

# The Miracle Continues

School of Engineering Celebrates  
HKUST's 20<sup>th</sup> Anniversary



2011 marks another milestone in the history of HKUST as the University reaches its 20th year, and the School of Engineering (SENG) is fully playing its part in commemorating the occasion. In the different Anniversary activities the School is organizing throughout the year, we have set out to recognize and include all the different people who contribute to making SENG such a success.

Faculty members have helped us to become globally renowned through their outstanding research and innovations, and the honors and achievements they have received. They have also trained our students to become relevant, achieving, participating members of society. As a result, our students have gone out into society and shown how a HKUST education can provide the formative, all-round experience to generate innovative entrepreneurs and leaders in industry, business and government.

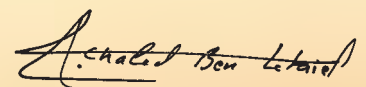
The Hong Kong community has provided the foundation for our student body and constantly supported us while we in turn have worked together with community members, from schools to industries, to let people know about the impact of engineering and how it can move Hong Kong forward. Our alumni have been our proud ambassadors out in the world, while on campus we have sought to generate opportunities to work together with fellow members of HKUST.

In SENG's 20th Anniversary celebrations, our activities therefore encompass all these groups. And as this issue of *In Focus* shows, the events – ranging from top international conferences on engineering education and the future of innovation to a fun day on campus for alumni and their families – provide powerful recognition of what we have accomplished to date. Global interaction at the highest levels, community engagement, SENG family spirit, and campus connectivity, all are part of SENG's sterling record of achievement.

Indeed, as the largest School at HKUST, with the highest number of undergraduates, graduates and faculty, and the most comprehensive within the engineering field in Hong Kong, SENG has a pivotal role to play in raising awareness about the essential role that engineers play in improving our lives. Our consistently high global rankings show that we are being successful in contributing to major achievements in the field. We also want to ensure people outside the engineering field recognize how central a role innovation and

technology play in making the world a better place, from improved healthcare to more efficient buildings and bridges to new consumer electronic breakthroughs.

As we look toward HKUST's next 20 years, SENG intends to continue to push forward in its research and education achievements. We are already drawing together faculty on interdisciplinary endeavors and theme-based research to tackle some of the world's biggest challenges, such as energy and the environment. We are rapidly moving forward with our education of 21st century engineers as we look forward to the four-year undergraduate degree system in Hong Kong in 2012 and the opportunities it will bring. A wider view will also be enhanced by our ongoing move toward diversity among our students, looking to draw the best talents from around the world to generate a global hub of ideas and links that will benefit all who study at SENG. These are our goals, and with the momentum of all the people who have contributed in the past and will do so in the future, they are ones I believe we will achieve.



**Prof Khaled Ben Letaief**  
Dean of Engineering





## Concurrent

## ■ Prof Mordecai Golin

Professor, Computer Science and Engineering

Appointed Associate Vice-President for Postgraduate Studies, HKUST



## ■ Prof Mitchell Tseng

Chair Professor, Industrial Engineering and Logistics Management

Appointed Associate Vice-President for Research and Innovation, HKUST



## ■ Prof Lionel Ni

Chair Professor, Computer Science and Engineering

Appointed Dean of HKUST Fok Ying Tung Graduate School



## Visiting Faculty

## ■ Prof Koon Fung Lam

Assistant Professor, Chemical and Biomolecular Engineering

PhD – The Hong Kong University of Science and Technology

## ■ Prof Matthew Law

Assistant Professor, Electronic and Computer Engineering

PhD – The Hong Kong University of Science and Technology

## ■ Prof Yue Wang

Assistant Professor, Industrial Engineering and Logistics Management

PhD – The Hong Kong University of Science and Technology

## Prof Ben Letaief Honored as ISI Highly Cited Researcher

Prof Khaled Ben Letaief, Dean of Engineering, gained further recognition as an international leader in his field by being honored and selected as ISI Highly Cited Researcher by Thomson Reuters in the field of Computer Science and Engineering.

Honoring the fundamental contributions made in 21 broad subject categories in life sciences, medicine, physical sciences, engineering and social sciences, ISI Highly Cited Researchers are individuals who are the most highly cited in their fields and inclusion in this list is taken as a measure of the esteem of these scientific researchers and is used, for example, by the Academic Ranking of World Universities.

Prof Ben Letaief joins an elite club of less than half of 1% of all published researchers in the world who are recognized among the 250 top and most-cited researchers in a defined discipline within a specific time-period. Prof Ben Letaief is a Fellow of IEEE and is currently serving as the Vice-President of the IEEE Communications Society. He is also the recipient of many other international distinguished awards including the prestigious IEEE Marconi Prize Award in Wireless Communications.



## Wireless Project Receives Top Honor in MOE Natural Science Awards

Prof Lionel Ni, Prof Yunhao Liu and Mr Mo Li, Computer Science and Engineering, received a prestigious First Class honor in the Ministry of Education (MOE) Awards for Research Excellence in Natural Sciences for their cutting-edge project on “Range-free Localization and Localizability for Wireless Network and IOT: Theory and Practice”. The award was one of five secured by HKUST in this category, the largest number among tertiary institutions in Hong Kong. The natural science award targets tertiary institutions in China and recognizes those who have made discoveries in basic and applied research or explained natural phenomenon or characteristics through scientific research.

Profs Ni and Liu’s wireless project led to the design of one of the world’s earliest range-free localization and localizability systems using RFID; and found a solution to the problem of accurately obtaining real-time object locations in a wireless sensor network and the Internet of Things.



Photo Credit:  
Beijing-Hong Kong  
Academic Exchange Centre

# SENG Research Excellence Awards

The launch of the School of Engineering Research Excellence Awards recognizes the impact and contributions of the School's faculty members and provides an inspiring tribute to the world-class work being carried out at HKUST. In Focus showcases the four inaugural winners.

## Distinguished Research Excellence Award



### Prof Hoi Sing Kwok

*Electronic and Computer Engineering*  
*Dr William MW Mong Chair*  
*Professor of Nanotechnology*

Prof Kwok has become the first winner of the top Research Excellence Award, which honors a

distinguished engineering faculty member with exceptional research achievements and significant impact locally and globally.

The pioneering academic was cited for his contributions to the field of display technologies, an area where he has enjoyed major achievements since 1992, the year he joined HKUST. A Harvard PhD graduate in Applied Physics, Prof Kwok has received 58 patents, with another 30 under review, and produced over 500 refereed publications on display-related research, achieving an outstanding H-index citation rate of 40.

During his productive career, Prof Kwok has been actively engaged in both fundamental and applied research. The development of silicon micro-displays and the technology transfer of active-matrix organic light-emitting diode (OLED) displays are key developments. "He is a true-blue academic of HKUST, with all his work created here," said Prof Ross Murch, Head of Electronic and Computer Engineering.

After his arrival at HKUST, Prof Kwok spotted the industrial need for liquid crystal display technology and built up a research program. He has pioneered the development of low temperature polycrystalline silicon (LTPS) thin-film transistors (TFT) for high resolution active-matrix displays, among many other successful technology breakthroughs.

Prof Kwok's invention of color-filtered liquid-crystal display on silicon (LCOS) was licensed to Himax Display Inc of Taiwan and the device they produced based on this invention has been incorporated into many products, including the Nikon PJ1000 digital camera. In addition, inventions related to LTPS TFT have been licensed to Sinodisplay Technology Inc to commercialize the technology for active-matrix OLED displays.

Prof Kwok's contributions to the field have been recognized through numerous prestigious professional affiliations. He is an

IEEE Fellow, a Fellow of the Society for Information Display, and an Elected Member of the Asia-Pacific Academy of Materials, among others.

## Research Excellence Award



### Prof Guohua Chen

*Chemical and Biomolecular Engineering*

Prof Chen has been a major contributor to two key research areas, the drying of high-value products and electrochemical technologies for industrial

wastewater treatment. He has also gained acclaim for the application of nanotechnologies to environmental protection.

Such achievements have secured him this award, which recognizes an outstanding faculty member with a proven record of research excellence.

As an example of the impact of his work, the electrochemical technologies developed in his laboratory have been evaluated as the most likely technology to deal with the remediation of oily wastewaters, being cited in *MIT Technology Review* as the future option of restaurant wastewater treatment. The Hong Kong Environmental Conservation Fund granted research funding to build a pilot plant and excellent results have been obtained to date.

Prof Chen, who earned his PhD at McGill University and joined HKUST in the mid-1990s, has published over 120 journal papers and shared his knowledge through active participation in international conferences and workshops. He has been an editor of *Separation and Purification Technology*, a top journal in the field of chemical engineering and is an International Advisory Panel Member of the World Congress of Chemical Engineering.

The high quality of his research training has assisted his postgraduate students in obtaining excellent research output and careers. Bachelor degree students have gained the benefit of Prof Chen's cutting-edge view of research through his participation in the Undergraduate Research Opportunities Program.

## Research Excellence Award



### Prof Qian Zhang

*Computer Science and Engineering*

Prof Zhang, a PhD graduate of Wuhan University and previously with Microsoft Research Asia, Beijing, is internationally known for the outstanding quality of her research in mobile multimedia communication

and advanced wireless networking.

She gained early recognition for her work on resource allocation, streaming protocol and cross-layer QoS support for multimedia streaming, which has been frequently cited.

Prof Zhang was the first to propose an end-system based mobility solution for heterogeneous wireless networks and has made notable contributions in the area of wireless sensor networks. In recent years, she has made pioneering advances in cognitive and cooperative wireless networks, an emerging research area. This includes opening up a new research direction for cognitive radio networks by utilizing cooperative relay to improve the transmission diversity and correspondingly the spectrum efficiency.

Among earlier accolades, she was named among the World's Top Young Innovators in the *MIT Technology Review 100* in 2004 and received the Overseas Young Investigator Award from the National Natural Science Foundation of China in 2006.

Prof Zhang, who joined HKUST in 2005, has published over 200 refereed papers in top journals and international conferences and is the inventor of around 30 pending international patents. She is also an active leader in her department at HKUST and has high visibility in the professional community.

She is co-director of Huawei-HKUST Innovation Lab and the director of the Digital Life Research Center at HKUST.

## Young Investigator Research Award



### Prof Matthew McKay

*Electronic and Computer Engineering*

Prof McKay has established an exceptional research record for a junior faculty member, helping him to become the first winner of this award which recognizes the achievements of a rising star with potential for future

leadership.

Joining HKUST in 2007 after receiving his PhD at the University of Sydney in Australia, Prof McKay is making strong contributions to the fundamental understanding and design of advanced signal processing methods for wireless communications. He has published over 40 journal papers and received 400 citations.

One of his main areas of interest is applications of random matrix theory to signal processing and information theory. He has become well known for being able to characterize the achievable capacity limits of multi-channel communication systems using his random matrix theory. Through his results, for example, the data rate of mobile telephones and WiFi can be improved.

Showing the global recognition he is receiving, Prof McKay was awarded the 2011 Stephen O. Rice Prize in the Field of Communications Theory from the IEEE Communications Society. This highly regarded award is given annually for the best paper published in *IEEE Transactions on Communications* in the previous three years. The paper was co-authored by Shi Jin, Xiqi Gao and Iain B. Collings.

He gained a 2010 Young Author Best Paper Award from the IEEE Signal Processing Society with a paper co-authored with his PhD student Liang Sun, and Shi Jin. He also received Best Paper Awards at the IEEE International Conference on Communications 2011 and the IEEE Global Communications Conference 2010.

Prof McKay has also taken a pro-active role in establishing collaborations with international experts and promoting research excellence among his students.

## Selecting the Winners

Criteria for selection of awardees included research output, originality and innovativeness; impact of research output on society, industry and the relevant engineering disciplines; research training provided to students and post-doctoral researchers; and their leadership role in collaboration with national and international research partners.

Nominees had to be excellent researchers over a sustained period of time – at least the past three years –

and research achievements recognized by the award were expected to be for work carried out mainly at HKUST.

The Research Awards Selection Committee comprised the head or acting head of each of the School of Engineering's six departments and was chaired by Prof Joseph Lee, Vice-President for Research and Graduate Studies. Of four co-opted members, three were Professors Emeriti and one a member of the HKUST Institute for Advanced Study.

## Artificial Intelligence Journal Headquartered at HKUST



In a significant boost for HKUST's international presence and Hong Kong's drive to become an academic hub, the University has become the headquarters for a prestigious new journal focusing on artificial intelligence.

*ACM Transactions on Intelligent Systems and Technology* is being led by founding editor-in-chief Prof

Qiang Yang, Computer Science and Engineering, an IEEE Fellow, and a specialist in data mining and artificial intelligence. ACM, or the Association for Computing Machinery, is one of the two largest and most authoritative computing associations globally, together with the IEEE.

The new journal aims to promote multi-disciplinary artificial intelligence research, with topics ranging from computational sustainability to computational social and cultural dynamics. Papers started to be accepted at the beginning of 2010 and an inaugural issue was published in October 2010. An impressive 400 submissions were received from around the world during its first year, including top institutions such as MIT and Stanford.

"This is a terrific development," said Prof Mounir Hamdi, Chair Professor and Head of the Computer Science and Engineering Department. "The founding of such a prestigious journal is a clear indication of the great research stature of Prof Yang and our department as a whole."

The first four issues of the journal are available at <http://tist.acm.org/publications.html>.

## SENG Academics Receive Google Research Awards

Three Computer Science and Engineering faculty members have had their cutting-edge studies recognized, with each receiving a Google Research Award from the global internet search giant. This was the highest number of awards granted to academics at a single university in Hong Kong in the funding round results released in Q4 2010.

Prof Chi Keung Tang, Prof Sunghun Kim and Prof Ke Yi received funding for their studies in "Quasi-Dense 3D Reconstruction from 2D Uncalibrated Photos" (geo/maps), "Crash Reproduction" (software engineering) and "Computing Statistical Summaries with MapReduce" (information retrieval, extraction and organization) respectively.

The Google Research Awards program identifies and supports faculty pursuing research in areas of mutual interest internationally, with two rounds of funding held annually. In the Q4 2010 round, Google supported 112 awards across 20 different subject areas, totaling more than US\$6 million. Hong Kong received a total of five awards and one joint award putting it among the top regions to gain awards, along with the US, UK and Germany. Academics from 14 regions in total gained funding, with around 65% of the awards going to researchers in the US.



## Transforming Video Technology



Prof Bing Zeng, Electronic and Computer Engineering, and his 2010 PhD graduate Dr Jingjing Fu, now working at Microsoft Research Asia, have been selected to receive the 2011 *IEEE Transactions on Circuits and Systems for Video Technology* – Best Paper Award for their paper "Directional Discrete Cosine

Transforms: A New Framework for Image Coding". The IEEE journal is widely recognized as the best in the area of video technology. About 200 papers are published every year, with an acceptance rate of about 17%. Each year, one paper

published over the past three years is selected to receive the Best Paper Award. It was the first time since the journal's launch in 1991 that the honor had been awarded to a Hong Kong professor and his student for work completely carried out in Hong Kong. In his paper, he lays down the fundamental framework for the breakthrough transformation that has been widely used in many image and video coding applications.

With the same paper, Prof Zeng also won the Best Paper Award at the IEEE International Symposium on Circuits and Systems 2011, held in Rio de Janeiro, Brazil. The symposium is the world's premier networking forum of leading researchers in the highly active fields of theory, design and implementation of circuits and systems.



## Top-Tier Rankings Globally in Engineering and Technology Subjects

HKUST has maintained its remarkable global presence in engineering and technology in a new set of academic subject rankings released in April. According to the 2011 QS World University Rankings by Subject - Engineering and Technology, the first time these tables have been published, HKUST was ranked No.1 in Greater China in Computer Science & Information Systems and No.1 in Hong Kong in Mechanical, Aeronautical & Manufacturing.

In the Computer Science & Information Systems category, HKUST was placed 26th. This ranking is in line with the Computer Science and Engineering Department's ranking at 26th in the world and 1st in Greater China in the Academic Ranking of World Universities (ARWU) league table produced by Shanghai Jiao Tong University in 2010. The Electronic and Computer Engineering Department was globally placed 28th.

Dean of Engineering Prof Khaled Ben Letaief said he was delighted to see that the School of Engineering was continuing to excel in international rankings. "We shall strive toward making even greater impact on the world with our first-rate education and research now and in the future," he said.

A total of five subject areas in engineering and technology were covered in the QS rankings. Ranking indicators include academic reputation, employer reputation and citations, with the high rankings of HKUST's engineering departments being an endorsement of its world-class faculty, high-impact research, outstanding students, and state-of-the-art facilities.

Other strong HKUST subject rankings included 42nd in Civil & Structural Engineering, ahead of University of Bristol (47th) and Texas A&M University (51-100th); 44th in Mechanical,

Aeronautical & Manufacturing, ahead of Korea Advanced Institute of Science & Technology (KAIST) (49th) and University of Wisconsin-Madison (51-100th); and 51-100th in Chemical Engineering.

### 2011 QS World University Rankings - Computer Science & Information Systems Rankings

Institution	World Ranking
Massachusetts Institute of Technology	1
University of California, Los Angeles	8
Columbia University	17
<b>HKUST</b>	<b>26</b>
Purdue University	29
The University of Tokyo	35
Tsinghua University	43

### 2011 QS World University Rankings - Electrical and Electronic Engineering Rankings

Institution	World Ranking
Massachusetts Institute of Technology	1
Princeton University	12
Cornell University	19
<b>HKUST</b>	<b>28</b>
University of British Columbia	30
Purdue University	32
Tsinghua University	40

## Agreement Signed for Joint PhD Program

Expanding the School of Engineering (SENG)'s international network and visibility further, a joint PhD degree program is to be established under an exciting academic and research collaboration agreement between the School and the College of Engineering at Pohang University of Science and Technology (POSTECH) in Korea.

The four-year HKUST/POSTECH program will require students to spend two years at each university, providing exposure to the research environment in two leading Asia-Pacific institutions and boosting students' competitive edge. Every student will also have two faculty advisors, one from each institution. The universities are seeking to admit the first cohort in Fall 2012.

The agreement marks another successful collaboration with a top Korean university for SENG. In 2009, the

School agreed a joint PhD program with Korea Advanced Institute of Science and Technology, a major research institution in Korea.



## Princeton Exchange Expands Research Opportunities for Undergraduates

In a pioneering move, HKUST has become the first university in Asia to enter into an undergraduate summer research exchange partnership in engineering with Princeton University.

The two-way summer exchange agreement will see School of Engineering (SENG) students spend eight weeks at the Ivy League institution where they will engage in research with faculty members on designated projects. Princeton students will undertake research with HKUST academics and professional research teams from Hong Kong Applied Science and Technology Research Institute (ASTRI).

The arrangement is especially notable as Princeton has less than 10 institutional partners for reciprocal exchange worldwide. In combining hands-on research experience with international exchange, the program also offers a different form of study abroad experience for SENG students.

Dean of Engineering Prof Khaled Ben Letaief said that SENG was committed to providing an outstanding undergraduate education that produced global citizens. "We are therefore very excited about this initiative which will not only allow our students to acquire an international outlook but will further develop their appreciation of research."

Prof Vincent Poor, Dean of the School of Engineering and Applied Science at Princeton, also welcomed the move. "We are very pleased to establish a partnership with HKUST Engineering School to jointly advance the levels of distinction in discovery and transmission of knowledge and understanding through this research exchange program," he said.



## First Choice Again for PhD Engineering Fellows

The School of Engineering (SENG) continues to be the first choice for high-flying Hong Kong, Mainland China and overseas engineering students admitted under the Hong Kong PhD Fellowship Scheme, offered by the Research Grants Council (RGC).

In May, the RGC announced that 123 elite PhD students from around 20 countries/regions had accepted offers for 2011/12, with a total of 22 awardees electing to study at SENG. This was equivalent to 44% of the total fellows admitted to all engineering disciplines in Hong Kong.

The RGC's PhD scheme is now in its second year and for both years SENG has drawn the highest number of engineering awardees in Hong Kong. It also represents more than two-thirds of the total 32 students admitted to Schools at HKUST under the 2011/12 intake.

The commitment and cutting-edge research of SENG's world-class academics in different engineering fields are among the School's top attractions for the next generation of leading researchers, according to Dean of Engineering Prof Khaled Ben Letaief. "With top-notch teaching, pioneering research projects and state-of-the-art facilities, I am sure awardees can maximize their potential here," he said.

The PhD Fellowship Scheme was launched by the RGC to attract the best and brightest students from around the world to study and carry out research in University Grants Committee-funded institutions in Hong Kong. A total of 4,024 applications from 103 countries/regions were received in the 2011/12 round.



## Leading Academy Recognizes IELM Head

In recognition of his outstanding contributions over the years, Prof Fugee Tsung, Head of Industrial Engineering and Logistics Management, has been elected an Academician of the International Academy for Quality (IAQ). The academy is the most prestigious international organization in its field. It comprises peer-nominated members who admit individuals identified as global thought leaders in quality-related issues.



Prof Tsung is only the second in Hong Kong and one of just six academicians in Greater China to receive the accolade. His research focuses on quality control and the improvement of complex systems in both the manufacturing and service sectors. Prof Tsung has also taken up many leadership positions, including Regional Vice-President (Asia) of the Institute of Industrial Engineers (IIE), and helped to raise wider awareness of quality techniques in the region.

Showing the growing attention now being paid to the area in Greater China, the Asian Network for Quality 2012 Congress will be held at HKUST. Around 500 quality professionals from Asia are expected to attend.

## Ergonomics Expert Elected Fellow

Prof Richard So, Industrial Engineering and Logistics Management, has been elected a Fellow of the Institute of Ergonomics and Human Factors for his significant contributions to ergonomics. Established in 1949, the Institute is the oldest professional society in the field and aims to promote public awareness of ergonomics and its applications. Prof So has also been invited to become editor in the area of Human Factors for *Displays*, an international journal focusing on research related to vision and displays.



## Faculty Honors, Awards and Achievements

- Prof Oscar Au, Electronic and Computer Engineering, and his team are among the few university teams contributing to the competitive Joint Collaborative Team on Video Coding (JCTVC), which is developing the next-generation video coding standard. Prof Au's team has had three proposals accepted into the High Efficiency Video Coding (HEVC) standard's working draft. The first proposal on chroma entropy coding was accepted at the Daegu (Korea) meeting in January 2011. The second and third proposals were on sub-LCU Qp representation and dQP calculation method respectively and were accepted at the Geneva meeting in March 2011. The HEVC standard will be finalized in mid 2013.


- Prof Mansun Chan, Electronic and Computer Engineering, and his team won a 2009 Shenzhen City Technology Innovation Award from the Shenzhen Science and Technology Association with the project "New Generation Nano-CMOS Device Model Research and Verification for SOC Design". The project was undertaken with Peking University Shenzhen Graduate School.


- Prof Albert Chung, Computer Engineering Program, Prof Sunghun Kim, Computer Science and Engineering, Prof Lambros Katafygiotis, Civil and Environmental Engineering, and Prof Henry Lam, Chemical and Biomolecular Engineering, have been named among HKUST's 2010 Best Ten Lecturers in the annual awards event organized by VERTEX, House II Students Association. The independent student initiative allows those studying at HKUST to show their appreciation of lecturers' work and give them a vote of thanks. It was the 14th year the event had been organized.
- Prof Pascale Fung, Electronic and Computer Engineering, and her team received a Second Class Prize in the Shenzhen/Hong Kong Technology Innovation Competition 2010 for their ITF/APAS project on a 3G automotive infotainment system. HKUST was the only Hong Kong institution, academic or private, to win a prize that year.



- Associate Dean of Engineering Prof Jang Kyo Kim, Mechanical Engineering, has been elected editor of *Composite Part A*, one of the most prestigious journals in the field. Prof Kim has been serving on the journal's editorial board for seven years, as well as being on the editorial boards of seven other international journals related to areas of advanced materials and composites.



- For the second consecutive year, Prof Sunghun Kim, Computer Science and Engineering, has been selected to receive a highly competitive Software Engineering Innovation Foundation (SEIF) Award from Microsoft Research. His proposal, "GATE: Game-based Automatic Testing Environment", was the only one selected from Asia and among just 10 worldwide that were chosen from 88 study proposals in 2011. The proposal will be supported by a grant of US\$35,000 for a year. SEIF is open to universities and research institutions worldwide and receives proposals of the highest standards. Selection criteria include the project's impact on the software engineering community, potential for wide dissemination and use of the intellectual property created, ability to complete the project, as well as the qualifications of the principal investigator.



- Prof Chung Yee Lee and Prof Ajay Joneja, Industrial Engineering and Logistics Management, have been awarded a research grant from the Innovation and Technology Fund for their project "Integrated Decision Support System for Dynamic Vehicle-Dispatching and Scheduling with Real-time Information under Operation Uncertainty". The project seeks to develop an integrated information technology platform for passenger transport in real-time operation and information exchange to reduce operation costs and improve efficiency.



- Research by Prof Yi-Kuen Lee, Mechanical Engineering, on "Super-hydrophobic Surface with Nano-flowers on Silicon" has been published on the Chinese International NEMS Network website and become one of its most frequently viewed articles. Prof Lee has also published a paper, in collaboration with Prof Hsian-Rong Tseng at UCLA, on the development of the 2nd generation microfluidic circulating tumor cells (CTCs) capture technology which was chosen as the cover of *Angewandte Chemie International Edition* (Mar 21, 2011 issue). The paper, "Highly Efficient Capture of Circulating Tumor Cells Using Nanostructured Silicon Substrates with Integrated Chaotic Micromixers" has also been highlighted in *Nature Medicine* (Mar 2011 issue).



- Prof Wai Ho Mow, Computer Engineering Program, has been awarded a 2010/11 grant from the Overseas and Hong Kong, Macau Young Scholars Collaborative Research Fund, set up by the National Natural Science Foundation of China, for his project "Optimal Training Sequence Design and Low-Complexity Estimation/Decoding Methods for Multiple-Antenna Wireless Communications". The research is being carried out in collaboration with Southwest Jiaotong University in Sichuan.



- A co-authored poster by Prof Hui He Qiu, Mechanical Engineering, entitled "Drastic Enhancement of Boiling Heat Transfer with Micro- and Nano-Engineering of Surface Wettability", won the Honorable Mention-ASME Best Poster Award at the Micro & Nanotechnology Society-Wide Forum at the 2010 American Society of Mechanical Engineers (ASME) International Mechanical Engineering Congress & Exposition in Vancouver.



- Prof Jiang Xu, Electronic and Computer Engineering, has been selected by the Institute of Electrical and Electronics Engineers (IEEE) Computer Society as a Distinguished Visitor. Under the society's Distinguished Visitors Program, first-quality speakers from among its membership share the latest insights in different areas of the field with professional and student chapters of the society in different locations.





# The Rise of HKUST ROBOTICS

A robot addressed an amazed audience at HKUST on April 12, giving an 11-minute presentation at the HKUST 20th Anniversary Program Parade presented by the School of Engineering (SENG). The NAO robot, recently acquired for training purposes, had been successfully programmed to give the entertaining introduction by members of HKUST's Robotics Team, all of whom come from SENG.

HKUST's Robotics Team stems from students' successful participation in the annual Robocon contest, which began in 2004. The 2011 team comprises 70 students from Hong Kong, Mainland China and overseas, with representatives from all of the School's departments. This marks a 75% increase on 2010 and shows the enthusiasm for this type of learning experience outside the regular curriculum. Altogether around 150 SENG students signed up to participate before the Robotics Team selection was made.

In order for more students to participate in external competitions, Robotics Team members have now been divided into four groups, with each taking part in one of four major events. These are the Robocon Hong Kong Contest and three new ones, the Remotely Operated Vehicles (ROV) Competition featuring underwater robots, the Smart Car Competition, and NAO RoboCup.

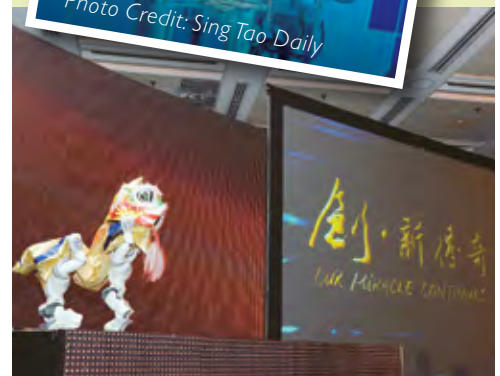
To celebrate the formation of the Robotics Team, senior administrators of the University, including President Prof Tony F Chan, presented team flags to the individual groups at the Program Parade. Members of the Robotics Team also took a pledge to participate in the contests in a competitive but sporting manner.

A few days before the Program Parade, the ROV team got off to a flying start by performing excellently in the Hong Kong Underwater Robot Challenge, a qualification examination for the international competition. With this success, they represented Hong Kong in the ROV international competition at NASA Johnson Space Center in Houston in June and won the Design Elegance Award, which was judged by the aesthetics, simplicity and functionality of the vehicle's design. Grateful to the Robotics Team's logistics partner, DHL Express, for providing logistics consultation and sponsoring the air express transportation of over 85kg. With DHL's professional help on shipping the sophisticated and delicate underwater robot machines, the robot has been safely and efficiently delivered between Hong Kong and Houston.

The Robotics Team is supervised by Prof Zexiang Li and Prof Tim Woo, both from the Electronic and Computer Engineering Department.



Photo Credit: Sing Tao Daily



## Robots Perform Lion Dance at Grand Celebration

Two NAO robots also made a memorable appearance at HKUST's Grand Celebration commemorating the University's 20th Anniversary on April 8. The robots, programmed by HKUST Robotics Team members, performed an impressive lion dance at the event.



# Salute to Two Decades

The School of Engineering is proud to commemorate HKUST's 20th Anniversary through arranging and participating in the following special events that highlight the University's emphasis on innovation, high achievement, knowledge transfer and team spirit.

## The Second International Workshop on Innovative Engineering Education

Langham Place Hotel, Hong Kong, **19-21 Jan 2011**  
 HKUST, **22 Jan 2011**

Organized by  
 HKUST Center for Engineering Education Innovation (E<sup>2</sup>I)  
 Sungkyunkwan University Hub Center for Innovative Engineering Education

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## The Making of the World's Largest Digital Photo Workshop

HKUST, **18-19 Mar 2011**

Organized by  
 HKUST School of Engineering  
 HKUST Department of Computer Science and Engineering

2

## SENG/IAS Joint Distinguished Lecture by Prof Vincent Poor

HKUST, **21 Mar 2011**

Organized by  
 HKUST School of Engineering  
 HKUST Institute for Advanced Study (IAS)

3

## HKUST 20th Anniversary Celebration Program Parade by School of Engineering

HKUST, **12 Apr 2011**

Organized by  
 HKUST School of Engineering

4

### EVENT 1

## The Second International Workshop on Innovative Engineering Education

A successful gathering of more than 100 engineering educators took place in Hong Kong in January, co-organized by the Center for Engineering Education Innovation and Sungkyunkwan University Hub Center for Innovative Engineering Education. Topics included assessment, accreditation and intercultural issues, among others. The keynote speakers were Prof David Radcliffe, Purdue University, and Prof Elizabeth Godfrey, University of Technology Sydney.

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### EVENT 2

## The Making of the World's Largest Digital Photo Workshop

Prof Pedro Sander, Computer Science and Engineering, conducted an eye-opening interactive workshop that introduced the technologies and methods involved in creating his global record-breaking digital photo to elite high school students from local and international schools in Hong Kong. Adding to the special nature of the event, the "train-the-trainer" approach was used, with students encouraged to pass on the knowledge they acquired to classmates, family and friends, greatly increasing the potential number of people to gain knowledge from the activity.

More on P14



### EVENT 3

## SENG/IAS Joint Distinguished Lecture by Prof Vincent Poor

Eminent academic Prof Vincent Poor, Dean of the School of Engineering and Applied Science and Michael Henry Strater University Professor of Electrical Engineering at Princeton University, gave an engaging presentation on "Information and Inference in the Wireless Physical Layer". In his talk, Prof Poor explored information theoretic or inferential problems, each motivated by an applications-layer issue. Over 90 people attended the lecture.



# of Achievement



<p><b>Engineering Alumni Fun Day</b> HKUST, <b>28 May 2011</b></p> <p>Organized by HKUST School of Engineering</p> <p><b>5</b></p>	<p><b>IEEE Technology Time Machine Symposium</b> Sheraton Hong Kong Hotel, <b>1-3 Jun 2011</b></p> <p>Organized by Institute of Electrical and Electronics Engineers (IEEE) Co-organized by HKUST and Hong Kong Applied Science and Technology Research Institute (ASTRI)</p> <p><b>6</b></p>	<p><b>HKUST "Bring Technology to Community" Exhibition</b> Hong Kong Science Museum, <b>14-23 Oct 2011</b></p> <p>Organized by HKUST School of Engineering</p> <p><b>7</b></p>	<p><b>SENG/CIVL/IAS Joint Distinguished Lecture by Prof Robert Mair</b> HKUST, <b>Nov 2011</b></p> <p>Organized by HKUST School of Engineering HKUST Department of Civil &amp; Environmental Engineering HKUST Institute for Advanced Study</p> <p><b>8</b></p>	<p><b>HKUST Engineering Day</b> HKUST, <b>Dec 2011</b></p> <p>Organized by HKUST School of Engineering</p> <p><b>9</b></p>
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## EVENT 4

### HKUST 20th Anniversary Celebration Program Parade by School of Engineering

A lively parade was held to showcase the special events organized by the School of Engineering to commemorate the University's latest historical milestone. One of the stars of the show was a NAO robot, which gave a fun introduction to the occasion with its rundown of the celebratory line-up. Around 150 students and academics participated including HKUST President Prof Tony F Chan, Vice-President Prof Y S Wong, Associate Provost Dr David Mole, Dean of Engineering Prof Khaled Ben Letaief, and Associate Deans of Engineering Prof Roger Cheng and Prof Charles Ng.

*More on robotics on P11*



## EVENT 5

### Engineering Alumni Fun Day

A happy time was spent by all on May 28 at a celebratory School of Engineering alumni family day gathering.

*More on P15&24*



## EVENT 6

### IEEE Technology Time Machine Symposium

Intriguing insight into next-generation advances was provided at the first IEEE symposium devoted to future technologies, which was held in Hong Kong and co-organized by HKUST.

*More on P14*



## EVENTS 7,8,9

### Coming Soon!

Look out for more outstanding 20A events from the School of Engineering in the Fall. Events comprise an inspiring "Bring Technology to Community" exhibition, with contributions by School of Engineering faculty, students and alumni; a thought-provoking distinguished lecture by Cambridge University civil engineering expert Prof Robert Mair; and SENG's Engineering Day.



## Advancing Engineering Education Across Borders



Multinational experience-sharing was the order of the day when the School of Engineering's Center for Engineering Education Innovation (E<sup>2</sup>I) brought together more than 100 engineering educators from over 30 universities in the Second International Workshop on Innovative Engineering Education (IEE 2011) to review and share good practices in innovative engineering education.

Those attending the fruitful two-day forum in January came from South Korea, Hong Kong, Taiwan, US and Australia. The event was organized in collaboration with the Sungkyunkwan University Hub Center for Innovative Engineering Education (SKKU Hub

Center) and supported by the Korea Institute for Advancement of Technology (KIAT) and Korea's Ministry of Education, Science and Technology.

In addition to welcome addresses by Prof Sung-Jin Song, Director of the SKKU Hub Center and Chairman of the Organizing Committee, and Prof Khaled Ben Letaief, Dean of Engineering at HKUST, a total of 14 keynote and invited speakers made presentations on topics related to accreditation of engineering programs, program-level assessment of learning outcomes, faculty development, and interdisciplinary and intercultural issues in engineering education.

A post-conference workshop on the use of pedagogies, assessment strategies, and technology in enhancing student learning was held at HKUST.

The two gatherings provided excellent opportunities for participants to network and identify potential areas for collaboration in the future.

## Fast Forward to the Technologies of the Future

A glimpse of the future was the intriguing prospect at the first IEEE Technology Time Machine (TTM) symposium, which was held in Hong Kong in June and co-organized by HKUST and the Hong Kong Applied Science and Technology Research Institute (ASTRI). Themed "Technologies Beyond 2020", the exciting event organized by the Institute of Electrical and Electronics Engineers (IEEE) focused on a number of potentially high-impact emerging technologies and scenarios.

The kick off ceremony was officiated by Mr John Tsang Chun-wah, Financial Secretary of the Hong Kong SAR Government; Dr Gordon Day, IEEE President-Elect; and members of the TTM Organizing Committee, including

General Co-Chair and HKUST Dean of Engineering Prof Khaled Ben Letaief. Through co-hosting the Symposium, Prof Ben Letaief hopes to drive strategic research planning in achieving the goal of the School to provide innovative and creative solution for industries and the society.

At the "Global R&D Leaders" panel discussion, HKUST President Prof Tony F Chan highlighted that business and industry should collaborate closely with universities to promote revolutionary innovative ideas. Panelists shared on innovation and advancement in areas ranging from radio access technology, biomedical sciences, implants of sensors in coronary arteries to human centric intelligent societies and new organic electronic materials. Prof Hoi Sing Kwok, Electronic and Computer Engineering, gave a keynote speech on display technologies, the field where he is globally renowned in.

## Zooming In on the Big Picture

Photography has taken on a new dimension for over 50 elite high school students from local and international schools in Hong Kong following an interactive workshop on how to create multi-image panoramas by Prof Pedro Sander, Computer Science and Engineering. Prof Sander broke the global record in December 2010 when he created the world's largest digital photo of 150 billion pixels.

During the workshop sessions, Prof Sander introduced the technologies and methods involved in creating his pioneering photograph depicting his hometown of Rio de Janeiro, Brazil. Students were fascinated by the power of the photograph,

which allowed them to zoom in on even distant areas and clearly see all the details.

Later, they set out to make their own multi-image panoramas of the HKUST campus by taking pictures and using software to "stitch" the images together. They also acquired knowledge of the algorithms and concepts behind the software.

Prof Sander said, "Through this workshop, I hope that students will see further evidence that working on engineering and computer technology is interesting, fun, useful and also highly intertwined with our daily lives."





# Fun, Games and HAPPY MEMORIES

It was all go on May 28 when over 330 of the School's alumni and their families took part in "The Engineering Alumni Fun Day". Afternoon events included soccer and basketball competitions and a highly popular mini-carnival for all ages at HKUST, followed by a Homecoming Dinner to celebrate HKUST's 20th anniversary at the Chinese Restaurant on campus. Those attending were able to meet up with professors, reminisce with old friends and catch up with their recent news, as well as enjoy the performances and activities specially arranged for the evening.



Heartfelt appreciation to members\* of the Hong Kong Electrical Appliances Manufacturers Association and other donors for sponsorship of prizes:

- Allan International Holdings Ltd.\*
- Chiaphua Industries Ltd.\*
- Chung Mei Industries Ltd.\*
- Fook Tin Technologies Ltd.\*
- G.E.W. Corporation Ltd.\*
- Goldwise Development Co.
- Hong Kong Ferry (Holdings) Co. Ltd.
- Philips Electronics HK Ltd.\*
- Sonca Products Ltd.\*
- Techtronic Industries Co. Ltd.\*







## Flying High Over World's Deepest Canyon

Postgraduate students Frank Wang and Jianyu Song, Electronic and Computer Engineering, have soared to new heights in their research and development with the successful autonomous flight of a self-designed unmanned helicopter across the Yarlung Zangbo Grand Canyon, the world's deepest canyon. Located in Tibet, the canyon, also referred to as "the last territory of mystery on Earth", is 504.6 km long and 6,009m deep at its lowest point, nearly three times the depth of the Grand Canyon in the US. Most of its many different terrains have never been traversed.

The helicopter, which flew over the canyon in September 2010, was equipped with the world's most compact automated piloting system and had an intelligent tracking system which enabled the user to adjust its route during the flight. The challenge for the students was to ensure that the helicopter could continue its designated tasks and safely return to base even if wireless and global positioning signals were lost. The

many blind spots in the complex topography of the canyon made the location a perfect testing ground. News of the flight was released in December 2010.

Earlier models of the HKUST unmanned helicopter have tackled the rigors of Mount Everest and assisted earthquake relief in Sichuan by taking surveillance photos to support post-disaster restoration work in areas too dangerous for manned flights.



## HKUST Students Shine in Inter-University Contest

A top trio of Computer Science and Engineering undergraduates beat 38 other teams from universities in Hong Kong and Macau to take the Champion Team Award at this year's exciting IBM DB2 UDB Inter-University Programming Contest in January. The competition attracted participants from eight universities.

Desmond Hung (Year 3), Qifeng Chen (Year 2) and Jueyi Wang (Year 1) showed their outstanding programming and problem solving skills by successfully completing a series of questions to score the highest marks in the shortest time.

The three students formed one of five HKUST teams entering the contest, which also saw HKUST receive the overall Champion University Award for the highest total scores earned by its teams. Students from Computer Science and Engineering, Computer Engineering Program, and Economics took part, with support and encouragement provided by faculty coach Prof Wilfred Ng and

postgraduate coach Derek Hu.

The contest aims to strengthen students' capabilities in relation to the DB2 database management system.



## The Rewards of Early Research Training

It has been a wonderfully eventful year for MPhil Computer Science and Engineering student Emprise Yun Kwan Chan. He has become this year's champion of HKUST's Mr Armin and Mrs Lillian Kitchell Undergraduate Research Award scheme. He has also seen his research project on social networks and machine learning lead to a paper that was recently accepted by a top international artificial intelligence conference.

Entering HKUST as a straight A student, Emprise has made stellar progress at the University, finishing his difficult double degree in Computer Science and Math (General Math) in just 2.5 years. He is now on course to complete his MPhil in just 1.5 years.

Emprise credits his early research experience on the Undergraduate Research Opportunities Program (UROP)

with Prof Dit-Yan Yeung in Year 2 and Year 3 as providing essential early training that has given him a head start at postgraduate level.

It also inspired his paper "A Convex Formulation of Modularity Maximization for Community Detection", which Emprise will present in July at the major International Joint Conferences on Artificial Intelligence (IJCAI) in Barcelona, Spain. The paper was co-authored with Prof Yeung.

Among the five winners in the research award scheme, four were from the School of Engineering. The winners were selected from 2010 UROP participants.



## Turning Breakthroughs into Businesses

Triple honors were achieved by teams from the Electronic and Computer Engineering (ECE) Department in this year's HKUST 2011 Entrepreneurship Competition, with three separate groups winning awards out of 11 finalists and an original 124 teams who entered the contest.

The First Runner-up prize went to LEDoS, led by Prof Kei May Lau, for its breakthrough display technology based on proprietary micro-projection devices, which provides cost-effective customizable hardware and software for digital display applications ranging from digital signage to traffic signs.

iFlight Technology team, led by Prof Zexiang Li, received the Third Runner-up award for technology that has turned it into one of the world's leading developers and manufacturers of helicopter autopilot systems while the Student Award was won by Bull B Tech, led by undergraduate Yik Hei Chan, for a product that streamlines the business-to-customer process and has many applications in the retail industry.

The competition, which first started five years ago, seeks to foster entrepreneurship throughout the University, involving different members of the HKUST community and different Schools.

## Learning to Unleash the Entrepreneurial Spirit

In March, nine students from Dual Degree Program in Technology and Management (T&M) joined the prestigious MIT Global Startup Workshop 2011 in Seoul, Korea. The leading forum, held in different international locations annually, encourages entrepreneurship around the world and seeks to foster the ecosystems to support it.

At the three-day workshop, which this year focused on *Unleashing Entrepreneurial Potential to Invigorate the Economy*, T&M students were able to listen to discussions and network with a wide range of people from all over the world. The event brings together entrepreneurial leaders, executives, financiers, professors, students, government agents and private parties to share best practices, stimulate creativity and promote entrepreneurship.

In another memorable experience at the gathering, T&M student Kanishk Bali, Year 3, won third prize in the Elevator Pitch Competition, competing against more than 40 other entrants.





## Final-Year Projects Secure Award-Winning Success

The remarkable Braille Embosser final-year project by 2010 Electronic and Computer Engineering (ECE) graduates continues to make waves in the community, winning three top awards in the Hong Kong ICT Awards 2011 and a Gold Award at The Hong Kong Electronic Industries Association (HKEIA) Innovation & Technology Project Competition 2010.

Patrick Kwan Pak Lee and Matthew Kin Man Ting together with other ECE classmates recycled dot-matrix and ink-jet printers into cost-effective Braille Embossers for the visually challenged. A regular Braille Embosser sells for HK\$30,000. The ECE students' machine costs just HK\$1,000.

The double success adds to other engineering design awards for the invention, including the Gold Award and Most Innovative Award in the 2010 Amway Pan-Pearl River Delta Region Universities IT Project Competition and a Merit Award in the 10th International Asia Pacific ICT Alliance Awards 2010.

In this year's Hong Kong ICT Awards, the students' Braille Embosser gained the Gold Award, Best Social Responsibility and Best Commercial Value accolades in the Best Innovation & Research (College & Undergraduates) category.

In the HKEIA competition, a second ECE final-year project also proved a winner; with "Face Recognition in Embedded System" by Pak Ming Cheung, Pui Hang Lai, and Kwan Wai Tsang receiving the Merit Award.

Both projects were supervised by Prof Tim Woo.



## Honoring Academic Excellence

An elite group of 96 SENG undergraduates who had gained a place on the Dean's List at least twice in the preceding three semesters were honored for their academic excellence at a ceremony in May, together with their peers from other Schools at HKUST. Over 350 students achieved this honor. HKUST President Prof Tony F Chan and other senior administrators attended the event. Principals and teachers from the students' secondary schools were also invited to join the ceremony.



## Building Academic Bridges Through Mainland Exchange

A group of seven Civil and Environmental Engineering (CIVL) students enjoyed an eye-opening five-day exchange to two mainland universities in March to gain greater understanding of how the field is taught and what research is undertaken at the different institutions.

The visit, entitled "Student – Civil – Global", was organized for HKUST members of the Student Chapter of the Canadian Society for Civil Engineering Hong Kong branch, and was open to both undergraduates and postgraduates. Students, together with CIVL Chair Professor Moe Cheung, visited Tsinghua University in Beijing and Tianjin University.

At Tsinghua University, Prof Cheung gave a seminar on the design, construction and management of the Confederation Bridge, the largest public private partnership project in Canada, while Prof Peng Pan from Tsinghua presented his latest research on earthquake-resistant structural systems to the CIVL group. During the exchange at Tianjin University, Prof Qinghua Han, Prof

Qinghe Zhang and Prof Donghai Liu gave the Hong Kong visitors an introduction to the university's programs and research fields. Students also toured the construction lab at Tsinghua University and the hydraulic and hydropower simulation lab at Tianjin University.

As part of the exchange, a group of around 10 students and a professor from Tsinghua University will visit HKUST this June.



## Student Honors, Awards and Achievements

- PhD candidate Vincent Man Pun Chan, Electronic and Computer Engineering, won First Prize in the Student Paper Award at the 2010 Institute of Electrical and Electronics Engineers (IEEE) Asia Pacific Conference on Circuits and Systems. His winning paper, “A Monolithic 2nd-Order Boundary Controller for Buck Converter with Fast Transient Response”, was co-authored by Prof Philip Mok. The biennial conference is a major international forum established by the IEEE Circuits and Systems Society for researchers to exchange their latest findings.



- A HKUST Programming Team (HKUST Optimus Prime) reached the world finals of the prestigious ACM International Collegiate Programming Contest in Florida, US, following their triumph in this year's regional contests in Hanoi and Kuala Lumpur. The team comprised Danqi Chen, Year 2, Computer Engineering Program, Yuliang Li, Year 2, and PhD candidate Lu Wang, Computer Science and Engineering. The team was led by Prof Ke Yi and postgraduate coach Hao Hu. This year, around 7,000 teams worldwide participated in the regional contests, with 102 teams qualifying for the finals.

- MPhil student Pak Ming Cheung, Electronic and Computer Engineering, won the Champion Award in the Design for Elderly Competition 2011. His winning proposal focused on designing e-games under the “Innovative Ideas for Quality Living” category. The contest was held as part of Hong Kong Engineering Week 2011.



- Darren Sin Wang Chiu, Year 2, Computer Engineering and Global Business Management, was awarded the 2009-10 Hong Kong Institution of Engineers (HKIE) Scholarship for his outstanding academic achievement.



- PhD student Wenqi Du, Civil and Environmental Engineering, has won the Arup Research Prize 2011. The accolade, funded by Ove Arup & Partners Hong Kong Ltd, is awarded to undergraduate or postgraduate students to promote creativity and high standards of technology. Wenqi's research seeks to develop guidelines for seismic design of buildings in Hong Kong and the results of his work are expected to bring great benefit to the local building industry.



- Electronic and Computer Engineering PhD candidate Shaoqi Feng received the Best Student Paper Award (2nd Runner-up) at the 11th IEEE Photonics Society Hong Kong Chapter Postgraduate Conference. His winning paper, “Electro-optical Tunable Time Delay and Advance in a Silicon Feedback-microring Resonator”, was co-authored by Dr Xianshu Luo and Prof Andrew Poon.



- PhD student Cuiting Guo, Industrial Engineering and Logistics Management, received the Best Short Paper Award at the IEEE Virtual Reality Conference 2011, held in Singapore. The conference is the most prestigious international conference focusing on virtual reality. The paper looked at the question: “Could OKAN be an Objective Indicator of the Susceptibility to Visually Induced Motion Sickness?”
- An Industrial Engineering and Logistics Management undergraduate team comprising Zhiyi He, Year 2, Sihua Luo, Year 1, and Yik Hang Pang, Year 1, gained the Second Runner-up award in the Hong Kong Society for Quality student project competition. The competition is open to university students in industrial, manufacturing, quality or related disciplines, and provides them with an opportunity to work on an actual industrial case and propose a resolution.





- Electronic and Computer Engineering PhD student Xiaocheng Jing won First Prize in the Student Paper Contest at the 2010 IEEE International Conference on Electron Devices and Solid-State



Circuits with her paper "Soft-Start Circuit with Duty Ratio Controlled Voltage Clamping and Adaptive Sizing Technique for Integrated DC-DC Converters". PhD student Chenchang Zhan, Electronic and Computer Engineering, came third with his paper "Output-Capacitor-Free Adaptively Biased Low-Dropout Regulators". Zhan also won the Student Paper Award at the IEEE International Symposium on Circuits and Systems held in Rio de Janeiro, Brazil in May with his paper "An Output-Capacitor-Free Adaptively Biased Low-Dropout Regulator with Sub-Threshold Undershoot-Reduction for SoC", co-authored with Prof Wing-Hung Ki. A total of 658 papers were presented in the symposium. Only 3 papers were awarded the Student Paper Award.

- PhD student Liang Lu, Industrial Engineering and Logistics Management, received First Prize in the Best Student Paper Competition at the Second Production and Operations Management

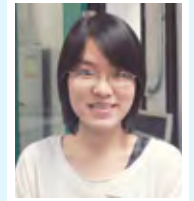
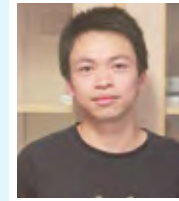
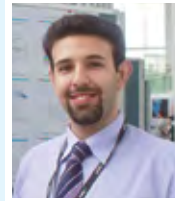


Society (POMS)-Hong Kong International Conference. The conference was organized by the POMS-Hong Kong and Taiwan Chapters, the Department of Industrial Engineering and Logistics Management and the HKUST Logistics and Supply Chain Management Institute.

- Hing Yik Ng, Year 2, Mechanical Engineering, received the Outstanding Student Award 2010 from the Aircraft Engineer Development Scheme (AEDS) in recognition of her high-flying performance in examinations and participation in AEDS activities. AEDS is organized by the Manufacturing and Industrial Division of the Hong Kong Institution of Engineers and supported by the Hong Kong Aircraft Engineering Co Ltd and the Royal Aeronautical Society (Hong Kong Branch). It seeks to encourage undergraduates to plan and prepare for a career in aircraft engineering and maintenance.



- Electronic and Computer Engineering PhD students Mahdi Nikdast, Xiaowen Wu and Yaoyao Ye gained the Best Poster Presentation Award (2nd place) at the AMD Technical Forum and Exhibition 2010, held in Taipei. Their research project, "A Formal Analysis of Crosstalk Noise in Mesh-based Optical Network-on-Chip for Chip Multiprocessors", was co-authored by Prof Jiang Xu. AMD is a leading semiconductor company.



- Postgraduate student Zhijian Zhou, Electronic and Computer Engineering, has been awarded First Runner-up in the Postgraduate Category of the Student Paper Contest held by the IEEE Hong Kong Section 2010, for his paper "The Design, Fabrication and Characterization of Piezoresistive Tactile Sensor for Fingerprint Sensing". 2010 ECE graduate Yue Yu was awarded First Runner-up in the Undergraduate Category for her paper "Modified-MMSE Equalization for Noise and Interference Mitigation in SU-MIMO Systems"



- Sixteen students from Dual Degree Program in Technology and Management (T&M) had a great opportunity to learn more about the business world when they participated in the Schmidt-HKUST Corporate Project in Fall 2010. During the three-month project, the four student teams looked at ways to promote and facilitate adoption of Radio Frequency Identification (RFID). To do so, they attended conferences, corporate seminars and conducted market analysis, among other activities, before presenting their proposals to a panel of judges comprising senior executives and business professionals. The winning team recommended using short-range wireless technology to connect social networks with physical location information.



## International Industry-Education Drive to Boost Innovation



In a highly significant development, the School of Engineering has become part of a leading industry-education global social innovation program

designed to develop more effective approaches to education in science, technology, engineering and mathematics (STEM) worldwide.

As part of the HP Catalyst Initiative, set up by leading technology multinational Hewlett Packard, HKUST has received a generous grant of US\$150,000 which will be put toward a new teaching lab equipped with high-end computers for Computer Science and Engineering students.

The University is among 35 educational institutions across 11 countries to be selected by Hewlett Packard to receive a grant in 2010. It is also a member of the newly established Hewlett Packard-sponsored Measuring Learning Consortium, led by Carnegie Mellon University in the US. The six-member multinational group will explore new technologies for measuring students'

competencies in the four fields.

The consortium is one of five set up by Hewlett Packard in 2010 focusing on the transformation of STEM education. Member organizations were selected through an open, competitive global call for proposals.

"We are excited about the impact of this initiative and the network of consortia in the long term," said Prof Mounir Hamdi, Head of Computer Science and Engineering and Project Lead. Such funding would help the University deliver projects that will shape the way education develops and society evolves as well as empower students to collaborate globally, he noted.

Ms Gabi Zedlmayer, Vice President, Office of Global Social Innovation at Hewlett Packard, explained that the HP Catalyst Initiative underscored the company's vision of a world where innovation and collaboration are enabled by investments in technology and education. "The program is designed to help foster potential solutions to society's most critical challenges by educating and nurturing leaders," she said. "This will be critical in ensuring we develop new communities and find new ways of doing things."

## Innovative Technology Research Shared with International School Teachers

Over 70 science teachers from six international secondary schools under the English Schools Foundation (ESF) gained interesting insight into some of the latest technological advances at the School of Engineering's first professional development day for secondary school educators in May.

The international school teachers were welcomed to HKUST by Provost Prof Wei Shyy. This was followed by a presentation by Dean of Engineering Prof Khaled Ben Letaief and talks by faculty members on a range of hot topics, including green buildings, wind energy, mobile technology, and terahertz imaging. Participants also had the opportunity to tour HKUST's leading research facilities and scenic campus, and hear about student life from the School's Student Ambassadors.

Dean Ben Letaief said he hoped the successful event marked the beginning of a long-term relationship between the School of Engineering and the ESF, which is Hong Kong's largest international school network educating around 16,000 students and over 50 nationalities.

## Exploring the Story of Semiconductor Lasers

Prof Dieter Bimberg, Chair of Applied Solid State Physics at Technical University of Berlin for the past 30 years, gave a fascinating talk on "Our Daily Life with Semiconductor Lasers" at HKUST in January.

The talk, jointly organized by the School of Engineering and HKUST Institute for Advanced Study, examined the amazing success story related to semiconductor lasers. It explored how a fundamental physics breakthrough regarded as useless to the economy 50 years ago, has evolved through further engineering and discovery to become a key part of modern life.

The new knowledge and understanding went on to spur intercontinental optical communication, the basis of the internet, and to form the backbone of modern energy efficient systems. DVDs, the optical mouse, and medical applications, are just some examples of the products now associated with the discovery.





## Forums Foster Industrial Engineering Links

Two significant meetings of minds from Hong Kong and beyond provided opportunities for thought-provoking discussion on some of the latest issues related to industrial engineering and logistics management in January.

From January 6-7, over 120 overseas, Mainland China and Taiwan delegates attended the Second POMS-HK International Conference held at HKUST. The successful two-day event, organized by the Industrial Engineering and Logistics Management (IELM) Department, HKUST Logistics & Supply Chain Management Institute and the Production and Operations Management Society (POMS) – Hong Kong Chapter, focused on “POM in the Economic Recovery”.

Drawing together practitioners and academics, the conference provided a highly useful platform for knowledge-sharing on production and operations management issues in the face of changing economic times and insights on the design, planning, implementation and management of production systems and their impact.

On January 8, IELM hosted the 1st Forum for the Council of Industrial Engineering Department Heads in Greater China (CIEDHC). The gathering brought together 40 department heads from Mainland China, Taiwan and Hong Kong to promote the development of industrial engineering and related areas in Greater China and to strengthen exchanges among industrial engineering departments in the region.

Presentations were provided by a number of academics, including Prof Ershi Qi, Dean of the School of Management, Tianjin University, and Prof Ching Jong Liao, Industrial Management Department and Vice President of National Taiwan University of Science and Technology, who both gave detailed accounts of industrial engineering developments in their respective locations. Prof Fugue Tsung, Head of IELM at HKUST, was elected Founding President of the Council.



## IELM Mentorship Dinner

Over 160 mentors and student mentees from the Industrial Engineering and Logistics Management Department enjoyed an informal get-together at the IELM Mentorship Dinner in November. The mentorship program provides undergraduates with an opportunity to learn from a business mentor, expand networks and build social skills.

## Workshop on Liquid Crystals for Photonics

Prof VG Chigrinov, Electronic and Computer Engineering, hosted a Workshop on Liquid Crystals for Photonics from 8-10 Dec 2010 at HKUST. The event provided a useful forum for liquid crystal scientists, researchers and engineers from around the world to present their pioneering research and exchange ideas. An article on the workshop was later published in *Liquid Crystals Today*, an official publication of the International Liquid Crystal Society.

## MECH Postgraduates' Society

In the past few months, members of the Mechanical Engineering Postgraduates' Society have been able to take part in a series of fun events organized to help students meet new people and enjoy time out from their research. Activities included bike riding, a barbecue, and the Society's second basketball competition, all of which proved highly enjoyable and a great way to relax.



## Directing Tunnel Projects and Flying Planes

Two civil engineering alumni discuss how their studies at SENG put them on diverse roads to success.

### DR MORGANYANG, 1996 PhD

Director of Operations, China  
AECOM

"After my PhD, focused on wind-induced vibration of cable-stayed bridges, I joined Maunsell (later integrated into AECOM) to work on geotechnical and tunnel projects. I was the project manager for the design and construction of the North Point-Quarry Bay section of the MTR's Tseung Kwan O line and other signature tunnel projects in Hong Kong.

"The Yangtze River tunnel-bridge, linking Shanghai's Pudong district and Chongming Island, was my significant Mainland project. It opened in 2009 and is one of the world's largest shield-driven tunnels, with a diameter of 15.44m.

"The Hong Kong-Zhuhai-Macau Bridge is one of the most challenging projects in the world for civil engineers as the sea-crossing fixed link, involving the construction of the largest immersed tunnel connecting man-made islands, is over 30km. It gives me many challenges, including environmental and sustainability issues, but also valuable experience in such a unique project.

"The world is flat and changing rapidly, with increasing client demands. Innovation is therefore a key aspect of civil engineering's future. Students will need to have the flexibility to handle such a working environment.

"I was the first PhD graduate in Civil Engineering at HKUST and I felt my time at the School of Engineering (SENG) was



really good preparation for my career. I also see the strengths of other HKUST graduates who come to work at the company. They are skilful at advanced computer simulations and have a strong background in mechanics. Their training may have been demanding but it means they are confident too."

### CLAUDIA SIN, 2007 BEng

Second Officer, Hong Kong Dragon Airlines Ltd

"Flying has been my dream since I was young. Although aviation degrees are not yet offered locally, my HKUST civil engineering degree equipped me to fulfill my dream of becoming a pilot. The engineering training at SENG emphasizes logical thinking and analytical skills, which helped me a lot in my career, especially in meeting the challenges of my 14-month cadet training in Australia. During my years at SENG, I was also lucky enough to win several scholarships to gain flying experience in Australia, New Zealand and Hong Kong.

"While a SENG student, I won a local eBay business competition with two of my Civil Engineering classmates and this gave us the valuable opportunity to work as interns in three different eBay offices in Asia. In addition, I represented the University in the "Introducing and Demonstrating Earthquake Engineering Research in Schools Competition" in Taiwan.

"I think I developed a great deal at SENG and my all-round education there broadened my horizons considerably, helping me to achieve my career goal."



## Main Board Listing for Perception Digital



Electronic and Computer Engineering (ECE) alumnus and HKUST's first PhD graduate Prof Jack Lau achieved further success in June when the hi-tech company he founded transferred its listing from the Growth

Enterprise Market (GEM) of the Hong Kong Stock Exchange to the Main Board. The company was first listed on the GEM board in December 2009.

Perception Digital Holdings Limited is the first and largest listed company set up under the HKUST Entrepreneurship Program. It specializes in technological solutions for consumer electronics and technology commercialization, and holds more than 25 patents. Major customers include leading international brands and Fortune Global 500 companies.



# Engineering Alumni Fun Day



## Calendar of Events

**September 24-25, 2011**

**HKUST Information Day**  
HKUST Campus

**December 2011**

**HKUST Engineering Day**  
HKUST Campus

**October 14-23, 2011**

**HKUST "Bring Technology to Community" Exhibition**  
Hong Kong Science Museum

**December 8-11, 2011**

**The 3rd International Symposium on Plasticity and Impact**  
HKUST Clear Water Bay Campus (Dec 8-10) and HKUST Fok Ying Tung Graduate School, Nansha Campus (Dec 10-11)

The above events are subject to change without prior notice.

### 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](mailto:seng@ust.hk).

**Stay connected and keep in touch!**

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