best Smart Hong Kong (Digital Inclusion Application) Silver Award in this contest. The winning mobile application, CHEARS, is an intelligent hearing aid application designed for hearing impaired people. Through smartphones and ultra-high audio processing function of the earphones, CHEARS is able to generate soft and clear sounds which enable hearing impaired people to have a better communication with families and friends.
The Alumni Association of Electronic and Information Engineering (AAEIE) organized an Alumni Gathering in the PolyU Staff Club Restaurant for more than 40 EIE alumni and academic staff on 15 December 2017. AAEIE also held its Annual General Meeting to present the annual report and activity plan to their members on this occasion. The participants enjoyed this reunion very much as they could meet their old friends and find out the latest news of the Association and the Department.

AAEIE Ukulele Interest Class

The Alumni Association of Electronic and Information Engineering (AAEIE) organized a Ukulele Interest Class in PolyU on 10 June 2017. About 15 participants joined this activity and enjoyed learning the basic playing technique of this fun Hawaiian musical instrument.

AAEIE Alumni Gathering 2017
The 23rd Congregation was organized by the University on 7 November 2017. More than 300 EIE graduates of undergraduate and postgraduate programmes were conferred by Prof. H.C. Man, Dean of the Faculty of Engineering. The graduates joined the Departmental Graduation Tea Reception after the ceremony to take pictures and celebrate their success with their families, friends and professors. The Interim Head and Programme Leaders also presented the Best Academic Performance Awards and the Honors Project Awards to the awardees on this joyful occasion.
The EIE Dragon Boat Team had excellent achievements in 2017. They got five trophies in different dragon boat races between April and November 2017! The Team won the:

- 1st Runner-up in Inter-Company Cup of the Kwun Tong Dragon Boat Race 2017;
- 1st Runner-up in Men’s Gold Plate B of the Stanley Dragon Boat Warm Up Races 2017;
- 2nd Runner-up in the Tsing Yi Small Boat Race 2017;
- 3rd Runner-up in Community Group Silver Plate of the Deep Water Bay Small Dragon Boat Race 2017; and
- 9th Runner-up in Men’s B Gold Cup of the Stanley International Dragon Boat Championships 2017.

Besides dragon boat racing, the team was invited by the Hong Kong China Dragon Boat Association to participate in the filming of the TV show “The Amazing Race China” with the movie star Fan Bingbing at the Central Ferry Piers on 3 June 2017. They also held a 10th Anniversary Celebration Dinner in PolyU Staff Club Restaurant on 30 October 2017 with the President, Professor Timothy W. Tong, as the honored guest for the event. Let’s cheer to the Team for their victory!
Formed by a group of EIE students, alumni and staff, the EIE Dragon Boat Team has participated in the Stanley International Dragon Boat Championships every year since 2008. They undergo months of intensive training and practice to prepare for the international dragon boat competitions for the Chinese customary Tuen Ng Festival each year. The Team has harvested more than 30 prizes throughout the years including the 1st Runner-up awards in the Inter-Company Cup of the Kwun Tong Dragon Boat Race 2017 and the Men’s Gold Plate B of the Stanley Dragon Boat Warm Up Races 2017. The Team is celebrating its 10th anniversary this year.

You are welcome to join this big family to enhance your fitness and enjoy dragon boat races in summer!

Please send your full Chinese and English Name, and mobile number to jason99tsui@hotmail.com for enrollment.
BSc(Hons) Degree in Information Security
資訊安全（榮譽）理學士學位課程

(Programme Code: 42480)

2-year Full-time Government-funded Top-up Degree Programme

**Programme Features**

The recent advance in information and communication technologies (ICT) has brought people great convenience in their daily life. Data has become one of the most valuable assets to any country and any business which requires careful protection. To protect data security and privacy and to safeguard against the risk of potentially devastating security attacks and misuses have thus become a vital concern to all countries and organizations.

This Programme aims at producing graduates with:

- a wide range of professional knowledge and skills relevant to Information Security,
- creativity and innovation,
- adaptability to changing technology and society, and
- all-rounded attributes.

**Major Subject Areas:**

- Authentication Systems
- Cryptography
- Operations Security
- Security Architecture and Design
- Software Development Security
- Telecommunications and Network Security

**Entrance Requirements**

An Associate Degree or Higher Diploma from a recognised institution in

- Information Technology,
- Computer Studies,
- Computing,
- Engineering,
- Electronic Engineering,
- Information Engineering,
- Communication Engineering,
- Electrical Engineering,
- Computer Engineering or
- a similar discipline.

**Application Method**

Apply online via PolyU eAdmission system starting from mid-Sep:
http://www.polyu.edu.hk/admission
Programme Code: 42480

Jointly offered by:

**Department of Electronic and Information Engineering & Department of Computing**
The Hong Kong Polytechnic University
Hung Hom, Hong Kong

Tel: 2766 6259/ 2766 6223
Fax: 2362 8439
Email: eie.enquiry@polyu.edu.hk
Website: http://www.eie.polyu.edu.hk/info
Master of Science in Electronic and Information Engineering (MSc)

Postgraduate Diploma in Electronic and Information Engineering (PgD)

With specialism study options in “Internet of Things” and “Multimedia Signal Processing and Communications”

Programme Features
The programme aims at providing graduates of electronic and information engineering, electrical engineering, telecommunications engineering, computer science and other related disciplines an opportunity for further study at postgraduate level. Students will embark on a broad choice of core subjects in multimedia technologies, telecommunications, electronic engineering and optoelectronics that enable them to meet new challenges and tap new opportunities in relevant fields.

Study Duration
Normal Study Period: 1-2.5 years (MSc) / 1-1.5 years (PgD)
Maximum Study Period: 5 years (MSc) / 3 years (PgD)

Application and Enquiries
Website: http://www.eie.polyu.edu.hk/mscinfo
Tel: (852) 2766 6226 / (852) 2766 4184
Email: eie.enquiry@polyu.edu.hk

New Specialism in Internet of Things (IoT) will be offered starting from 2018/2019
新「物聯網」專修將於 2018/2019 推出

EIE Alumni Scholarship provided for all EIE undergraduate alumni enrolling the MSc in EIE programme.

MSc Studentship at $6000 per month offered for MSc dissertation students to work as part-time Research Assistant.

Credit Transfer of EIE level 5 subjects took during EIE undergraduate study to the MSc in EIE programme for reducing tuition fees and credits required for graduation.
Engineering Doctorate (EngD) is a 3-year full-time or 5-year part-time postgraduate programme co-hosted by the Department of Electronic and Information Engineering and the Faculty of Engineering.

Programme Aims
This programme is targeted for those who are in or are aspiring to be in senior management or principal research and development positions in companies/organisations that are involved in science, technology and engineering. The curriculum is designed to improve the candidates’ skills in management of innovation and technology, enhance professional competence and expertise in specific engineering fields and strengthen capabilities in research, innovation and technology transfer from a practical perspective.

Programme Features
The programme comprises two equally weighted components: coursework and thesis. The coursework aims at reinforcing and expanding candidates’ breadth of knowledge in management of innovation and advanced technologies. The thesis, which is company/organisation related, should make a significant contribution and/or provide innovative insights into professional practice in an engineering discipline. The award of “Doctor of Engineering” will be granted on successful completion of all the coursework and the thesis. Graduates can use the title “Dr”.

Application and Enquiries
Online Application: www.polyu.edu.hk/admission
Programme Information: www.polyu.edu.hk/study

Admission Enquiry
Ms Stephanie Wong
Faculty of Engineering
Tel: 852-3400 3813
Email: destepwg@polyu.edu.hk

Programme Coordinator
Professor Winco Yung
Faculty of Engineering
Tel: 852-2766 6599
Email: wincokc.yung@polyu.edu.hk
Your support is essential to the Department's long-term development. Please make your donation by completing the following form and send it back to us by fax to 2362 6412 or by post.

CONFIRMATION OF DONATION

I/ Our Organization*, hereby confirm(s) my/ our* pledge to make the following donation to “The Hong Kong Polytechnic University” (PolyU) and my/ our* agreement to the schedule of payment and purpose of donation, subject to acceptance by the Management and Council of the University. (Please *✓* and delete where marked with an “*” as appropriate)

1. Donation Amount
HK$ ______________________________

2. Schedule of Payment
☐ One-off Donation, on or before:

☐ By Installments: ( ) Yearly ( ) Quarterly ( ) Monthly ( ) Others (Please specify: )
Period from _______________ to _______________ No. of installments: _______________
Donation per installment: HK$ __________________________ Total: HK$ __________________________

3. Purpose of Donation
☐ University Development ☐ Academic Development ☐ Student Development ☐ Scholarship
☐ Bursary ☐ Others (please specify: Department of Electronic and Information Engineering)

4. Payment Method
☐ By Cheque: (Please make the cheque payable to “The Hong Kong Polytechnic University” and send it together with this form to Room DE633, Department of Electronic and Information Engineering, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong)

☐ By Credit Card: (applicable to donation of HK$100,000 or below only): ( ) PolyU VISA Card ( ) VISA ( ) MasterCard
Name of Card Holder (as shown on the credit card):
Card No.: ____________ Expiry Date: ____________

5. Name on Donation Receipt

Type of Donor: ☐ Individual ☐ Organization
Name of Donor: Prof/ Dr/ Ir/ Dr Prof/ Ir Dr/ Miss/ Mt/ Mrs/ Ms*
(Eng) (Chi)
Position: ____________________________ ____________________________
(Eng) (Chi)
Name of Organization: ____________________________ ____________________________
(Eng) (Chi)
Position: ____________________________ ____________________________
(Eng) (Chi)
Tel No.: ____________________________ ____________________________
(Eng) (Chi)
Email Address: ____________________________ ____________________________
(Eng) (Chi)
Mailing Address: ____________________________ ____________________________

Affiliation with PolyU (if applicable):
☐ PolyU Alumnus ☐ PolyU Staff ☐ PolyU Student
Year of Graduation: ☐ Staff ID: ☐ Student ID:
Department/ School/ Faculty: ____________________________ ____________________________

Donor Acknowledgement

Donors who have made cumulative donations of HK$20,000 or above to the University since November 1994 shall be honoured as a member of The Hong Kong Polytechnic University Foundation (PolyU Foundation). Please refer to www.polyu.edu.hk/aado/polyufoundation for details.

☐ I/ Our Organization* would like to use ________________ (name) in donor and membership listings.

☐ I/ Our Organization* would like to remain anonymous in donor and membership listings, if any.

Declaration in relation to Application for the Government’s Matching Grant

☐ I/ Our Organization* acknowledge(s) and agree(s) that if eligible, PolyU will apply for a grant that matches this donation from the Government or its related bodies including the University Grants Committee, by submitting details of my/ our* donation and that I/ our organization* have/ has no objection to the disclosure of my name/ our organization’s name*, purpose and details of my/ our* donation to the Government or its related bodies.

Authorized Signature: ________________ Date: ________________

Personal Information Collection Statement

To ensure that you are informed of PolyU’s latest developments, we will send news and announcements of the University (and its internal departments and constituent units) and other information (including information about activities, benefits and services, education programmes and solicitation of donations) to you through various communication channels by using your personal data provided (including email address, mailing address, contact telephone number and fax number). We will not use your personal data for sending the said information to you without your consent, and if you want to have access to or change your personal data, please contact the Alumni Affairs and Development Office of PolyU at Tel: (852) 2766 4101/ Fax: (852) 2364 5467/ Email: almail@polyu.edu.hk.

If you do not agree to our use of your personal data for the above-mentioned purposes, please let us know by putting a ✓ in this box:

Thank you very much for your generous support to EIE!