IN FOCUS

SENG
SCHOOL OF ENGINEERING

IMPRESSIVE DISPLAY

HKUST ENGINEERING
| Summer 2014 |
Newsletter No.25

Groundbreaking Advanced Displays and Optoelectronics Technologies

Dean's Message

This coming September marks five years since I was appointed Dean of the School of Engineering. It is incredible how time flies, and this seems an appropriate time to take stock of what we have achieved and examine the direction we wish to take for the future.

First, let me say that the School is doing extremely well in all key aspects related to our vision of positioning HKUST as a center of excellence for world-class engineering education. To mention major highlights of the past five years: reinvention of the undergraduate curriculum; transition to 334 education system; establishment of the Center for Engineering Education Innovation (E^2I); increasing the quantity and quality of exchange-outs and internships; and pushing for more interaction with the outside world through the Center for Global & Community Engagement.

We are continuing to focus on internationalizing the School. Witness our achievements in attracting the best and brightest from around the world through the Hong Kong PhD Fellowship Scheme: of the 223 selected for the 2014/15 academic year, 65 came to HKUST – and of these, 42 chose Engineering.

I am extremely pleased that the School continues to shine in prestigious international education-related rankings, or the fact that Engineering at HKUST is proving increasingly popular with local students.

So where do we go from here to maintain – indeed, increase – our momentum?

Alongside consolidation, our strategy is to emphasize three main areas of development: tri-modal education, entrepreneurship, and e-learning/blended learning.

Tri-modal education provides students with a career aspiration track system based on what they want to achieve; whether it is research, professional engineering, or entrepreneurship, we will provide them with the best tools in order to achieve their goal.

We are focusing on expanding our entrepreneurship activities through innovative co-curricular programs. A new minor in entrepreneurship is being launched, while a new MPhil Program in Technology Leadership and Entrepreneurship will be introduced.

We are viewing the seemingly unstoppable e-learning issue from two points of view: first, to offer our own undergraduates the opportunity to view lectures online, which would then be followed up with interactive classroom sessions; and second, to offer MOOC programs to interested students around the world.

Following the reinvention of undergraduate education, we are now seeking to give graduate education a similar treatment. It is particularly vital that we help graduate students to develop non-research skills, such as presentation, writing and ethics. We have also identified three key research themes designed to bring the whole School together, namely autonomous systems and robotics; big data; and smart green cities. Most discoveries are made at the intersection of disciplines, so it is imperative that our work embraces an interdisciplinary approach.

The School will face challenges in achieving these goals, but I believe we can build on excellence and move to the next level through engagement, cooperation and collaboration in order to ensure we work within our research themes and make an impact with major projects on a global scale.

Prof Khaled Ben Letaief
Dean of Engineering

Excellence Rewarded

in Prestigious Global Surveys

The excellence of a university is gauged not just by academic results but also by the employability of its graduates. Employers are looking for talented people who will bring effective communication skills, team work aptitude, and the ability to perform under pressure and in challenging situations.

So it is particularly pleasing that HKUST has been ranked first in Greater China in the high-profile Global Employability University Ranking 2013, carried out by French consulting group RH Emerging in partnership with German polling institute Trendence. The University's position at No. 18 represents a very impressive jump of 28 places over the 2012 ranking, and makes it the only institution in Greater China in the top 20.

As one of the most international universities in China, HKUST is committed to nurturing graduates who have a broad set of skills and a global perspective, as well as embracing a creative and entrepreneurial spirit. It is encouraging to see that this mission is bearing fruit and that these efforts are recognized by the business world. More than 5,000 top recruiters in 30 countries and regions were interviewed for the survey.

Engineering Success

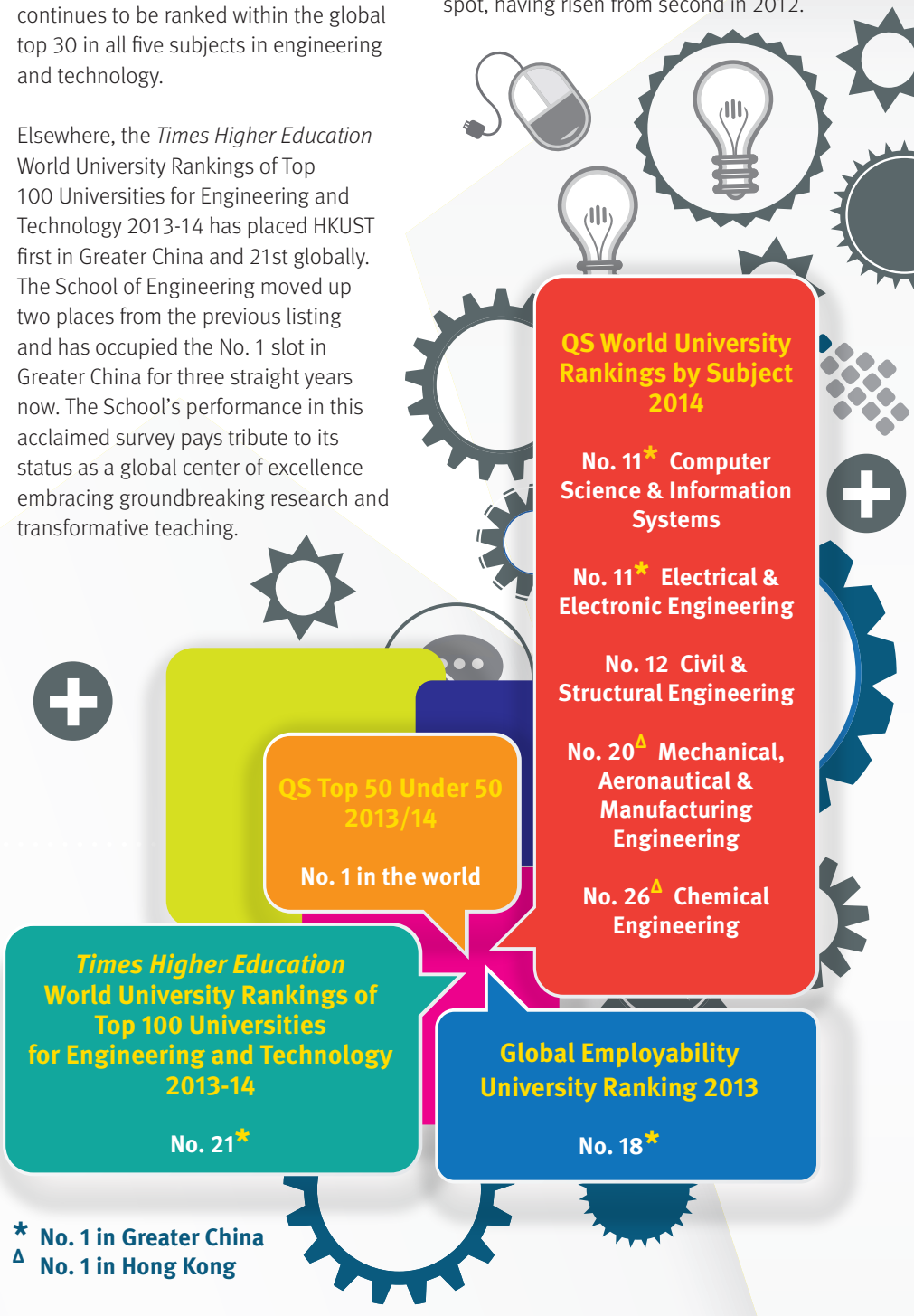
The School of Engineering in particular can be proud with the results of the QS World University Rankings by Subject 2014, where engineering and technology subjects have posted striking rises.

Overall, HKUST is ranked within the world's top 20 in most engineering and technology subjects in this prestigious survey, which ranks subjects based on reputation and research citations. Three subjects achieved their highest positions since the subject rankings were launched in 2011, namely Computer Science & Information Systems (11th), Electrical & Electronic Engineering (11th), and Civil & Structural Engineering (12th). These results establish HKUST as No. 1 in Greater China in both the Computer Science & Information Systems and Electrical & Electronic Engineering fields, and No. 1 in Hong Kong in both the Mechanical, Aeronautical & Manufacturing Engineering and Chemical Engineering fields. Among the five engineering and technology subjects, HKUST enjoyed a leap of between one-to-seven places in four subjects compared with last year. HKUST continues to be ranked within the global top 30 in all five subjects in engineering and technology.

Elsewhere, the *Times Higher Education* World University Rankings of Top 100 Universities for Engineering and Technology 2013-14 has placed HKUST first in Greater China and 21st globally. The School of Engineering moved up two places from the previous listing and has occupied the No. 1 slot in Greater China for three straight years now. The School's performance in this acclaimed survey pays tribute to its status as a global center of excellence embracing groundbreaking research and transformative teaching.

Best of the Young Stars

The QS Top 50 Under 50 2013/14 is an interesting ranking survey in that it rates the world's top 50 universities established within the last 50 years, based on the highest-performing young institutions in the 2013/14 QS World University Rankings. This is the second-year running that HKUST has secured top spot, having risen from second in 2012.



Displaying Exper

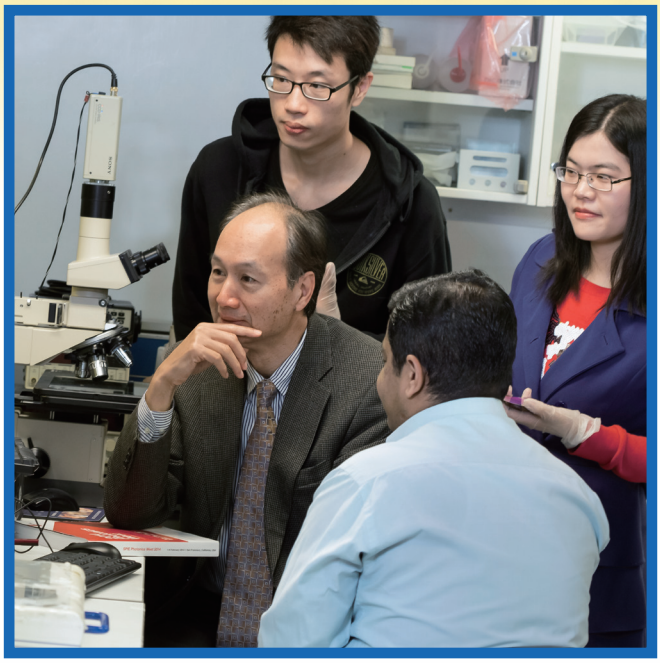
The establishment of the State Key Laboratory on Advanced Displays and Optoelectronics Technologies (SKL) pays tribute to the excellence demonstrated by the School in these fields and the groundbreaking work of Prof Hoi-Sing Kwok

The School of Engineering is proud to house the second State Key Laboratory at HKUST. The new facility, which was officially opened in September 2013, will lead research into advanced displays and optoelectronics technologies. Prof Hoi-Sing Kwok, Chair Professor of Electronic and Computer Engineering (ECE) and Dr William M W Mong Chair Professor of Nanotechnology, has been appointed Director of SKL.

The establishment of this prestigious laboratory is testament to the pioneering work done by the ECE Department under Prof Kwok's leadership in the field of display technology. But talk with the professor about his work in this area, and he confesses that he "stumbled" into display technology shortly after his return to Hong Kong from 23 years of study, teaching and research in the US.

His primary interest while on the faculty of the State University of New York at Buffalo for 13 years was in optics and electronics. "I was working on different combinations of optics and electronics and material science," he recalls. "When I returned to Hong Kong I thought I should do something more practical, and considered integrating microelectronics and optics as HKUST had good microelectronics facilities. I was thinking of doing research into programmable holography. Then by chance I met a friend for tea, who was the founder of a successful LCD company in Hong Kong, and he asked me why not integrate microelectronics and optics in the form of display, as in having an entire display system on a single piece of silicon."

When he looked more deeply into it, Prof Kwok realized that this was indeed a "hot area", with the likes of industry giants IBM, Sony and Intel all working on it, and is a technology that people encounter in everyday life. He was also struck by the fact that display technology is a very practical field and therefore not a research area usually covered by universities. "It was not considered scientific enough, it's very commercially oriented," he comments. So he set about building on Hong Kong's expertise in microelectronics and applied for funding to set up an LCD line for the University, something he says would probably not have been possible in the US because it is much commercialized. He convinced the Hong Kong government to provide HK$15 million in funding, and his friend played a role with HK$1 million matching funds.



Prof Kwok's first project focused on the invention of liquid-crystal display on silicon (LCOS), which involved the successful integration of LCD and silicon-wafer integrated circuits (IC). "We developed one of the best micro-LCOS," he notes. "Applications include high-definition TV, projection TV and wearable-display goggles." This technology has since been licensed to a Taiwanese company. Next came the photo-aligning technique for LCD applications, for which Prof Kwok recruited the world's foremost expert in this field, Prof Vladimir Chigrinov. "The team is working with a Japanese company on this technology, which uses light rather than mechanical rubbing to align liquid crystals; it achieves better uniformity and doesn't produce waste and dust. We are hopeful that this technique will be commercialized in time." A third project has pioneered the development of low-temperature polycrystalline silicon (LTPS) thin-film transistors (TFT). "This is the backbone of all high-resolution displays on glass," he says. "We have invented a whole series of patents related to this technology, and we are also trying to commercialize it."

Display-Related Hub

The SKL was set up in collaboration with Sun Yat-Sen University following approval from the Ministry of Science and Technology of the Central Government. With a grant of HK$5 million per year and matching funds from HKUST, it is initially focusing on five areas of research: oxide

tise to the World

TFT-array technology; third-generation organic LED (OLED) devices; LCD devices; video signal processing and IC design; plus frontier technologies.

"Our aim is to make the best possible display and to improve existing technology," notes Prof Kwok. "There are still a lot of areas in this field where enhancements can be made, especially in energy conservation, cutting manufacturing costs and the development of flexible displays. Through SKL we will be able to establish one of the best facilities for display research internationally. One of our goals is to make HKUST a hub of research in this field for China and the outside world. We also want to establish a platform for people to meet and discuss display-related issues, and to this end we will be organizing workshops; this will bring more activities to the School and the University."

Prof Kwok's role as director is to distribute funding and ensure that the facility generates good results and publicity. "I am working hard on interacting with industry.

We have already achieved our first industrial contract, with China Star Optics Technology in Shenzhen, for TFT technology. We are also in negotiation with another company to work on flexible displays," he says.

He is keen that all the principle investigators involved in SKL work in tandem and share their ideas and challenges. "This was a condition I made when deciding where the funding should go," he says. Among the projects that are already up and running, Prof Oscar Au is working on new ways to render sub-pixels to generate resolution by means of software. Prof Long Quan is working on 3D displays. Prof Patrick Yue is involved in integrating LED with displays in designs of circuits and transistor designs on panels. And Prof Ching W Tang – the inventor of OLED – is striving to improve coating technologies in order to reduce both cost and waste.

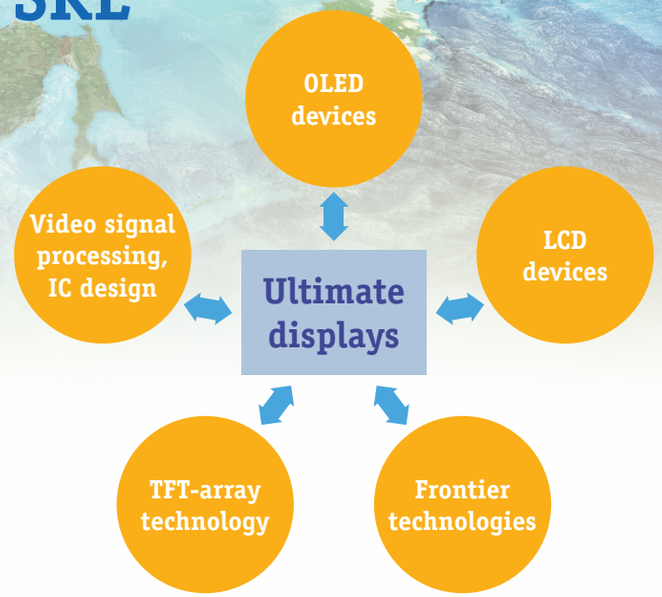
"Looking to the future, we have a good core of principle investigators and within the next five years I would like to see more funding from commercial activities, with at least three more technologies commercialized and generating revenues for the Lab," he says.

Prof Kwok takes this opportunity to sit back and ponder on the amazing developments in the field of display technology. "Display was not in my life 20 years ago – or anyone else's. But now it is everywhere: our world is display-centric and every person is in contact with it at least 20 times a day, be it on our phones, at the train station, the shopping mall, the bus stop..." He points to an area of wall adjacent to his desk and shares that in his imagination he can see a huge LCD frame there: "One day you can have a Monet on your wall, the next day a classical Chinese painting..." But his real wish is that it will be at SKL that these amazing technologies can be developed.

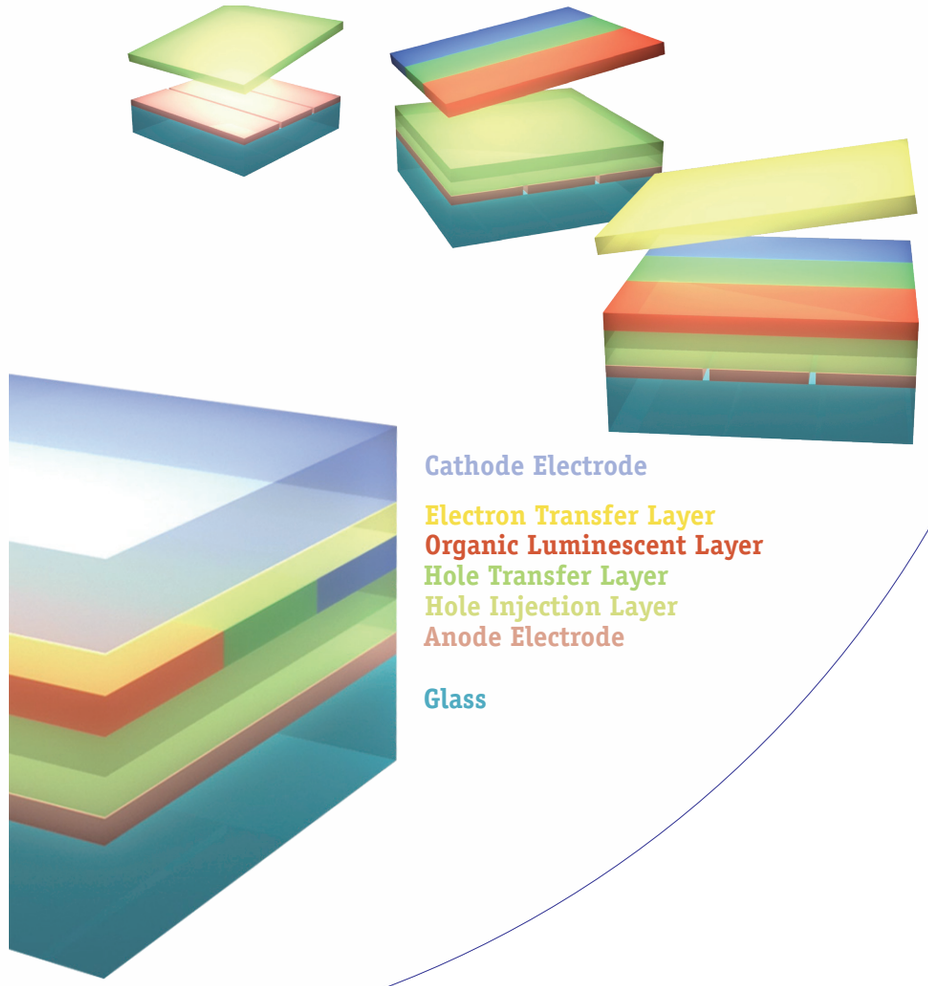
Our aim is to make the best possible display and to improve existing technology.

Prof Hoi-Sing Kwok

Five Core Research Areas of SKL



OLED Diagrams



Fascination for Electronics

- A childhood fascination with electronics sparked Prof Kwok's lifelong academic career; his hobby was electronics – he made a simple radio in elementary school, and in secondary school he built his own hi-fi system
- "I always found electronics fascinating because you get to make things yourself," says Prof Kwok
- BS, Electrical Engineering, Northwestern University
- MS and PhD, Applied Physics, Harvard University
- When HKUST started, Prof Kwok wrote to the founding president asking if he could spend a one-year sabbatical at the University. The president wrote back saying, "Sure, but why not spend 10 years with us?"; 22 years later he is still here!
- Recipient of 77 patents, with another 30 under review and produced over 700 refereed publications on display-related research
- Recipient of the first Distinguished Research Excellence Award of the School of Engineering for contributions to the field of display technologies
- IEEE Fellow
- Society for Information Display Fellow – "enables interaction with industry," says Prof Kwok
- Outside interests: history, Chinese poetry, calligraphy, geography and astronomy

Ms & Mr Young Engineers

Three outstanding Year 1 undergraduates discuss why they chose to study engineering rather than pure science – and what appeals most about HKUST

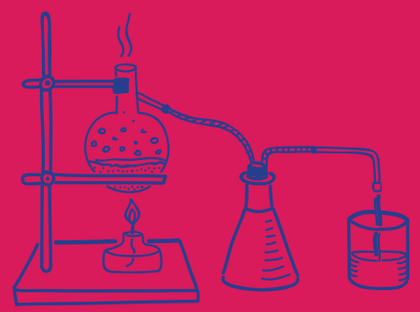
Bernard Wai Lok Li

Queen's College

Top scorer of HKDSE exam among students admitted to the School of Engineering in 2013

"Engineering is the link between the work of scientists and the everyday lives of people."

I have always been fascinated by the question that I reckon many scientists face, and that is, is their invention economically feasible? Scientists work hard to develop laws and formulae that form the basis of inventions, but how many of these are destined to remain forever in the lab? I suspect many never see the light of day. This is where the profession of engineering comes in: it is the link between the work of scientists and the everyday lives of people.



I was prompted to delve into the essence of this subject, by searching for studies that elucidate the nature of "engineering" to general readers. I discovered that engineers differ from scientists in that they often deal with the issue of "how" to produce the inventions put forward by scientists through optimizing the benefits. As a student-to-be of engineering, I was pondering over the fact that while a concrete foundation in scientific knowledge was important, engineering itself relies upon sociological tools – such as economics – to consider these theories in a more real-life and practical way. This reveals why I choose to be an engineer, which is different to becoming a scientist.

Personally, I adore mathematics and science when they are applied in a broad sense. As for why I specifically chose HKUST, I would say I was impressed by the academically oriented atmosphere. In terms of software, the School of Engineering provides ample opportunities to equip students with a strong theoretical background as well as practical skills for their future career. The Undergraduate Research Opportunities Program (UROP) is an example of how students can gain access to research independently, rather than being confined to rigid theories from textbooks. This "trial-and-error" approach to learning can prepare me for becoming a self-dependent engineer who transforms theories into practicality. These are vital qualities that all engineers should be endowed with, and I am confident to say that I'm ready to accomplish the dreams of my own, and to inherit the work left undone by engineers of past generations.

Jenny Ji Eun Kang

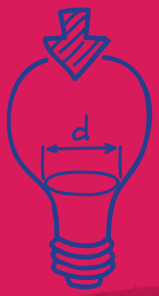
Li Po Chun United World College of Hong Kong

"I've always wanted to study the technicality of science with a touch of creativity, and engineering seemed to marry the two."

I only really discovered my underlying love for engineering during my last year of high school, when I had to think about what I wanted to study at university. I mainly wanted to pursue chemistry because I was interested in how chemicals work and shape our lives. I still remember my very first science project in which I had to test whether or not professional shampoos really lived up to their claim of being "better" than regular shampoos. Shortly after, I homed in on my fascination with pharmaceuticals – from the design process all the way to their effects on our bodies. It was then it struck me: chemistry may be a good choice for me... but what about chemical engineering?

The more I looked into engineering, the more it appealed to me. I've always wanted to study the technicality of science with a touch of creativity, and engineering seemed to marry the two. And the fact that engineering can tackle some of the most pressing problems humanity faces in the present filled me with excitement. Engineers are people who design our world, who innovate and explore, who strive for a better tomorrow... and I wanted to be one of them!

My story is just beginning and with the help of HKUST and the many opportunities it offers – such as exchange programs to universities all over the world and UROP – the possibilities are endless. With all that I've learnt and the inspiring peers and professors whom I've met in the past few months, I'm excited to discover what is to come. Whether it is household chemicals or pharmaceuticals, I hope to explore my interest in the application of chemistry in our lives through studying chemical engineering. And with HKUST Engineering, I know that I can take my interests to the next level and equip myself to become the engineer that the world needs today.



Tony Peng Zhou

Hangzhou Xuejun High School
Mainland China

"I like the words of Theodore von Kármán: "Scientists discover the world that exists; engineers create the world that never was."

"Why didn't you continue to study physics at university?" "Why did you choose the School of Engineering?" These are the most common questions asked by my friends once they hear that I won a gold medal at the 14th Asian Physics Olympiad in 2013. Doing well in physics might be an advantage – albeit temporary – in others' eyes. But for me, the reason I chose engineering was purely because of interest.

I like the words of Theodore von Kármán, the Hungarian-American mathematician, aerospace engineer and physicist: "Scientists discover the world that exists; engineers create the world that never was." After careful consideration, I realized that I was more enthusiastic about creating new stuff. And HKUST is a very internationalized university that can spark my inspiration.

Studying at HKUST is more than just going to classes and reading textbooks in the library. Rather, it provides us with a variety of activities that enable us to connect with the most advanced science and technology. There are many prestigious researchers and corporations sharing their ideas and achievements with us. For me, one of the most inspirational is DJI Innovations, founded by a School of Engineering alumnus, which is a world leader in small, high-performance unmanned aerial systems for commercial and recreational use.

This is just one of the numerous inspiring instances that have revolutionized my view of engineers.

I have joined HKUST's Aeronautics Interest Group. We are working on a project to manufacture a model plane. Our target is not merely to get it airborne, but develop it to perform a series of difficult tasks. For example, we have designed a suspension system with large wheels that enables the plane to taxi across undulating ground, while we have also changed the configuration of the plane so it is lighter and faster. During this process, I experienced the excitement of being an engineer. And I thank HKUST for giving me this excellent opportunity.

In hindsight, I rejoice that I made the correct decision to study at the School of Engineering. Here at HKUST, I can develop my confidence so as to become a young yet prominent engineer, just as I have always dreamed.

Chuck-jee Chau

PhD, Computer Science and Engineering (2017)
MSc, Computer Science and Engineering (2011)

I decided to do my PhD at HKUST because Prof Andrew Horner, the only computer music researcher in Hong Kong, is based here at the Department of Computer Science and Engineering. Exploring computer software and hardware was my hobby since primary school, and while I was at secondary school I started developing websites and programs. I have been playing the piano since I was five or six, and I have tried different instruments since then – most recently I am working on the marimba, which is a big kind of xylophone with rich and mellow bass sounds.

So with this background in music and computers, I had a hard time determining which to study when I left secondary school. I took advice from my family and friends and for career reasons I chose computer engineering with a music minor. After all, engineering and music are both "arts" – yes, even engineering – with delicate craftsmanship and communication vital to both.

For my PhD, I am carrying out research on the synthesis and analysis of sound. Together with Prof Horner, we dismantle sound – for example, the pure sound that comes from a violin, which we then rebuild using software programs. We are now working on timbre – or tone color – and emotion of various instruments. For example, do guitars and harps sound sad? Do xylophones have a happier sound?

There is a lot of freedom here at the School of Engineering, especially in the relationship with my research advisor. I benefit from abundant valuable experience outside of studies: I am involved in the HKUST Summer Musicals, for instance – I helped as the rehearsal pianist, and I encountered so many talented musicians, singers and actors here in the university. It was simply fun to make music with these students. I perform as a collaborative pianist and percussionist at my leisure.

Being involved in music and computers is rewarding because cross-curricular study has increasing prominence recently. We always need to ensure that our minds do not get too narrow. Achieving a balanced life is certainly challenging yet satisfying. There is hardly a measurement for a successful life, but for me, success is about making a difference in the lives of others – with arts which communicate emotions and thoughts, and with technologies which connect and enhance the communication.

Three School of Engineering students share their thoughts on why they are passionate about music

We ♥

Kenny Tsun Yat Lam

Dual Degree Program in Technology and Management – BEng Logistics Management & Engineering + BBA General Business Management (2015)

One of the two full-time students selected by Musicus Society to compose a new work as part of Musicus Fest in 2013

I hope that in the future, HKUST will offer more music courses because the current ones are very interesting! A music composition course I took in summer 2013 with Prof Bright Sheng coincided with the inaugural Musicus Fest calling for original scores, from which they selected students to compose new works. Musicus Fest not only aims to cultivate young musical talents, but also to promote sites of historical and cultural significance. I was invited to write a piece inspired by the Asia Society Hong Kong Center, situated at the Former Explosives Magazine site in Admiralty. I

Crystal Suet Ying Yuen

BEng, Logistics Management and Engineering (2014)

Music

Simply put, my life in music is based solely on one thing – faith. The most important lesson music has brought me is that faith makes a difference. It motivates you to try harder, encourages you to enjoy the process, and leads you to success. I don't have an affluent family background, I don't have great connections, but I always believe that even without support, I can achieve much more – and I have.

Music plays an important role in my life. From learning to performing, then to composing, teaching and developing talents, music is my lifelong companion. I used to take part in many local and international competitions, and was often lucky enough to be awarded. Although I studied at the Hong Kong Academy for Performing Arts when I was younger, for several years I studied piano on my own, partly for financial reasons, but also because I believed that I could do it on my own. One year, I studied and then passed a diploma with distinction just with the help of YouTube! I won Best Original Music Award 2010 at the Hong Kong 5th Inter-School Film Festival, even though I had never studied composition, and most adventurous of all, I managed to get myself a place in international piano competitions, including the 15th Ettlingen International Piano Competition in Germany in 2010. That's how far faith can take you when you are really determined.

Engineering does not seem to be related to music in any way. But I chose to study it because I wanted to be proficient in both sciences and arts. In fact, possessing knowledge in both areas gives me the chance to think in a more creative, critical and innovative way because of the different skills needed; the ability to appreciate the arts, in particular, raises my inner quality.

Having experienced the life of self-learning through music, I don't really care about "success" anymore. Seeing myself growing day by day is already a rewarding process.

composed a piece for a piano trio, which was my first time composing for string instruments. It was challenging and very exciting at the same time. My work was world premiered by internationally renowned violinist Latica Honda-Rosenberg, cellist Jens Peter Maintz and Hong Kong pianist Colleen Lee last December.

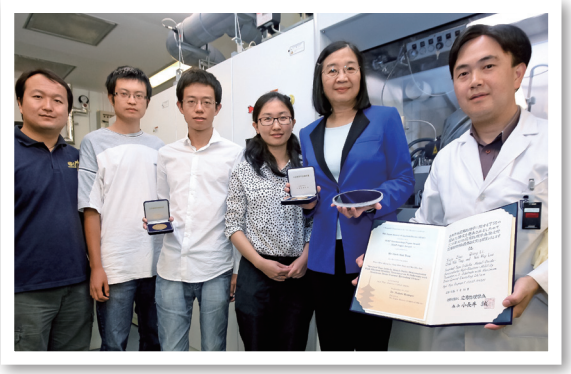
I started playing the piano when I was four, and later on I also took up the recorder. I started singing in an a cappella group in Form 6, when I tried my hand at music arranging. Since entering HKUST, I have taken several music composition courses offered by the School of Humanities and Social Science, because I wanted to explore different areas in music.

Entering university, I am becoming more involved in music. Apart from the music courses I took in HKUST, I live in Hall VII, where we have a community called Arts a-LIVE, which gathers residents who love performing arts. We organize events like music sharing nights and dance workshops. It is an immersive experience to live in a community with friends who share similar interests. Outside school, I sing in a chamber choir Die Konzertisten, as well as a contemporary male a cappella group Set Tone Men. Music has become an integral part of my life.

I am now attending the Royal Institute of Technology in Sweden for an exchange program. This has so far been an eye-opening experience to immerse in Europe's rich musical history. I am looking forward to learning about their arts scene and sharing it with my friends.

Electronic Engineers Win Recognition

for High-Performance Transistors



Congratulations go to the research team led by Prof Kei May Lau, Chair Professor of Electronic and Computer Engineering, for receiving the JSAP Outstanding Paper Award from the Japan Society of Applied Physics for its work on novel high-speed, energy-saving transistors. This is the first time the award has been won by any team from Hong Kong and Mainland China since its inception in 1979.

The paper on "Inverted-Type InGaAs Metal-Oxide-Semiconductor High-Electron-Mobility Transistor on Si Substrate with Maximum Drain Current Exceeding 2A/mm" was co-authored by alumna Dr Xiuju Zhou, PhD student Qiang Li, researcher Chak Wah Tang and Prof Lau. The award honors excellent original papers that contribute to the progress and improvement of applied physics.

The novel "match-making" technology deposits next-generation, high-speed, energy-efficient transistors on silicon using high-mobility compound semiconductor materials. These devices seek to reduce power consumption by as much as 10 times and increase switching speeds five-fold. This is indeed groundbreaking work, given the importance of computers, mobile devices and other gadgets in everyday life and their reliance on high-performing transistors.

In addition, the research team has also demonstrated high-speed transistors and photo-detectors utilizing the compound crystals with comparable performance to those using high-cost matching crystals. The project is supported by major multinational companies in the field and by public funding, and the technology is expected to be widely used by the semiconductor integrated circuit industry in the future.

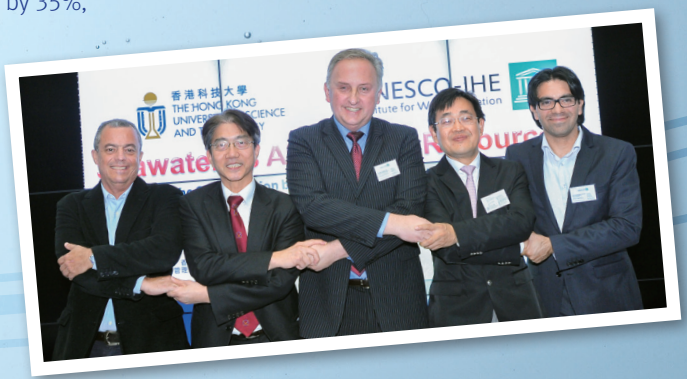
Water-Saving Technology

'Exported' to Cuba

It is an everyday matter that Hong Kong people hardly give a second thought to, but for those in developing parts of the world it can make a huge difference to their lives – and that is the SAR's seawater toilet-flushing system, which saves huge amounts of fresh water and energy daily. Prof Guanghao Chen, Civil and Environmental Engineering, explains: "Leveraging this unique system, we have developed a novel, energy-efficient and low-carbon sewage treatment technology."

The resulting innovative urban water-management system is part of "+AGUA PARA TODOS (More Water for All)", a three-year water-saving project at the heart of a partnership between HKUST and the UNESCO-IHE Institute for Water Education, being implemented in the Caribbean island of Cuba. "The Sulphate Reduction, Autotrophic Denitrification and Nitrification Integrated (SANI) Process can eliminate 90% of sewage sludge production and reduce sewage treatment costs by 50%, space requirements by over 50% and cut greenhouse gas emissions by 35%," explains Prof Chen.

This valuable project includes the conversion of part of a tourist resort near Havana to seawater toilet flushing, reuse of wastewater for irrigation and the use of the SANI Process for wastewater treatment. It is an excellent example of the relevance of HKUST's research and development regarding global water management and environmental protection. Water shortages are a growing problem in the world today, and this innovative technology provides an energy-efficient and economical way to save water in coastal cities and islands.



Top China and International Honors
for Innovative Academic

Prof Tianshou Zhao, Chair Professor of Mechanical and Aerospace Engineering, and his research team have won one of Mainland China's most prestigious science and technology awards for the second consecutive year. Internationally, the eminent academic has also been selected as a World's Most Influential Scientific Mind and a Highly Cited Researcher 2014 by Thomson Reuters.

The team received a 2013 State Natural Science Award (Second Class) from the State Council for pioneering work on Direct Alcohol Fuel Cells (DAFC). Fuel cell technology is efficient and clean, and has a variety of applications including mobile phones, computers, automobiles and buildings.

Prof Zhao's research is focused on the physical and chemical process of fuel cells, successfully revealing the underlying mechanism of coupled heat/mass energy transfer and electrochemical kinetics in fuel cells and establishing a new theoretical framework. This significant breakthrough has improved the performance of direct alcohol fuel cells, and has driven this type of fuel cell closer to commercialization. The research has made a seminal contribution to the creation of a new interdisciplinary field between thermo-fluid sciences and electrochemistry.

The Highly Cited Researcher honor is a new accolade announced recently to identify influential and contemporary researchers who have contributed significantly to highly cited publications in a given field. Researchers earn the distinction by publishing the greatest number of papers ranked among the top 1% most cited for their subject field and year of publication between 2002 and 2012. The 2014 list contains some 3,200 researchers in 21 fields of the sciences and social sciences. Prof Zhao is among only 187 researchers worldwide to be included in the list's engineering field.

Researchers Collect
National Science and Technology Awards

School of Engineering researchers have received two honors in the 2013 Higher Education Outstanding Scientific Research Output Awards (Science and Technology), presented by the Ministry of Education.

A First Class Award in Scientific and Technological Progress was awarded to Prof Charles W W Ng, Chair Professor of Civil and Environmental Engineering, his collaborators from Tianjin University and Mainland China industry partners, who have developed a new theory and calculation methods for building underground structures in a more economical and faster way without compromising safety. They also identified key controlling factors which shed new light on deformation and failing mechanisms in deep underground structures.

A Second Class Award in Natural Science was presented to postdoctoral fellow Dr Tian Fang, Computer Science and Engineering, and collaborators from Beijing Normal University and Wuhan University, who put forward a series of novel approaches to improve clarity and segmentation accuracy when building complex 3D city models.

The Higher Education Outstanding Scientific Research Output Awards recognize leading research projects at tertiary institutions in China and are presented to individuals or units that have made remarkable contributions in the areas of scientific discovery, technological innovation, science and technology advancement, and the implementation of patented technologies.

International Recognition for Excellence in Research

Nine faculty members have been elected Fellows of prestigious professional organizations

Institute of Electrical and Electronics Engineers (IEEE)

Three of the six new 2014 IEEE Fellows in Hong Kong are from HKUST. They bring the total number of IEEE Fellows at the School of Engineering to 33, including 24 from the Department of Electronic and Computer Engineering, seven from the Department of Computer Science and Engineering and two from the Department of Mechanical and Aerospace Engineering.

Prof Kevin Chen
Electronic and Computer Engineering

Prof Chen was elected for contributions to compound semiconductor heterojunction transistor technologies. At the core of his contributions are inventions and fundamental understanding of several technologies that have advanced the commercial applications of the high-performance but difficult-to-manufacture enhancement-mode compound semiconductor transistors. These devices have been used to implement high-efficiency and high-linearity radio-frequency amplifiers in wireless mobile devices, such as wristwatch mobile phones, and for realizing next-generation low-loss and high-efficiency power switches that can lead to substantial energy saving.

Prof Howard Luong
Electronic and Computer Engineering

Prof Luong has been recognized for single-handedly pioneering and building up a world-class radio frequency integrated circuit (RFIC) research program in Hong Kong. He has made significant contributions to the advancement of low-voltage low-power RFIC designs by being the first to propose many innovative and useful design techniques. His most important contribution has been to propose transformer feedback to implement ultra-low-voltage high-performance voltage-controlled oscillators. He successfully designed and demonstrated the first LC VCO at 0.35V supply, which is even smaller than the devices' threshold voltage of 0.5V, while still achieving high frequency, good phase noise, and low power consumption. As of now, it is still the lowest supply voltage ever reported for CMOS VCOs.

Prof Philip Mok
Electronic and Computer Engineering

Prof Mok has made distinctive contributions to the design of power-management integrated circuits (PMIC), and has helped making handheld devices such as smart phones, digital cameras and tablet computers smaller, thinner and lighter by pushing the limits of the performance of handheld devices while maximizing the battery run-time. The effectiveness of power delivery from the rechargeable battery to the handheld device in different modes of operations relies on the performances of power converters inside the PMIC. He is a leader in PMIC and has developed numerous novel analog and mixed-signal circuit techniques and control methodologies.

US National Academy of Engineering (NAE)

President Prof Tony F Chan
Chair Professor of Computer Science and Engineering

Prof Chan has been elected in recognition of his application of numerical techniques to image processing and scientific computing, and for providing engineering leadership at national and international levels. He is the only ethnic Chinese among the 67 members newly elected this year, and is one of just a handful of US NAE members based in Hong Kong. "This recognition will allow me to connect with leaders of the US engineering profession, as well as provide a great forum for me, and HKUST as a whole, to be involved in discussion and influence issues and trends in science and technology," said Prof Chan.

US Human Factors and Ergonomics Society (HFES)

Prof Ravindra Goonetilleke

Industrial Engineering and Logistics Management

Prof Goonetilleke is the first member from Hong Kong and the Greater China region to be elected as a Fellow. This honor acknowledges his outstanding professional contributions to the Society and to human factors and ergonomics, as well as his achievements to advance the discipline and science of this field. His work on design related issues has been internationally recognized and his various projects have won top awards both in Hong Kong and around the world. He is a Hong Kong representative of the International Ergonomics Association, of which HFES is a member.

International Microelectronics Assembly and Packaging Society (IMAPS)

Prof Ricky Lee

Mechanical and Aerospace Engineering

Prof Lee has been elected Fellow for his research and development efforts related to the packaging and assembly of integrated circuits (IC), optoelectronic devices and microsystems. His research covers chip scale and wafer-level packaging, through-silicon vias (TSV) and 3D IC integration, LED packaging, and solder joint reliability. He has made vital contributions to a number of areas, namely applications of finite element method and fracture mechanics to the stress analysis of electronic components and systems; investigation of board-level solder joint reliability under thermal and mechanical loading; research on TSV technologies for 3D IC integration; and development of LED wafer-level packaging technologies.

Institution of Structural Engineers (IStructE) and Institution of Civil Engineers (ICE)

Prof Christopher Leung

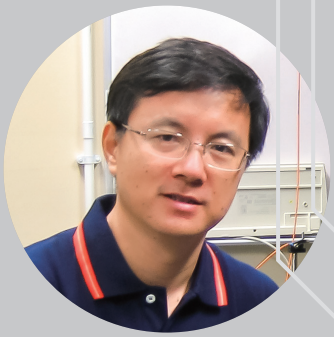
Civil and Environmental Engineering

Prof Leung has been elected Fellow for his research in composite materials and their applications. He is a pioneer in the development of pseudo-ductile cementitious composites (PDCC) that exhibit high deformation and energy-absorption capabilities. These materials are now being employed in the US, Japan and China for various applications including structural members in buildings to enhance seismic resistance, deck surface and joints of bridges to improve durability, and the surface repair of deteriorated concrete dams. His major contribution is the establishment of a fundamental theory that provides material selection guidelines to achieve the desirable properties of PDCC.

International Society for Optics and Photonics (SPIE)

Prof Jianan Qu

Electronic and Computer Engineering



Prof Qu has been elected Fellow in recognition of his achievements in biomedical optics, especially in areas of optical diagnosis of early cancer and multiphoton spectroscopy. His significant discoveries have pioneered a variety of highly innovative technologies that pave the road for the translation of advanced optical technologies to molecular bio-imaging and clinical applications. He has been a member of SPIE since 1994 and currently serves as an editorial board member of the *Journal of Biomedical Optics*.

International Congress on Fracture – The World Academy of Structural Integrity (ICF-WASI)

Prof Tongyi Zhang

Chair Professor of Mechanical and Aerospace Engineering

Prof Zhang has been elected for his research in the interdisciplinary area between materials science and solid mechanics. He has made significant contributions to the fracture of piezoelectric materials under electrical and/or mechanical loading. He has established a novel testing technique, called microbridge tests, to characterize the mechanical properties of materials in small scales, which is very difficult to achieve in a conventional way. Recently, he discovered the mechanism behind the size-dependent mechanical properties of nanomaterials such as nanowires and thin films. Prof Zhang is also Vice-President of the ICF Society.

HKUST Energy Institute Celebrates Opening
with Forum on Sustainable Future

The HKUST Energy Institute celebrated its grand opening in March, with leading scientists and energy experts from around the world participating in the occasion.

The Institute demonstrates the University's commitment to the global development of a sustainable energy future. It will provide a multi-disciplinary platform to bring together scientists to work on cutting-edge research across HKUST and beyond, and coordinate energy programs for undergraduate and postgraduate students. Some 90 faculty members are currently engaged in energy-related research at the University, with particular strengths in solar cells, fuel cells, solid state lighting and thermal energy technologies. The Institute's diverse portfolio of interests will cover energy generation, storage and distribution, efficiency and policy-making.

The keynote speech was given by Dr Christine Loh, Under Secretary for the Environment of the HKSAR, who focused on the evolving picture of energy in Hong Kong and the challenges facing the community, ranging from the city's fuel mix, the regulatory framework for the two power companies, and air pollution.

Other officiating guests included Ms Janet Wong, Commissioner for Innovation and Technology, HKUST President Prof Tony F Chan, Executive Vice-President and Provost Prof Wei Shyy, Vice-President for Research and Graduate Studies Prof Joseph Hun-wei Lee, and the Institute's Director Prof Tianshou Zhao, also Chair Professor of Mechanical and Aerospace Engineering and an award-winning researcher in the field (see P10).

President Chan said that the Institute would engage in emerging energy research that can have a transformative impact over the long term on Hong Kong and the country's energy future. The ceremony was followed by a two-day forum on sustainable energy, with eminent speakers from Hong Kong, Mainland China, Japan and the United States discussing a range of cutting-edge developments involving ocean wind power, environmentally friendly building, cost-effective production of bioethanol, and solar cell design, among others.

HKIE Recognizes Four-Year Degree Program

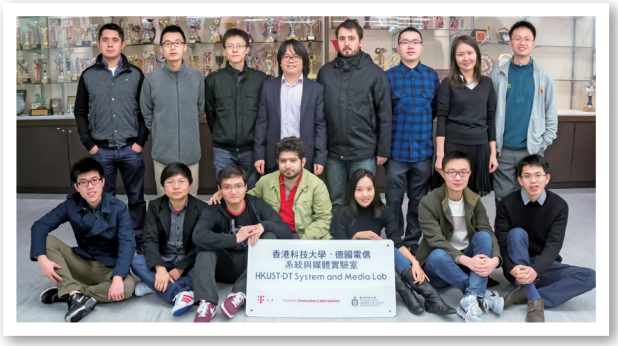
The Hong Kong Institution of Engineers (HKIE) has granted provisional accreditation to the School of Engineering's four-year undergraduate degree programs under the outcome-based education approach, making the School the first in Hong Kong to acquire this recognition.

Provisional accreditation was granted following a two-day visit by the HKIE accreditation team last Fall. The result continues the School's long-held HKIE recognition, which covers programs within the Departments of Chemical and Biomolecular Engineering, Civil and Environmental Engineering, Electronic and Computer Engineering, Industrial Engineering and Logistics Management, and Mechanical and Aerospace Engineering, and the Computer Engineering Program.

Such status is important as HKIE is a signatory of the Washington Accord, a recognition agreement between engineering degree accreditation bodies overseas. Engineering degrees accredited by HKIE also receive recognition from other Washington Accord signatories, giving the programs international standing.

Industry Partnership

Spearheads Research



HKUST has entered into a partnership with a leading global telecommunications giant that will create extraordinary innovation with true market impact.

The University has signed a research cooperation agreement with Deutsche Telekom (DT), with a grant of €500,000 (approximately HK$5 million), to set up the HKUST-DT System and Media Lab (SyMLab) for cutting-edge research on mobile systems and media. The lab aims to bring pioneering system and media research to Asia. It provides an excellent academic research environment with strong ties to industry and has the capabilities to address real problems. Through this strategic partnership, DT is able to access the research and innovation environment in Greater China while the researchers are able to connect with the rest of the world.

DT operates in around 50 countries, especially in Europe and North America. The arm involved in the HKUST venture is T-Labs, a world leader in telecommunication and networking research. The Director of the HKUST-DT SyMLab is Prof Pan Hui, Computer Science and Engineering, who has a wealth of industry experience, including with T-Labs.

Talent Development

at Heart of New Initiative

HKUST- Qualcomm Joint Innovation and Research Laboratory celebrated its official opening in September 2013. The initiative represents a collaboration between the University and Qualcomm Inc, with a focus on talent development and R&D for next-generation Internet infrastructure. Qualcomm has donated US$200,000 (approximately HK$1.5 million) as initial funding.

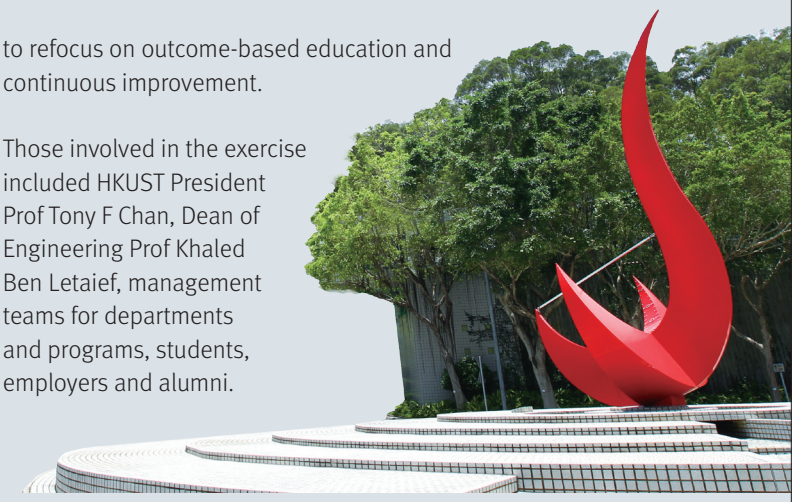
Prof Khaled Ben Letaief, Dean of Engineering; Prof Ross Murch, Head of Electronic and Computer Engineering; Prof Patrick Yue, Associate Provost for Knowledge Transfer and Founding Director of HKUST-Qualcomm Joint Innovation and Research Laboratory; and from Qualcomm Inc, Dr Mingxi Fan, Senior Director, Engineering; Dr Jilei Hou, Director, Engineering; and Dr Xing Jin, Senior Manager, Program Management, all signed the commemorative banner to signify the official opening of the lab.

The lab aims to nurture research and talent in areas of mutual interest between the partners under the next-generation Internet infrastructure pilot theme, an approach that can better utilize funding resources to create synergy between related projects and harness the expertise of multiple faculty. Qualcomm is a world-leading provider of wireless technology and services, headquartered in the US and with 175-plus locations around the world.

The accreditation team was led by Prof David Holger, Associate Provost for Academic Programs and Dean of the Graduate College of Iowa State University in the US. Prof Holger praised the School for creating an environment of creative, educational, and curricular innovation which was well in line with the increasingly complex demands on graduates seeking to prepare themselves for an engineering career.

The accreditation team also highlighted the high quality of the School's academic staff, and the School's ability to secure resources to develop excellent educational programs, and the way the School had taken full advantage of Hong Kong's education reform move to a four-year degree program to refocus on outcome-based education and continuous improvement.

Those involved in the exercise included HKUST President Prof Tony F Chan, Dean of Engineering Prof Khaled Ben Letaief, management teams for departments and programs, students, employers and alumni.



Faculty Discoverers Honored in School Awards

The recipients of the School of Engineering Research Excellence Awards 2014 were announced in April, with two outstanding faculty members receiving recognition for their accomplishments. The School-wide awards encompassing all six departments seek to recognize exceptional faculty members who are at different stages of their career.

The winner of the Distinguished Research Excellence Award for 2014 was Prof Tianshou Zhao, Chair Professor of Mechanical and Aerospace Engineering, Director of the HKUST Energy Institute, and Senior Fellow of the HKUST Jockey Club Institute for Advanced Study. This award honors a faculty member with exceptional research achievements and significant impact at the local and global levels and is the most prestigious award among the categories.

Prof Zhao has spent 19 years at HKUST, making seminal contributions to the energy field through his commitment to clean energy production and storage devices to boost sustainable living. His research and technological innovation have impacted many areas, including fuel cells, flow batteries, multi-scale multiphase heat and mass transport with electrochemical reactions, and computational modeling. He has been a prolific sharer of his discoveries and knowledge through four edited books, 10 book chapters and over 50 keynote lectures at international conferences. He has also published more than 200 papers in prestigious journals, which have received over 6,500 citations, and has an h-index of 47 (Web of Science). More recently, Prof Zhao has been named a Highly Cited Researcher 2014 and a World's Most Influential Scientific Mind 2014 by Thomson Reuters.

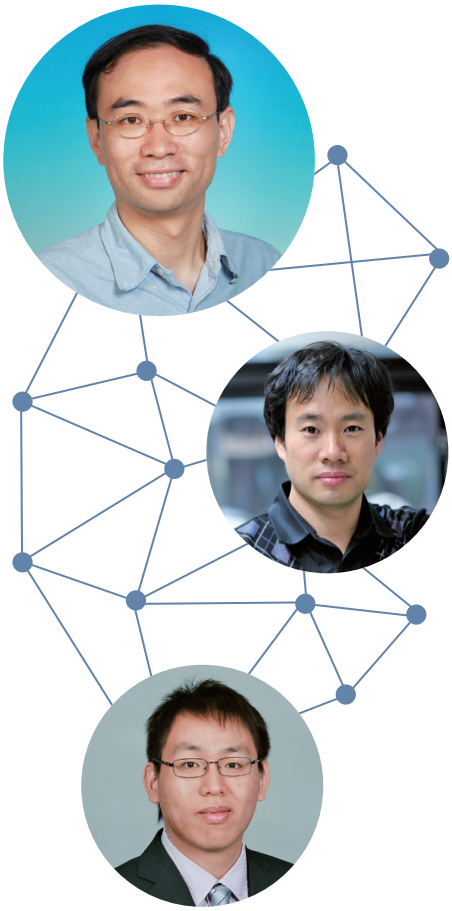
His work has been recognized at the highest levels, leading to two State Natural Science Awards, ASME Fellowship, and a Croucher Senior Research Fellowship, among others. He also plays a significant role in international journals, currently serving as editor-in-chief of *Advances in Fuel Cells*, regional editor for *Applied Thermal Engineering* and editor for the *Royal Society of Chemistry (RSC) Energy and Environment Series*.

The Research Excellence Award was collected by Prof Hong K Lo, Associate Dean of Engineering (Undergraduate Studies) and Chair Professor of Civil and Environmental Engineering. The honor recognizes the efforts of a leading faculty member with a proven record of research excellence. He has focused his research efforts on studies related to transportation, including dynamic traffic assignment, dynamic traffic control, and reliability, achieving world renown for his work.

Prof Lo's research standing is illustrated by his selection in the preliminary list of Thomson Reuters Highly Cited Researchers in Engineering in 2013.

He has published 10 book chapters and 146 journal papers, and in terms of papers published from 2003-2013 in the top three transportation journals (*Transportation Research Part B*, *Transportation Research Part A*, and *Transportation Science*), his productivity is ranked seventh globally. Prof Lo has received prestigious research honors, including the triennial World Conference on Transport Research (WCTR) Award, serves as managing editor of the *Journal of Intelligent Transportation Systems* and editor-in-chief of *Transportmetrica B: Transport Dynamics*, and is a member of the Transport Advisory Committee, advising Hong Kong's Chief Executive in Council on city-wide transport policies.

Dean of Engineering Prof Khaled Ben Letaief said the School was proud of faculty members' research record. Criteria for the awards include originality of research output, impact on society and the field, research training provision for students, and leadership in national and international collaborative research partnerships.



Teaching Excellence
Brings Recognition

Three faculty members, namely Prof Shenghui Song, Prof Sunghun Kim and Prof Ho Yin Mak, have been honored in the School of Engineering Teaching Excellence Appreciation Award 2012-13, which recognizes continuous excellence in undergraduate teaching, as well as fostering students' interest in the relevant subjects and the promotion of students' learning.

Prof Song, Electronic and Computer Engineering, received the Distinguished Teaching Award. One particularly special achievement was his development of the new Signal Processing and Communications core course under the four-year curriculum, for which he re-developed all the teaching materials, receiving excellent feedback from students.

Prof Kim, Computer Science and Engineering, and Prof Mak, Industrial Engineering and Logistics Management, received Teaching Awards. Prof Kim is using Facebook and Twitter applications to motivate students on the Software Engineering course, as well as encouraging them to publish their projects in the Android Market. Prof Mak has devoted great effort towards providing a motivating and stimulating learning environment with critical thinking in class. He also spends a lot of time outside class communicating with his students.

This is not the first time that these three faculty members have been recognized for their teaching and motivation skills. They are all recipients of the student-run HKUST Best Ten Lecturers Awards: Prof Song in 2013, Prof Mak in 2012, and Prof Kim in 2010.

Trio of Top Performers Receive
SENG PhD Honors

The School of Engineering (SENG) PhD Research Excellence Awards 2013-14 have been awarded to recipients from three different departments in recognition of their influential contributions to their discipline during their PhD studies at the University.

Dr Adetoyese Olajire Oyedun, 2014 graduate of Chemical and Biomolecular Engineering with Energy Concentration and a 2010 Hong Kong PhD Fellowship awardee, received the honor for research that has enabled him to propose three different operating strategies to solve the problem of high-energy usage during pyrolysis of solid wastes, such as bamboo and plastics. He has presented his work at five international conferences and published 16 peer-reviewed papers (eight as first author).

2013 graduate Dr Denis Guangyin Chen, Electronic and Computer Engineering, sought to address the sensing needs of future mobile imaging, sensor networks, and biomedical instrumentation. His work on low-power micro-electronic sensors, compressive imaging, and laser Doppler imaging has produced seven peer-reviewed papers in top journals in his field (five as first author), a US patent, and has been presented at four international conferences.

Dr Biao Zhang, 2013 graduate of Mechanical and Aerospace Engineering, concentrated his research efforts on advanced materials for energy storage devices, including fabrication of metal oxide/nanocarbon composites and their electrochemical performance as electrodes in Li-ion batteries and supercapacitors. He has published 24 peer-reviewed papers, which have been cited around 400 times.

Dr Oyedun has become a postdoctoral fellow and Dr Zhang is currently a visiting scholar in their respective departments at HKUST. Dr Chen has been recruited to work as a sensing systems hardware engineer (optical) at Apple Inc's Cupertino headquarters in California.

Strategic Partnerships

Promote Global Vision

Academic institutions cannot exist in isolation: it is essential that educators and researchers from around the world share their insights and research, because this in turn inspires further exploration and discoveries.

HKUST is very aware of the trend towards increasing collaboration within academia, hence the establishment of the Sponsorship Scheme for Targeted Strategic Partnerships (SSTSP). This university-level scheme cultivates strategic partnerships with like-minded institutions from around the world, often with funding from both sides facilitating research collaborations, faculty and student visits, workshops and conferences.

The University currently has a handful of strategic partners, among them two from the US and one from Switzerland are involved with the School of Engineering, namely California Institute of Technology (Caltech), University of Southern California (USC) and École Polytechnique Fédérale de Lausanne (EPFL), covering collaborative projects encompassing various research areas which reflect HKUST's expertise and strategic focus.

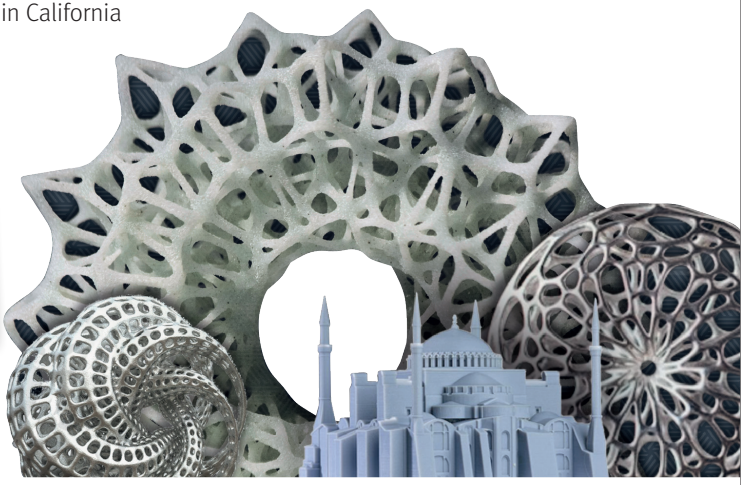
Under SSTSP, faculty proposals are welcome. Collaborations are encouraged through seed funding from the President's Targets of Opportunity Fund, often with funding from partner universities. The aim is that the collaborations will become full-scale, self-sustaining undertakings in the future.

Caltech and HKUST's Department of Electronic and Computer Engineering are working together on a project entitled Towards a Theory of Secure Cyber-Physical System. Other Caltech projects involve one with the Department of Computer Science and Engineering, and two with the Department of Mechanical and Aerospace Engineering related to the reliability of bio-MEMS technology and the development of novel fuel cell electrodes respectively.

USC's collaboration with the Department of Chemical and Biomolecular Engineering has already resulted in a workshop entitled Frontiers of Chemical Engineering, held at HKUST. The Department of Industrial Engineering and Logistics Management is working with USC on collaboration related to next-generation manufacturing, particularly nano-manufacturing and additive manufacturing, and has jointly held workshops on 3D printing at both HKUST and USC. The Department of Electronic and Computer Engineering is working with the university partner in California on novel integrated solutions to green computing problems, with a seminar in Hong Kong on Designing Energy-Efficient Information Processing Systems already staged. The Department of Computer Science and Engineering has held a joint workshop on Big Data, as part of the theme of mobile crowdsourcing.

EPFL is working with the Department of Civil and Environmental Engineering on two projects, namely research on technological hazards related to security of critical infrastructure under explosive/impact loading, and research on energy foundations and geo-environmental engineering, involving faculty and PhD student visits as well as workshops. A new joint project with the Department of Computer Science and Engineering on big data research is being developed, with workshops in both Hong Kong and Switzerland.

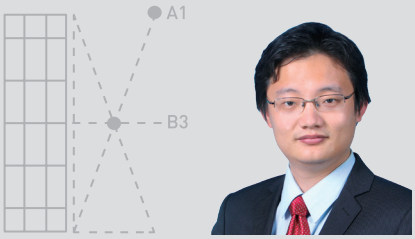
Through these strategic partners, the School of Engineering is developing and nurturing close-knit and fruitful relationships that will bring enormous benefits to undergraduate and postgraduate students and faculty.



Faculty Honors, Awards & Achievements

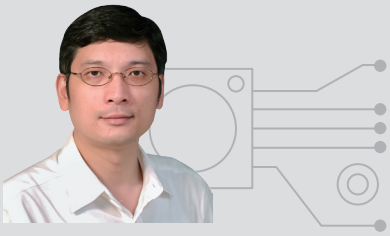
Dean of Engineering and Chair Professor of Electronic and Computer Engineering **Prof Khaled Ben Letaief** has been elected Vice-President for Technical Activities of the IEEE Communications Society, through a worldwide vote by members. IEEE is the world's largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity. IEEE and its members inspire a global community through its highly cited publications, conferences, technology standards, and professional and educational activities.

Prof Matthew McKay, Electronic and Computer Engineering, has won the 8th Asia-Pacific Young Researcher Award from the IEEE Communications Society (ComSoc). The award honors researchers who have been very active in ComSoc publications and conference activities over the last three years.

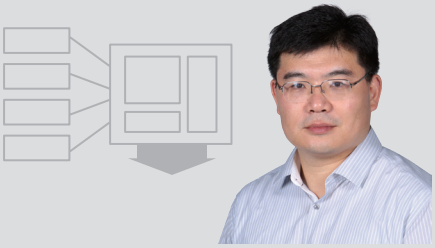


The paper by **Prof Ming Liu**, Electronic and Computer Engineering, won the RoboCup Best Paper Award at the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2013, held in November in Tokyo. According to the Google ranking of publications in robotics, IROS is ranked fourth over all media, including top journals and conferences. The paper, entitled "3D Path Planning and Execution for Search and Rescue Ground Robots", was co-authored by collaborators from the Autonomous Systems Lab of ETH Zürich.

Chair Professor of Civil and Environmental Engineering **Prof Charles W W Ng** and his former PhD student Dr S Y Peng, together with collaborators from Tianjin University, were named the 2013 recipients of the Prix R M Quigley Award by the National Research Council Canada (NRC). Their paper, entitled "Excavation Effects on Pile Behavior and Capacity", was ranked No. 1 out of 102 papers published in *Canadian Geotechnical Journal* (CGJ) in 2012 – and represents a first for a research team from Hong Kong and the Mainland since the establishment of the journal 50 years ago. CGJ is one of the most reputable mainstream journals in geotechnical engineering worldwide.



The novel 2D barcode app PiCode developed by the HKUST Barcode Group led by **Prof Wai Ho Mow**, Computer Engineering Program, won the Best Mobile App Award at ACM MobiCom 2013, the flagship ACM conference focusing on the theory, system, practice and challenge of providing users with a successful mobile or wireless experience. Working with Prof Mow on the app were MPhil students Wenjian Huang and Chenchen Liu, and PhD student Baojian Zhou. In addition, the paper entitled "Bounds on the Expected Rank of Sparse Linear Operator Channel Matrices", by Prof Mow and Chenchen, was selected as one of the three best papers at the 2013 Asia-Pacific Conference on Communications (APCC'13), a major regional event.



A paper presented by a team led by **Prof Kevin Chen**, Electronic and Computer Engineering, won the Outstanding Poster Award at the 10th International Conference on Nitride Semiconductors (ICNS-10), held in August 2013 in Washington, DC. Entitled "Degradation of OFF-State Leakage Current in AlGaN/GaN HEMTs Induced by an ON-State Gate Overdrive", the paper was co-authored by research associate Dr Baikui Li, PhD students Qimeng Jiang, Cheng Liu and Shenghou Liu, and Prof Chen. ICNS is the premier forum for reporting research in group III-nitride semiconductors.

Prof Mohamed S Ghidaoui, Chair Professor of Civil and Environmental Engineering, has been elected Chair of Fluid Mechanics Committee for the International Association for Hydro-Environment Engineering and Research (IAHR). This committee focuses on fundamental and applied environmental fluid mechanics in support of hydraulic research (http://www.iahr.org/site/cms/contentviewarticle.asp?article=646). Founded in 1935, IAHR is a worldwide independent organization of engineers and water specialists working in fields related to the hydro-environmental sciences and their practical application.

Best-Ever Performance at Challenge Cup

Teams from HKUST have come up trumps with "medal-winning" performances at the so-called Olympics of science and technology for Chinese college students, representing the University's best-ever result at the National University Students Technology Challenge Cup Competition.

Six teams, composed of students from the Schools of Engineering and Science, garnered one First Class Award, three Second Class Awards and two Third Class Awards at the 13th edition of the Cup, held at Soochow University in October 2013. All were supervised by Prof Tim Woo, Director of the Center for Global & Community Engagement and Associate Professor of Engineering Education.

The First Class Award was won by MPhil student Yun Kei Wong, Electronic and Computer Engineering (ECE), for a project involving a quad-copter controlled by swaying Android devices.

Mechanical and Aerospace Engineering (MAE)'s Siu Fai Mak and Hin Yan Tang and Computer Science and Engineering (CSE)'s Chung Kwan Tse, all undergraduates, received a Second Class Award for their reconfigurable omni wheel system that provides an alternative for robots to get over obstacles autonomously.

Also winning Second Class Awards were undergraduates Wing Hong Chan, ECE, and Linguang Zhang, Computer Engineering Program (CPEG), for Ballbot – a robot that is able to self-balance on a spherical object; as did fellow undergraduates Ho Kai Cheung, ECE, and Ching Chun Chung, MAE, and a teammate from the Department of Physics for their pneumatic control system for an underwater robot.

CPEG undergraduate Hao Fung Tsang received a Third Class Award for his robotics plotter arm that draws vector graphics. Undergraduates Chun Hung Ching, MAE, Ka Kui Mo, CPEG, and Tzi Yang Shao, ECE, also received a Third Class Award for their intelligent balanced car.

The Challenge Cup is a biennial event held by CYL Central Committee, China Association for Science, Ministry of Education and the National Federation. This year's event attracted more than 1,000 entries from over 450 institutions from Mainland China, Hong Kong and Macau.

School Shines at Prestigious
GE Foundation TECH Award

Of the four First Place Awards, from more than 100 proposals, at the 2013 GE Foundation TECH Award, two were won by School of Engineering students – a tribute indeed to the excellence of the School. Following the final-round contest in Shanghai in December 2013, MPhil students Hoi Lam Chan and Hon Pan Lo, Electronic and Computer Engineering (ECE), received the award for their project "Remote Controlled Underwater Robot for Drainage Channels Maintenance", while PhD student Chubin Ou and MPhil student Jiaqi Wang, Mechanical and Aerospace Engineering, received theirs for the "Novel Patient-Tailored Vessel-Conformal Stent" project.

Hoi Lam's supervisors are Prof Tim Woo and Prof Wai Ho Mow, and Hon Pan's supervisor is Prof Bert Shi. Chubin and Jiaqi are supervised by Prof Matthew Yuen. In addition, ECE MPhil student Fengyu Che won a Third Place Award for his VLC project in the preliminary round contest.

The GE Foundation TECH Award was open for MPhil and PhD engineering students from top universities, and it was the first time that HKUST had been invited by the organizer.

Student Honors, Awards & Achievements

PhD students **Wei Bi** and **Yanjiao Chen**, Computer Science and Engineering, were awarded the prestigious Google Fellowship in Machine Learning and Google Fellowship in Mobile Computing respectively. Only four out of an extremely competitive pool of applicants were awarded the fellowships in China in 2013. The program recognizes and supports outstanding graduate students pursuing work in computer science and related disciplines.

Computer Science and Engineering PhD student **Jeff Huang** received the prestigious 2013 SIGSOFT Outstanding Doctoral Dissertation Award for his PhD thesis "Effective Methods for Debugging Concurrent Software". This award is given annually to only one author of an outstanding doctoral dissertation in the area of software engineering from all over the world. In addition, his paper "CLAP: Recording Local Executions to Reproduce Concurrency Failures", collaborated with IBM Research, received the SIGPLAN PLDI Distinguished Paper Award at the 34th annual ACM SIGPLAN conference on Programming Language Design and Implementation (PLDI 2013) in Seattle. PLDI is a significant event for publishing research results in the area of programming languages and software analysis. This was the first SIGPLAN PLDI paper award in Asia. Jeff is currently a postdoctoral researcher at the University of Illinois at Urbana-Champaign.

Three Mechanical and Aerospace Engineering PhD students won Third Prize at the International Contest of Applications in Nano-Micro Technologies (iCAN 2013). **Yuanwu Chen**, **Weiqiang Li** and **Yejun Zhu** developed a project entitled "Intelligent Happiness Detector". This is an integrated microsystem consisting of a wireless brainwave sensor, body-temperature sensor, heart-rate sensor, LED indictors for happiness level, micro controller unit and built-in computer program for calibration and analysis of sensor output. They were one of 18 teams from nine countries and regions selected for the final contest in Barcelona. The judging panel comprised more than 40 entrepreneurs and investors from all over the world.

Computer Science and Engineering undergraduates **Junhong Cao**, **Lingou Deng** and **Xiongqi Zhang**, all coached by Prof Ke Yi, won the Championship at the annual ACM-HK Programming Contest 2013. The event involved eight Hong Kong universities as well as two from Macau.

PhD student **Wei Dai**, Electronic and Computer Engineering, won the Best Student Paper Award at the IEEE International Conference on Image Processing (ICIP) held in September 2013 in Melbourne. The paper was entitled "Rate-Distortion Optimized Merge Frame Using Piecewise Constant Functions", and co-authored by Prof Oscar Au and collaborators from Japan's National Institute of Informatics, Singapore University of Technology and Design and University of Southern California. ICIP is one of two flagship conferences of the IEEE Signal Processing Society. It is known as the best conference for image processing with about 1,000 papers.

Electronic and Computer Engineering PhD student **Shuming Chen** received the Runner-up Prize in the Hong Kong Institution of Science 2013 Young Scientist Awards (Engineering Science Category) with his project on white organic light-emitting diodes (WOLEDs). He was able to achieve a WOLED with high efficiency of 66 lm/W and a high CRI of 92. The technology is now being applied to four-inch displays/lighting panels in a pilot project produced by a start-up company.

Student Honors, Awards & Achievements

An undergraduate Industrial Engineering and Logistics Management student team won the Champion Award at the HKIE-MI Student Project Competition 2012/13. **Siheng Ji**, **Yik Hang Pang** and **Yi Zhang**'s project was entitled "A Toys"R"Us Project to Design the Next Generation Toys". Their final design of the toy "Uncatchable Ball" was considered innovative and viable by the judging panel, which comprised six senior members of the Manufacturing and Industrial Division of the Hong Kong Institution of Engineers (HKIE-MI). The panel also highly commended the clarity and fluency of the students' presentations and their hard work.

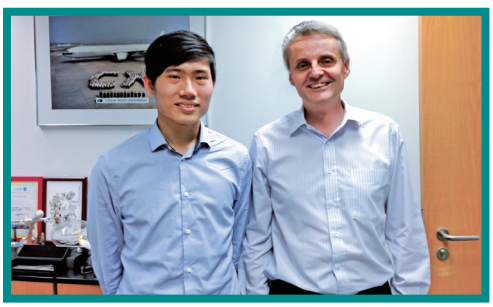
A Civil and Environmental Engineering postgraduate team, comprising MPhil students **Chun Hang Leung** (team leader) and **Chaoyi Wang** and PhD students **Cong Lu** and **Pengfei Wang**, won First Prize in the Introducing and Demonstrating Earthquake Engineering Research in Schools (IDEERS) competition, held at the National Center for Research on Earthquake Engineering, Taipei, in September 2013. The team was triumphant in the Postgraduate Division and also won the Best Presentation Award Third Prize. A total of 17 postgraduate and more than 40 undergraduate student teams from all around the world took part in the competition.

PhD student **Tsz Nok Ng**, Chemical and Biomolecular Engineering, won the Best Poster Award at the 3rd Asia-Pacific Chemical and Biological Microfluidics Conferences (APCBM), held in Korea in August 2013.

Electronic and Computer Engineering (ECE) PhD student **Zhikai Tang** received the Best Student Paper Award at the 2013 CS ManTech (Compound Semiconductor Manufacturing Technology) Conference in New Orleans, US. His paper was entitled "600 V High-Performance AlGaN/GaN HEMTs with AlN/SiNx Passivation" and was co-authored by ECE PhD students Qimeng Jiang, Cheng Liu and Shenghou Liu, Prof Kevin Chen, and former postdoctoral fellow Dr Sen Huang.

PhD student **Tao Lu**, Industrial Engineering and Logistics Management, won the Student Paper Award at the 2013 International Conference on Logistics and Maritime Systems (LOGMS) in Singapore. His paper, "Putting All Shipments in One Vessel? Carrier Portfolio Management in Liner Shipping", was the only one selected for the award. Tao's analysis revealed the two-sided benefits of using multiple carriers and suggested that in practice it is good enough for the shipper to select two particular carriers according to simple criteria.

Undergraduate **Henry Man Hang Wong**, Mechanical and Aerospace Engineering, received "The Engineering Staff Award – Innovation Award" from Cathay Pacific Airways while working as an engineering intern at the airline's Technical Service Engineering Department. The award honors staff who have implemented an innovative new idea that makes a difference to what they or others do at the company. Henry developed a quick reference program for fuel measurement, which substantially shortens the fuel measurement time.



Technology Meets Art at Design Thinking Course

In summer 2013, the Department of Industrial Engineering and Logistics Management (IELM) collaborated with the prestigious Hangzhou-based China Academy of Art (CAA) to host a new course entitled Design Thinking, with the theme of "Technology Meets Art". The aim of the three-credit, one-month summer course was to offer a platform for students to learn through practical experience of how to think like a designer, train up their "Design Thinking" mindset and resolve constraints arising from technical, aesthetic and human factors, as well as business concerns.

The course was jointly taught by faculty from both institutions, namely HKUST's Prof Ravindra Goonetilleke and Prof Emily Au of IELM, and Prof Huamin Qu and Prof Pedro Sander of the Department of Computer Science and Engineering (CSE), along with Prof Yuan Chen, Prof Zheng Liu, Prof Wangni Xu and Prof Junjie Zhang of the School of Design at CAA, and Prof Li Fan, Prof Jin Tian and Prof Bo Zheng of CAA's School of Intermedia Art. The teaching assistants were Mr Thilina Weerasinghe (IELM), Mr Conglei Shi (CSE), Ms Huiyi Cai (School of Design, CAA) and Ms Chuan Ma (School of Intermedia Art, CAA). A total of 20 HKUST students, along with Mainland counterparts, took part, splitting their time equally between the two centers. The students benefited from the multi-disciplinary academic exchange and received instruction in the knowledge of design, with a focus on physical product design and media design.

As well as lectures and visits to a company and a factory, they were able to upgrade their design knowledge to an advanced level through a group project. Working in multi-disciplinary groups of two to four people, they generated and tested project ideas in Hangzhou, and developed the final prototypes at HKUST. Through this activity, they were able to gain hands-on experience by broadening ideas and integrating technology and art elements through the design process. The prototypes were exhibited in the HKUST Engineering Commons.

IELM 4320 Design Thinking is also being run in summer 2014.

Tri-Modal Education Flies High with Airship Design Course

A pioneering engineering course focused on hands-on design got off to a flying start earlier this year. The three-credit Engineering Team Airship Design course gives students an experiential learning opportunity to gain practical knowledge of different elements of life as an engineer under the supervision of faculty, from innovation and solution-building to working in teams.

The course, which allows students to "feel" like an engineer, is a significant example of the tri-modal education approach that is now one of the School's main focuses. Tri-modal education seeks to enable students to explore and focus on their key career objective, be it research, becoming an engineering professional, or entrepreneurship, with the School offering appropriate tools to achieve their goal.

The culmination of the course was an airship competition held in April. Ten student teams were tasked with building a model airship to carry out a mock fire-fighting drill, with Team 7 the eventual winner. Faculty supervisors, teaching assistants, and student technical advisors were drawn from the disciplines of civil engineering, computer science and electronic engineering.

Elsevier's Executive Publisher Advises on
Getting Published in Scientific Journals

The globalization of science has dramatically changed the academic publishing industry over the past 20 years. "Science used to be US and Western Europe dominated," says Mr Chris Pringle, Elsevier's Executive Publisher – Geography and Transport, in an interview with the School's Center for Engineering Education Innovation (E^2I). "That's changed most dramatically with the emergence of Chinese research, which in the next year or two is expected to overtake the US in the quantity of published papers."

Mr Pringle cites technological changes such as computing and the Internet as enabling new research possibilities and people to be more productive. "The communication among researchers and between researchers and publishers has become so much quicker and easier," he says. "It's noticeable how many more papers these days are internationally authored."

Junior researchers looking to develop effective research communication skills can now enroll in a new research postgraduate course entitled "Professional Development in Engineering". The School of Engineering launched this course in the 2013-14 Fall Semester. A key focus area is to help students learn to expertly communicate their research to both specialists and non-specialists. The course also helps students with their entrepreneurial skills and research ethical awareness. E^2I facilitates the course through different training opportunities such as discussion forums, interactive workshops, competitions and seminars, and also assesses student learning outcomes.

At the end of the Fall Semester, students had an opportunity to hear an insider's perspective on navigating through academic publishing in an invited talk entitled "How to get published in scientific journals", given by Mr Pringle.

He emphasized that a strong manuscript is precise and presented in a logical sequence, so readers can understand the useful message being conveyed. "The transition from print to electronic journals has increased the readership from hundreds in the past to millions now," noted Mr Pringle. The increase in the number and range of readers means that well communicated research can make significant contributions to the field.

Mr Pringle advised junior researchers that choosing a journal in which to publish involves a multi-criteria decision: "You need to understand the criteria that the people you are trying to impress are going to use to judge you, how you want to impress future employers — in journals with higher impact factors, readership, or reaches a particular audience? Also you may want to show you can publish in a range of journals."

Research was traditionally published in subscription-based journals, but now there is more research available in the open-access format. "There's no doubt it [open access] is becoming a significant proportion of published research, and it may become a majority in not too many years," commented Mr Pringle. "That's a huge change that is happening now and will develop over the next few years." But a major challenge with open access is the issue of long-term sustainability. "Anyone can publish a journal in their free time so long as their enthusiasm lasts. But someone who has done it for five years may move on. Then what happens to the work that the authors put in? What about archiving issues?" Mr Pringle asked.

Common concerns expressed by students about the publishing process included determining an appropriate response to reviewers' comments. Mr Pringle pointed out that in any disagreements with reviewers one should remember that this is a scientific discussion — be objective and factual, not emotional. "You should not take criticism personally but learn from it," he said. "Correct the mistake this time and don't make it again."

And that's practical advice — both in research and in life.

HKUST Student Team Joins
Aircraft Design Competition in US

The HKUST Aeronautics Interest Group Model Team gained valuable experience at the American Institute of Aeronautics and Astronautics Student Design/Build/Fly Competition 2013/14, held in Kansas, US, in mid-April.

The 14-member team was among 80 teams from around the world to participate in the contest, which provided a real-world aircraft design experience for engineering students, enabling them to test out their analytical, organizational, and problem-solving skills.

Thanks go to DHL Express for providing logistics consultation and sponsoring the air express transportation of HKUST's aircraft. DHL Express has been the logistics partner for the School of Engineering for four years, offering shipment sponsorship to enable student-built machines to reach competition destinations.

Winners of Ford Conservation Grants Program Honored

The first recipients of the grants initiative involving Ford Motor Company were announced last Fall. A total of 23 Master of Science engineering students have benefited from the Ford-HKUST Conservation and Environmental Research Grants program, with research funding totaling HK$1 million.

The students were honored at a ceremony held in October, with Mr Alan Mulally, President and CEO of Ford Motor Company, on hand to congratulate the students on their winning proposals, along with Prof Wei Shyy, Executive Vice-President and Provost, HKUST.

The initial funding comprises equal donations from both Ford and the University. The grants support recipients' expenditure, including research, field study and laboratory needs. The research is based around environmental sustainability and conservation engineering, with a focus on green motoring and transport. Among the areas covered by the proposals are the optimization of heat management in hybrid-electric vehicles, powering vehicle A/C systems through recycled exhaust heat, and cooling automotive inverters by maximizing lithium-ion batteries and super-capacitor performance with nano-materials. The research was carried out through to May 2014.

"It is truly inspiring to meet these passionate, really smart students and discuss their innovative ideas," said Mr Mulally. "These kinds of conservation solutions are so important to the future sustainability of the environment."

Prof Christopher Chao, Associate Dean of Engineering (Research & Graduate Studies) noted that he was confident that the students will make good use of the grants to advance technology that improves people's lives: "The partnership will help support the development of engineering solutions to promote environmental sustainability."

Infiniti Offers Engineering Talents
Chance with Top F1 Team

Infiniti Red Bull Racing is currently Formula One's most successful team, having won both the Drivers' Championship and the Constructors' Championship for the last four years. HKUST is therefore immensely pleased to have entered into a cooperation agreement with Infiniti Motor Company Limited that will offer top engineering students the opportunity to gain experience with Infiniti Red Bull Racing through the new Infiniti Performance Engineering Academy.

On hand at the signing ceremony in October 2013 were Infiniti Red Bull Racing Formula One team ambassador Mr David Coulthard, Infiniti Formula One Global Director Mr Andreas Sigl, HKUST Vice-President for Institutional Advancement Dr Eden Y Woon and Dean of Engineering Prof Khaled Ben Letaief. Engineering students also engaged in discussions with the Formula One team at the event.

HKUST is the only university in Hong Kong to be a part of this global talent search, and one of a handful in Asia. Students will be able to participate in the global selection process for the Academy. Two winners chosen from the shortlisted candidates from around the world will enjoy a year-long internship, split between Infiniti Red Bull Racing and Infiniti's European Technical Center in the UK.

Speaking at the ceremony, Dr Woon commented: "This is a great acknowledgement of the University's world-class education and research, and high-flying engineering students. We hope to work closely with Infiniti on research and applications related to racing and road car technologies, and develop other programs to advance our students' professional knowledge and skills." It is envisioned that there will be opportunities to develop further cooperation.

Engineering Weeks

Encourage Reaching Out to Community

"Reaching Out to Community" was the theme of Engineering Weeks 2013, which took place from October 21 to November 4, 2013 under the aegis of the School's Center for Global & Community Engagement (GCE). The focus was on encouraging engineering students to step out of the classroom and utilize their engineering knowledge in the community. An exhibition and a variety of seminars were held on campus during the period.

Proceedings kicked off with an Engineering Education Forum cum Opening Ceremony on October 21. The title of the forum was "Empowering Engineering Students to Serve and Learn Today for a Better Tomorrow", and featured four guest speakers, namely Mr Erwin Huang, CEO of WebOrganic, Dr Stephen C F Chan, Head of Office of Service Learning, The Hong Kong Polytechnic University, Samantha Wing Man Kong, Founder of Eldpathy Co Limited, former head student ambassador for the University and undergraduate student of Chemical and Biomolecular Engineering, and Yoga Y Nadaraajan, undergraduate student of Electronic and Computer Engineering, who shared their experiences and thoughts on service-learning projects and their challenges.

Student chapters took the opportunity to introduce the work of their professional organizations and promote their student activities with booths set up at the Engineering & Community exhibition. This provided an excellent platform for the organizations to reach out to students and help the latter understand the many and varied ways in which engineering can help in the community.

The following two weeks were packed with seminars and sharing sessions, with a variety of guest speakers from professional organizations and NGOs, as well as HKUST alumni, invited to introduce the missions and projects of their organizations, and get over the message that engineering knowledge can be applied to different communities worldwide.

GCE is a cooperative platform for university students, community organizations and corporate partners to exchange ideas and share experience on how engineering can help in society.

Speech-Recognition Training Kit App

Aids Hearing-Impaired Kids

Hearing-impaired children are now benefiting from a speech-recognition training kit app, developed by Prof Albert Wong, Prof Tim Woo and research assistant Kobe Lam, Electronic and Computer Engineering. Their "Auditory and Speech Training App" revolutionizes existing paper-based auditory training tools, thanks to Android-based mobile technologies. The app recently received a Gold Award from the Web Accessibility Recognition Scheme 2014, co-organized by the Office of the Government Chief Information Officer (OGCIO) and the Equal Opportunities Commission.

The app facilitates convenient home training and provides better support to parents and teachers. A child's performance can be sent to therapists to evaluate the learning process, and the parents and children can also share their improvement through social media networks.

This project was sponsored by OGCIO through a one-off scheme on digital inclusion mobile applications, and developed in collaboration with the Hong Kong Society for the Deaf. The app is free for download in Google Play (keyword: 精靈小耳朵).

Celebrating Excellence of Dean of Engineering Scholarship Recipients

The success of engineering students with excellent results was celebrated at the Dean of Engineering Scholarship Presentation Ceremony, staged across two evenings on November 27 and 28, 2013.

The ceremony was first staged in 2012, with the 2013 edition expanding its scope to embrace not only students with at least one 5** subject, but also those with at least two 5* subjects at the Hong Kong Diploma of Secondary Education (HKDSE) Examination. A total of 158 students were presented with scholarships – more than double the figure of 2012.

Dean of Engineering Prof Khaled Ben Letaief was joined by Associate Deans Prof Roger Cheng, Prof Hong K Lo, Prof Christopher Chao, department heads and faculty members for the two ceremonies. It was pleasing to see in the audience around 90 principals and teachers from the students' secondary schools, who looked on proudly as their former pupils had their achievements recognized. In total, around 300 people attended the two gatherings.

Prof Ben Letaief highlighted the expanded scope of the scholarship scheme in his speech. "This does not only enable more top students to benefit from our first-rate education, but also further consolidate the human capital of the School, which is critical to our continued success," he said. He also extended his congratulations to the principals and teachers.

The evening continued with a presentation on the pioneering tri-modal education, newly developed for four-year students, by Prof Roger Cheng. There followed an enchanting musical performance by scholarship recipients: Mary Wong played violin and James Cheung played the electronic piano. Particularly valuable for the scholarship students was the sharing session with awardees Mary Wong, Johann Chung, Ben Lee and alumnus Jeff Li, who all spoke movingly about life at the University and in particular their experiences at the School.

Recipients will enjoy a range of privileges, such as bonus points in internship and exchange programs, empowering them to make the best of the wonderful opportunities presented by the University.

Engineering Leadership

Professional Program Successfully Completed

Tomorrow's industry leaders benefited from the expertise of the School of Engineering as they took part in the second Engineering Leadership Professional Program, which took place during the Fall Semester 2013. The program, which has a strong Hong Kong focus, aims at enhancing the capabilities of mid-level technical managers by developing their leadership skills and deepening their understanding of diverse business matters.

During the course, participants were exposed to a range of business and leadership challenges, especially applications that require an entrepreneurial mindset. The program follows a highly interactive, case-study approach using real-life, local cases. Representatives from major local corporations participated in each session, including MTR Corporation, Hongkong Electric, Gammon Construction, CLP Group, Chevalier Group, Shui On Group, PCCW, and Hong Kong Science and Technology Parks Corporation.

The program was initiated by Prof Po Chi Wu, and administered through the Professional Program & External Development Office. This was the second time it had been offered, and a third program will be organized in Fall 2014.

Pioneering Workshop Promotes Collaboration

The 1st EPFL-HKUST Workshop on Computer and Communication Sciences, involving faculty from the Department of Computer Science and Engineering and strategic partner École Polytechnique Fédérale de Lausanne (EPFL) of Switzerland, was held at HKUST in October 2013. It focused on a range of topics including artificial intelligence, cloud computing, database, and crowdsourcing and big data, with the aim of promoting research collaboration and exchange between the computer science faculty and postgraduate students at EPFL and HKUST. The workshop featured talks by eight HKUST professors, namely Profs Gary Chan, Lei Chen, Lin Gu, Pan Hui, James Kwok, Qiong Luo, Dimitris Papadias and D Y Yeung, and four EPFL professors – Profs Babak Falsafi, Boi Faltings, Matthias Grossglauser and Pearl Pu.

Students Gain Exposure at Anniversary Event

To celebrate the setting up of Microsoft Research Asia (MSRA) Lab 15 years ago and the Ministry of Education HKUST-MSRA Key Lab 10 years ago, the Department of Computer Science and Engineering organized the MSRA Hong Kong Day at HKUST on November 19, 2013. The event featured an HKUST Jockey Club Institute for Advanced Study Lecture "Transforming the Impossible to the Natural" by Prof Hsiao-Wuen Hon from MSRA, poster and demo session, and the 10th ACM-HK Student Research and Career Day. The latter event was co-organized by the Association for Computing Machinery in Hong Kong and MSRA with a view to enabling computer science and engineering students from universities across Hong Kong and Macau to gain exposure in a conference, present their innovative research work and share research ideas and experiences.

Prof Wilson Tang Memorial Fund Awards Launched

In memory of the late Prof Wilson Tang, Head of the Department of Civil and Environmental Engineering from 1996-2002, the Prof Wilson Tang Memorial Fund was set up in 2012. Using the investment return from the memorial fund and matching support from the University, School of Engineering and the Department, the scholarships, prizes and bursaries were launched in the 2013-14 academic year. In honor of Prof Tang's devotion to educating the youth, nurturing talents and promoting intellectual excellence, four different awards are provided, namely The Professor Wilson Tang Engineering Scholarship, The Professor Wilson Tang Scholarship, The Professor Wilson Tang Prize and The Professor Wilson Tang Bursary.

Condolence

We are deeply saddened to report that Prof Moe M S Cheung, former Head of the Department of Civil and Environmental Engineering (2003-2009), passed away peacefully in Hong Kong on March 2, 2014, aged 69, with his wife at his side. He joined HKUST in 2003, and under his leadership the department thrived. He enjoyed a distinguished academic career in which he made significant contributions in the areas of finite element and finite strip analysis in civil engineering, particularly in structural and bridge engineering. His outstanding achievements were internationally recognized by numerous awards and honors. He retired in 2011, but remained active in research, teaching and public service. He loved his students and mentored numerous graduate students and younger colleagues. Even after retirement, while in Hong Kong he would come to HKUST almost daily to undertake his research. His wisdom, kindness, and gentle and embracing nature will be sorely missed.

New Appointments

Concurrent

Prof Roger Cheng
Appointed Associate Provost (Teaching & Learning)
Professor, Electronic and Computer Engineering

Prof Patrick Yue
Appointed Associate Provost for Knowledge Transfer
Professor, Electronic and Computer Engineering

Prof Chih-Chen Chang
Appointed Academic Director (Undergraduate Core Education)
Professor, Civil and Environmental Engineering

Prof Jingshen Wu
Appointed Dean of Xi'an Jiaotong University-HKUST Joint School of Sustainable Development
Professor, Mechanical and Aerospace Engineering

Administrative

Prof Chi Ying Tsui
Appointed Associate Dean of Engineering (Undergraduate Studies)
Professor, Electronic and Computer Engineering

Prof King Lun Yeung
Appointed Associate Dean of Engineering (Research & Graduate Studies)
Professor, Chemical and Biomolecular Engineering

Prof Christopher Chao
Appointed Head of Department of Mechanical and Aerospace Engineering
Professor, Mechanical and Aerospace Engineering

Faculty Members

Prof Minhua Shao
Associate Professor, Chemical and Biomolecular Engineering
PhD – State University of New York at Stony Brook

Prof Wei Zhang
Assistant Professor, Electronic and Computer Engineering
PhD – Princeton University

Research Faculty

Prof Wei Han
Research Assistant Professor, Chemical and Biomolecular Engineering
PhD – Chinese Academy of Sciences

Adjunct Faculty

Prof Tat Choi Pang
Professor, Civil and Environmental Engineering

Visiting Faculty

Prof Jamal Deen
Professor, Electronic and Computer Engineering
PhD – Case Western Reserve University

Prof An Liu
Assistant Professor, Electronic and Computer Engineering
PhD – Peking University

Prof Lok Wang Ma
Assistant Professor, Mechanical and Aerospace Engineering
PhD – The University of New South Wales

Aerospace Engineering Flying High

Effective from September 1, 2013, the name of the Department of Mechanical Engineering (機械工程學系) has been officially changed to the Department of Mechanical and Aerospace Engineering (機械及航空航天工程學系), with the abbreviation of "MAE".

Echoing HKUST's mission to promote the advancement of society by producing global leaders, innovators and new knowledge, the School of Engineering envisions a strong demand for Aerospace Engineering education and expanding opportunities for HKUST graduates. Building on its existing strong faculty team in the School, "Aerospace Engineering" is identified as a new strategic area of education, research and knowledge transfer.

The MAE Department has already hired a number of faculty in this area in support of the development and looks forward to further enhancing its contribution to society with the full support of the School and the University. It will also continue to provide an inspiring and rigorous learning environment for students, staff, and faculty members with a common vision of building another world-class School of Engineering program at HKUST, with strong support from industry and the community.

CBME: Secrets of Success

The year 2013 marked the 20th anniversary of the Department of Chemical and Biomolecular Engineering (CBME). Celebrations took place over the whole year, kicking off with the staff New Year dinner, followed by the Joint Dean/Head of Department Symposium of Chinese Chemical Engineering Schools/ Departments, featuring guest lectures from prominent chemical engineers including Sir C K Chow, Chairman of Hong Kong Exchanges and Clearing, and Prof Phillip R Westmoreland, President of American Institute of Chemical Engineers. A grand celebration party was held on October 5, attended by around 200 students, staff, alumni and guests from other units of HKUST, industry and academia.

A congratulatory message from President Prof Tony F Chan was read at the party by Acting Dean of Engineering Prof Roger Cheng, while Vice-President for Institutional Advancement Dr Eden Y Woon delivered a speech of felicitations. During the banquet, Head of Department Prof Guohua Chen revealed the secrets behind its success over the past 20 years: strong networks, leadership from the University and support from other units, commitment from faculty and staff, continuous grants from government and industry, excellent teaching, research and development output, outstanding performances of students and alumni, skillful facilitation and dedicated service from all former Heads of Department.

Faculty and staff serving the Department for more than 20 years were honored with long service awards, and three retired faculty members received excellent contribution awards. Presentations of appreciation for industrial support were made to Chiaphua Industries, Lee Hysan Foundation and Air Products (HK) for their generous donations and creating opportunities for student internships and research collaborations.

IELM: Focus on the Future

The Department of Industrial Engineering and Logistics Management (IELM) has turned 20! In celebration of its success over the past two decades, an anniversary forum and commemorative dinner were held on September 28, 2013. More than 200 faculty members, staff, alumni and current students congregated for the dinner. In his remarks, Department Head Prof Fugee Tsung focused on the future, noting that he truly believed that education should adopt a holistic approach to build on existing departmental strengths while also using innovative and interdisciplinary approaches.

Clifford Ng, one of the original Industrial Engineering Department students in 1993 and currently an IELM Faculty Industry Advisor and Asia Director of Quality at Microsoft Corporation, shared his experiences of the early days at HKUST and how these influenced his career path. Prof Guohua Chen, Department Head of Chemical and Biomolecular Engineering, and Prof Christopher Leung, Department Head of Civil and Environmental Engineering, joined the celebration as guests of honor. HKUST President Prof Tony F Chan and founding Head of Department Prof Mitchell Tseng delivered messages via video.

Talented alumni and students entertained guests: dual degree student Kenny Lam (see also P7-8) played the treble recorder, while IELM alumna Vanessa Wong and HKUST alumna Dominica Tse gave a beautiful dance performance. The lucky draw proved very popular, with prizes sponsored by GP Electronics (HK) Limited and the Esquel Group.

A 20th anniversary publication and video that review the milestones and reflect upon the continuous innovations and latest developments of IELM are available. Check them out at http://20a.ielm.ust.hk/dinner.

Inaugural Alumni Event

Looks Back – and Forward

A reunion dinner for Computer Engineering Program (CPEG) alumni was held on November 18, 2013, hosted by founding Program Director Prof Kenneth C Smith and his wife Laura Fujino. This joyous occasion, which marked the first official alumni gathering, was attended by over 120 alumni and their families, as well as Electronic & Computer Engineering and Computer Science & Engineering faculty members.

CPEG Program Director Prof Wai Ho Mow and Associate Director Prof Raymond Wong kicked off the proceedings with welcoming remarks. Dean of Engineering Prof Khaled Ben Letaief and several ex-directors, including Prof Ross Murch, Prof Amine Bermak and Prof Albert Chung, shared their memories and the challenges they faced during their terms of office. Founding directors Prof Philip Chan and Prof Smith related stories about the program's early years.

The reunion dinner provided a wonderful opportunity for alumni to meet professors and fellow classmates, share their work experiences and offer feedback on CPEG's future development.

Sharing Experiences over Dinner

It was an evening to remember as 2013 BEng, MPhil and PhD graduates from the Department of Electronic and Computer Engineering (ECE) gathered together on November 2, 2013. Coming just a few days before the Congregation, the event provided a wonderful opportunity for the new graduates to be photographed alongside their friends and professors while wearing their graduation gowns. During dinner, there was much chat about work experiences, as well as discussion and feedback on ECE's future development.

Certificates were awarded to graduates who had shown significant academic improvements. In addition, BEng graduates Candy Kam and Leo Wu, and MPhil graduate Augustus Hu got up on stage to share their university experiences and career plans with the audience. Over 130 graduates, professors and family members attended the dinner.

Alumni can keep in touch with former classmates and faculty through the "EEALUMNI HKUST" Facebook page and by joining the "HKUST ELEC Alumni" group, for all the latest information on alumni activities.

Fun Activities Cement Friendships

On November 24, 2013, 150 Department of Mechanical and Aerospace Engineering (MAE) alumni, students, faculty members and families came together at the HKUST campus for the Annual Dinner 2013 and the fun Sports Day. Together, they celebrated the Department's 22nd anniversary and the launch of the undergraduate Minor Program in Aeronautical Engineering, which started in the Fall Semester of 2013.

The activities included soccer and basketball friendly matches, held in the afternoon, which allowed current students and alumni to catch up on the School's developments and recent industry news. During a delicious dinner, award presentations were made to two distinguished alumni, namely Ka Ming Tam, BEng (2003), MSc (2005), and Dr Shengming Liao, PhD (2002), in recognition of their outstanding service to the Department, as well as professional academic and industrial achievements.

SENG Award Winner Delivers Logistics Keynote

Prof Chung Yee Lee, recipient of the HKUST School of Engineering Distinguished Research Excellence Award 2013, delivered a fascinating keynote on December 5 to an enthusiastic audience, including HKUST Executive Vice-President and Provost Prof Wei Shyy, faculty members, students, industry representatives and members of the academic community.

The Distinguished Research Excellence Award is the highest level of recognition bestowed by the School. The keynote forms part of the award, and is an honor in itself. Prof Lee, Chair Professor of Industrial Engineering & Logistics Management and Cheong Ying Chan Professor of Engineering, shared his insights on "Ocean Container Transport Logistics: Challenges and Opportunities". Production scheduling and semiconductor manufacturing, business process management, and logistics management are Prof Lee's specialist research areas, in which he has made significant contributions.

In his talk, Prof Lee reviewed the current status and trends of ocean container transport. Logistics is a pillar industry in Hong Kong but is facing severe competition. He outlined that Hong Kong can reinforce its core competence and identify new directions by shifting its focus from physical flows more toward financial and information flows, yet still keep the logistics service as the foundation for other flows and services.

In his introduction, Prof Khaled Ben Letaief, Dean of the School of Engineering, extended his sincere congratulations to Prof Lee for his achievements throughout his career, and highlighted the fact that it is thanks to the distinction of the likes of Prof Lee that the University is consistently ranked among the top universities in the world in engineering. A reception was held at the Engineering Commons following the keynote.

Don't be the Missing Link...

Alumni relationships are invaluable assets to the School and alumni. To foster the growth of our alumni network, please keep us informed of your recent news and send us your updated contact information via email to seng@ust.hk.

Stay connected and keep in touch!

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