

# HKUST Shines in Pursuit of Excellence



HKUST has been named one of the world's top 100 universities in engineering in new rankings released by Shanghai Jiao Tong University.

Shanghai Jiao Tong has released a widely cited annual global league table since June 2003 based on institutions' overall performance. This year for the first time it has ranked universities worldwide in five specific areas: engineering/technology and computer sciences, natural sciences and mathematics, life and agriculture sciences, medicine and pharmacy, and social sciences.

In Shanghai Jiao Tong's engineering league table, HKUST has been ranked 37th globally. Results were announced in February. Every institution with Nobel Laureates, Fields Medal winners and frequently cited researchers was included, according to Jiao Tong. More than 1,000 in each area were initially ranked.

Ranking criteria for the engineering section included the number of highly cited researchers, number of publications, and percentage of articles published in top journals in the field. The other Hong Kong institutions in the engineering top 100 were City University and the Chinese University of Hong Kong in 51st and 77th place respectively.

HKUST has also been ranked 17th in the recent *Times Higher Education Supplement (THES)* league table of the world top 100 universities in technology.

Meanwhile, HKUST has received the highest overall score among Hong Kong's eight University Grants Committee (UGC)-supported tertiary institutions in the latest UGC Research Assessment Exercise. Out of the 13 assessment panels, HKUST scored the most in four: Electrical and Electronic Engineering, Built Environment, Biology and Social Science. Results of the exercise were announced in March.

Of the 208 panel members taking part in the exercise, 65 were external members from a number of countries around the world. They assessed some 18,700 research output items submitted by around 3,500 academics. Such an assessment was last held in 1999. For the 2006 exercise, the UGC raised the standard in light of the high quality of research in Hong Kong and elsewhere.

"We are glad that we have used a high standard of evaluation," said Prof Roland Chin, Chairman of the Research Grants Council under the UGC. "Many of the external assessment panel members are impressed with the performance of our institutions. They think that we compared well with top higher education institutions in Europe and North America. Some members think that Hong Kong has demonstrated an emergence of intellectual prominence in many research disciplines."



The year got off to a successful start with the three-day School of Engineering Advisory Committee Meeting in early January. Industry leaders and educators from leading international universities explored ways to drive engineering curriculum innovation in line with the 3-3-4 secondary-tertiary education system change in Hong Kong which will usher in the four-year undergraduate degree from 2012. Many valuable insights were shared at the gathering.

Our students and alumni continue to excel at home and abroad as this issue of *In Focus* demonstrates. Internships at leading international companies, an environmentally friendly public transportation project, selection for the first edition of *Who's Who of Emerging Leaders*, and a host of awards and honors show the quality and dynamism of those who study at the School.

We also report on the 2nd SENG Student Ambassador Program, which will encourage more young people to follow in our present students' footsteps. This outreach program will involve 29 nominated students in recruitment activities and school visits to increase knowledge of SENG and the different fields of engineering. The first program proved a valuable way to boost knowledge among school students and increase our ambassadors' presentation and communication skills.

Meanwhile, faculty members have been busy organizing a number of prestigious international engineering conferences and enhancing Hong Kong's reputation as an academic hub. This issue also features a novel technology created by SENG researchers and set to make three-dimensional images in films and games cost-effective and simple to produce.

We live in and are helping to create exciting times.

**Prof Philip Chan**  
*Dean of Engineering*



- ▶ The Six Sigma Quality Management course taught by Prof Fugee Tsung as part of the Master of Science in Engineering Enterprise Management has been accredited by the Hong Kong Society for Quality (HKSQ). Participants who have successfully completed this quality management course in the previous two years can apply to HKSQ for registration as a Certified Six Sigma Green Belt.
- ▶ The next issue of *In Focus* will see the launch of a significant new section on Engineering Education, in which SENG faculty will share their insights as the School is preparing for the 4-year undergraduate curriculum. Prof Edmond Ko, Senior Advisor to the Dean of Engineering, will start off with a series of articles on topics such as "Engineering Education as a Liberal Education?" and "Assessment in Engineering Education."

### Faculty Members

- **Prof Matthew McKay**  
*Assistant Professor, Electronic and Computer Engineering*  
(effective 2 April 2007)  
*PhD - University of Sydney*
- **Prof Ke Yi**  
*Assistant Professor, Computer Science and Engineering*  
(effective 1 August 2007)  
*PhD - Duke University*

### Administrative

- **Prof Jang-Kyo Kim**  
*Professor of Mechanical Engineering*  
*Appointed Associate Dean of Engineering*  
(Postgraduate Studies)
- **Prof Charles Wang Wai Ng**  
*Professor of Civil Engineering*  
*Appointed Associate Dean of Engineering*  
(Undergraduate Studies)

### HKUST Honors

- Prof Hau L Lee, Thoma Professor of Operations, Information, and Technology, at Stanford Graduate School of Business and founder and director of the Stanford Global Supply Chain Management Forum, received an Honorary Doctorate in Engineering at HKUST's 14th Congregation for his leading work on supply chain management.
- Prof Irene Man-Chi Lo, Associate Professor of Civil Engineering, has been awarded the HKUST's Michael G Gale Medal for Distinguished Teaching.
- Prof Mordecai J Golin, Computer Science and Engineering, Prof Po Lok Yue, Chemical Engineering, and Prof Lambros Katafygiotis, Civil Engineering, have been selected for the School of Engineering Teaching Excellence Appreciation Award 2005-06. Prof Golin also received the Distinguished Teaching Award.

## Faculty Achievements

- Prof Philip Chan and Prof Li Qiu, Electronic and Computer Engineering, have been elected Fellows of the prestigious Institute of Electrical and Electronics Engineers (IEEE). This brings the total number of IEEE Fellows in the Department of Electronic and Computer Engineering to 11.
- Prof Ming Fang, Chemical Engineering Department, has been awarded the Certificate of Commendation by the HKSAR Government for his outstanding contributions to the promotion of popular science in high schools.
- Prof James Kwok and PhD student Ivor Wai-Hung Tsang, Computer Science and Engineering, have received the IEEE Transactions on Neural Networks Outstanding 2004 Paper Award (bestowed in 2006) for their paper "The Pre-image Problem in Kernel Methods", published in *IEEE Transactions on Neural Networks*, Volume 15, in 2004.
- Prof Kenny Kwok, Civil Engineering, has been elected Asia-Pacific Regional Coordinator and joined the Executive Board of the International Association for Wind Engineering. The association promotes international co-operation among scientists, engineers and other professionals to advance knowledge in the field.
- Prof Irene M. C. Lo of Civil Engineering, her former PhD student, Dr. Keith C. K. Lai, and her research partners in Denmark have been selected by the American Society of Civil Engineers for the 2007 Samuel Arnold Greeley Award. This prestigious award is presented by the Society to recognize Prof. Lo and her research group on their outstanding paper "Field Monitoring of a Permeable Reactive Barrier for Removal of Chlorinated Organics", *Journal of Environmental Engineering, ASCE*, February, 2006.
- Prof Charles Ng, Civil Engineering, and Prof Yun-Min Chen of Zhejiang University, have been awarded the Overseas and Hong Kong, Macau Young Scholars Collaborative Research Fund by the National Science Foundation of China. Their three-year project, launched in January 2007, focuses on "Three-dimensional Centrifuge and Numerical Modeling of Tunneling Effects on Dykes". This is an extremely competitive award for young scholars aged below 45 from any field to apply. Only two scholars in Hong Kong were awarded last year.
- Prof Bertram Shi, Electronic and Computer Engineering, has been selected as a Distinguished Lecturer for the IEEE Circuits and Systems Society for 2007-08.
- Prof Richard So, Industrial Engineering and Logistics Management, has been invited to join the CIE Technical Committee TC1-67 on image safety. The Commission Internationale de L'eclairage or International Commission on Illumination (CIE) is a scientific, non-profit organization responsible for developing standards in the field of light and lighting. Prof So is also on the drafting committee of the International Standard Organization International Workshop Agreement 3 on image safety.
- Prof Fugee Tsung, Industrial Engineering and Logistics Management, has been elected a member of the International Statistical Institute. The institute is one of the oldest scientific associations in the world and members are globally recognized as leaders in the field.
- Prof Qian Zhang, Computer Science and Engineering, has received the Overseas Outstanding Young Scholar Award from the National Natural Science Foundation of China.



## Industry Awards

Perception Digital, a technology company founded by professors and graduates of the Department of Electrical and Electronic Engineering (now Department of Electronic and Computer Engineering) in 1999 and launched under the HKUST Entrepreneurship Program, have received three honors in the 2006 Hong Kong Awards for Industries, organized by the Federation of Hong Kong Industries.

The company, which focuses on research, development and design of high-end audio-visual consumer products, received a Consumer Product Design Award for its All-in-one Harddisk Multimedia Player (PD-3000), a Consumer Product Design Certificate of Merit for its Ultra-Compact 1" Harddisk Thumb Drive (PD-1606) and a Technological Achievement Certificate of Merit.

The founder, Professor Jack Lau, had completed his PhD degree in 1994 and became the first PhD to graduate from the Hong Kong University of Science and Technology. In 2000, he received the 10 Most Outstanding Young Person Award in Hong Kong, and was a recipient of the Young Industrialist Award of Hong Kong in 2005.



## Researchers on Three Continents Join Forces

The School of Engineering is to host a significant new HKUST research and education center that will work collaboratively with similar centers at two other top global universities to stimulate discoveries and develop the next generation of computer and communications innovators and engineers.

The International Center for Advanced Computing and Communications Technology (InterACT) is the result of HKUST's first collaborative agreement involving three universities from three different continents.

Under the arrangement, the University will work with Universität Karlsruhe, an elite German research institution, and Carnegie Mellon University, a top-ranked American university renowned for its expertise in computer science, on research and an education program in computing and communications technology. InterACT will operate over three sites, one at each of the three universities.

HKUST President Paul Chu said: "This will be an evolving partnership that serves as the model for future partnerships for all universities." Each institution would have administrative autonomy, while enjoying exciting opportunities for ideas-sharing, support and joint approaches, he said.

The innovative agreement will also open the way for students and faculty exchanges to extend multicultural understanding

and widen perspectives. Universität Karlsruhe is one of Germany's leading universities, with highly regarded computer science, mechanical engineering and business engineering programs. Carnegie Mellon is known for its arts and technology programs, its interdisciplinary focus and enterprising approach to education.

At HKUST, InterACT will initially be hosted by the Human Language Technology Center and most closely involve the Departments of Electronic and Computer Engineering and Computer Science and Engineering. It will also work with the Consumer Electronics Center and Computer Vision and Graphics Lab. Prof Pascale Fung, Electronic and Computer Engineering and co-founder of the Human Language Technology Center, will be the first director of InterACT at HKUST.



## Exchange Program Expands

The School of Engineering's popular undergraduate exchange program has recently undergone major expansion with the signing of agreements with ten further institutions in different parts of the world. The latest agreements bring the total number of School of Engineering exchange partner institutions to 53.

The new universities, all leading institutions, are Cornell University, Purdue University, George Washington University, University of Illinois at Urbana-Champaign, and Northwestern University in the US; University of Warwick and University of Southampton in the UK; Sophia University and Kyoto University in Japan; and Seoul National University in Korea.

The exchange program enhances undergraduates' educational experience and personal development through international exposure and boosts future career opportunities. School of Engineering undergraduates go abroad to study for one or two semesters, while overseas students from exchange partner institutions come to HKUST. Both experiences help to broaden cultural understanding among students and pave the way for international friendships and future collaborations.



## Advancing Hong Kong as an Academic Hub

The organization of a series of influential international engineering conferences in Hong Kong have kept School of Engineering academics on the go over the past few months. These events have focused on cutting-edge advances in a range of subjects within the engineering field.

In November, the 5th Asian-Australasian Conference on Composite Materials (ACCM-5) took place in Hong Kong. The conference, held every two years in different locations around the region, serves as an international forum for exploring and exchanging views on the latest developments in the characterization, testing, mechanics, modeling, design, manufacturing and application of composite materials and structures. It also seeks to foster R&D collaborations among academia, research institutions and relevant industries.

The four-day gathering in Hong Kong, organized by the Department of Mechanical Engineering, was one of the largest composite events yet held in the Asia Pacific region. The conference saw over 350 papers presented, drew more than 320 active participants from 22 countries, and addressed exciting scientific findings in many emerging composite technologies, in particular nanocomposites, smart composites, and composites for medicine. Prof Jang-Kyo Kim, Mechanical Engineering, served as the General Chair.

December brought the 8th International Conference on Electronic Materials and Packaging (EMAP2006) to HKUST. The major event promotes awareness of advances in this increasingly important area, including materials design and simulations, fabrication, reliability and thermal management of microsystems/MEMS packages. It also seeks to bring together academics and industrial researchers.

Over 160 people attended the four-day event from 11 countries and regions. Prof Ricky Lee, Mechanical Engineering, served as the General Chair. The conference was co-organized by the University and the IEEE Components, Packaging and Manufacturing Technology (CPMT) Society.

HKUST was also the venue for the two-day Asian Control Forum in January. The innovative event, organized by HKUST postgraduate students from the Electronic and Computer Engineering Department and other Hong Kong universities, focused on current trends in Asian control theory and applications, furthered communication between Asian control scientists and helped to promote Hong Kong as a center for international exchange on developments in the field.

Control technology has been adopted in almost all areas of engineering, including electrical, mechanical, chemical, metallurgical, civil, aeronautical, and atomic. Applications include the flight systems of aircraft and cruise control mechanisms in cars.

At the forum, leading scholars in control and applications from different Asian institutions gave seminars on topics ranging from biological control to adaptive control and systems identification to postgraduate students and other researchers in Hong Kong. Lively discussions ensued giving Hong Kong postgraduate students the opportunity to learn from the international research community, reflect on the latest developments in the field, and establish links globally and locally.



## Wireless Algorithms Set for **International Standards**

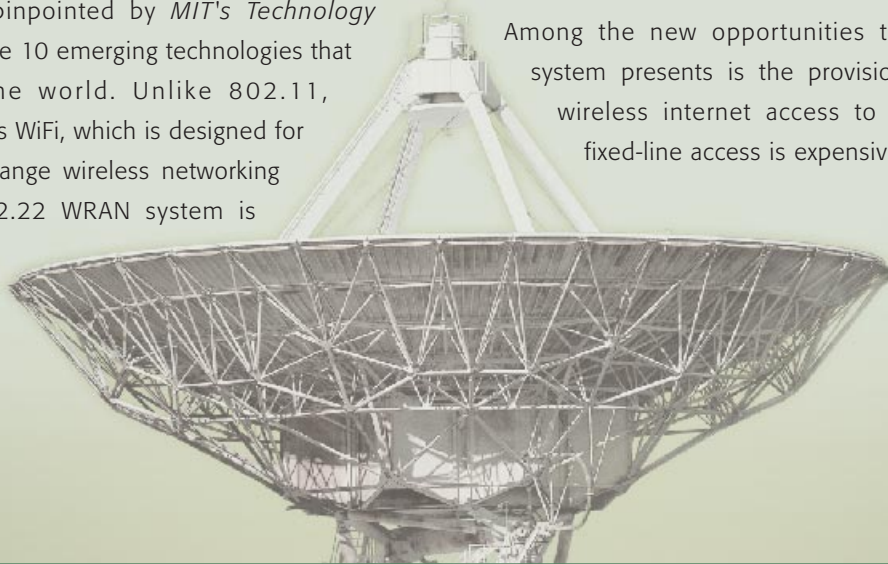
In a significant advance for Hong Kong research, two algorithms developed by the Electronic and Computer Engineering Department's Wireless Research Team and Huawei Technologies have been conditionally accepted for inclusion in international standards for the revolutionary 802.22 Wireless Regional Area Network (WRAN) system.

WRAN is one of the major commercial applications of Cognitive Radio, pinpointed by *MIT's Technology Review* as one of the 10 emerging technologies that will transform the world. Unlike 802.11, commonly known as WiFi, which is designed for stand-alone, short-range wireless networking (~100m), the 802.22 WRAN system is

targeted at long-range (~50km) wireless access and designed to operate in the underused VHF/UHF television frequency range, enabling dynamic sharing with spectrum license users.

The specification for the 802.22 WRAN system is being standardized by the Institute of Electrical and Electronics Engineers (IEEE), the world's leading professional association for the advancement of technology.

Among the new opportunities the 802.22 WRAN system presents is the provision of cost-effective wireless internet access to rural areas where fixed-line access is expensive.



## Research Draws Major Conference to HK

The HKUST Wireless Research Team and its cutting-edge work in the field were also instrumental in attracting the recent IEEE Wireless Communications and Networking Conference (WCNC) to Hong Kong for the first time.

WCNC is the world's leading international event for wireless engineers, researchers and communications professionals. Prof Khaled Ben Letaief, Chair Professor and Head of the Department of Electronics and

Computer Engineering (ECE), School of Engineering, served as General Chair of WCNC 2007 and Prof Ross Murch of ECE as Technical Program Chair. The conference, held in March, marked the first time that WCNC had been held outside North America. Over 960 attendees registered for the conference and over 1700 papers were submitted nearly doubling previous records marking an important success for our wireless group.



## 3D Images Ready to Take Leading Role

A novel technology created by School of Engineering researchers is set to change the face of films and computer games by simplifying the conversion of two-dimensional photographs into three-dimensional images. The semi-automatic, image-based computer modeling technique will enable movie-makers and games designers to easily and cost-effectively produce 3D models, slashing the time and human effort currently required by 90%, according to Prof Long Quan, Computer Science and Engineering.

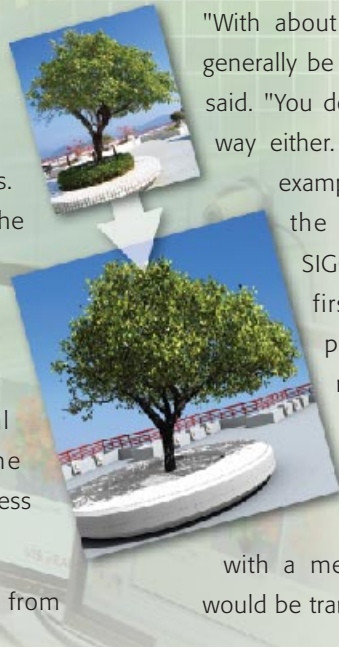
Prof Quan, who has spent over 10 years researching computer vision and imaging, explained that production costs for 3D images were now high due to the expensive 3D scanners and enormous amount of work required from digital artists to reproduce high-quality imitations of real objects. For example, a 3D image of the Parthenon, the classical Greek temple in Athens, might take five people a week to capture the data on site, then two digital artists a month to reproduce it. "Using our technology, only one person would be needed for just a few hours to take digital photographs and shoot some video for the computer to process," he said. "It would take less than 10% of the effort now spent."

After inputting a series of 2D pictures taken from

different angles, the HKUST technology identifies an object's characteristic points, finds the corresponding points in the different images, computes the results, and is then able to reconstruct a realistic 3D image. The data is stored in VRML. If the computer collected too many or too few characteristic points it would be impossible to recreate the image, Prof Quan said. However, by utilizing the "quasi-dense" technique, which collects sparsely in some areas and densely in others, the HKUST technology can quickly and effectively transform a 2D image into 3D.

"With about 20 2D pictures, a 3D image or model can generally be reproduced in around five minutes," Prof Quan said. "You don't have to take the 2D images in any special way either. Anyone with a digital camera can do it. Our example of a tree (pictured) which will be featured at the prestigious computer graphics conference SIGGRAPH 2007 in August shows that this is the first image-based tree modeling method that produce a quality that could be adequate for movies."

Prof Quan said that local post-production companies had already shown interest in the research. The University is working together with a media company and he hoped the technology would be transferred to industry soon.



## Smart Toy Pig Speaks to Consumers' Hearts

An intelligent toy pig created by the Human Language Technology Center in collaboration with a Shanghai toy manufacturer has proved a winner in the Mainland in the Year of the Pig. A speech recognition computer chip developed by the Center enables the "golden lucky piggy" as it is called to respond to 15 specific orders given in Putonghua and appear like a companion or pet. Some 200,000 have already been produced.

Prof Pascale Fung, Electronic and Computer Engineering and co-founder of the Center, said that researchers had

developed a larger speech recognition computer chip in 2005 but it was too large and expensive for the smart pig to be marketable and it was necessary to develop a much-reduced version. The tiny chip that eventually resulted - the smallest and cheapest in Mainland China - enables the pig to introduce itself and react appropriately when told to go forward or backward, among other responses.



## Monetary Authority ambassador gains financial insight

Technology and Management (T&M) Dual Degree student Stanley Kwok Pui-Sum is adding first-hand knowledge of the financial world to his HKUST studies after being selected as a student ambassador by the Hong Kong Monetary Authority (HKMA).

In his part-time ambassador's role, Stanley (Yr 2, Logistics Management and General Business Management) is working with the Authority's information center helping with guided tours, seminars and other public education programs. The HKMA information center, comprising an exhibition area and a library, is located in Two International Finance Centre in Central.

The annual student ambassador program gives undergraduates the opportunity to learn more about the work of the Authority and related financial issues and also to gain experience of organizing large-scale events. It provides initial training.

The program, which runs over nine months from October, is open to non-final year university students in Hong Kong. Ambassadors need to be fluent in Cantonese, Putonghua and English, and to demonstrate strong interpersonal and communication skills. For 2006-07, nine students were chosen as ambassadors.



Stanley Kwok (right), Yr 2 T&M, together with Hong Kong Monetary Authority Chief Executive Joseph Yam and a fellow student ambassador.



Civil Engineering undergraduates Sung Yee-Ling and Chan Tik-Pan have been awarded Chun Wo Foundation Scholarships for 2006-07. They received the cheque from Chun Wo Holdings Ltd executives on 26 March 2007. From left to right: Mr Derrick Pang, Prof Moe Cheung, Head of Civil Engineering, Sung Yee-Ling, Chan Tik-Pan, Mr Kelvin To, Mr Alan Li and Mr Wilfred Chau. The Chun Wo Foundation has been sponsoring civil engineering scholarships at HKUST since 2004.

PhD students Anatoli Murauski and Xihua Li under the supervision of Prof Vladimir Chigrinov, Electronic and Computer Engineering, received the Outstanding Poster Presentation Award at the 13th International Display Workshop in Japan. The annual conference is the largest display conference in Japan.

Postgraduate students Tong Shan, Electronic and Computer Engineering and Bingsheng He, Computer Science and Engineering, have been awarded 2007-08 IBM PhD Fellowships. The annual, world-wide competitive program recognizes and supports outstanding doctoral candidates in various academic fields.

PhD candidates Michael Sze Fan-Fu, Chemical Engineering, and Zhou Jiantao, Electronic and Computer Engineering, have received Fulbright Hong Kong Dissertation Research Program Awards, which will enable them to carry out some of their dissertation research at American universities.

Civil Engineering postgraduate students Tse Man-Kit and Li Jinhui have both received 2005-06 AGS awards from the Association of Geotechnical and Geoenvironmental Specialists (Hong Kong).

Third-year student Tse Yin-Man, Civil Engineering, won the best Final Year Paper Award 2005-2006 from the American Society of Civil Engineers (Hong Kong Section).

Computer Science and Engineering PhD student Wu Tai-Pang was awarded a 2006 Microsoft Fellowship. The fellowship program supports outstanding students from top universities in the Asia-Pacific region and opens up opportunities for internships at Microsoft Research Asia in Beijing.

PhD student Yuet-Wing Li, Electronic and Computer Engineering, will receive the Outstanding Student Paper Award at the Society for Information Display (SID) Symposium 2007 in Long Beach, California in May 2007.

Doctoral candidate Liu Lilin, Mechanical Engineering, won the first prize in the Student Paper Contest at the 8th International Conference on Electronic Materials and Packaging (EMAP2006) in Hong Kong.

PhD student Ma Peng-Cheng, Mechanical Engineering, received the Gold Award in the Best Student Paper Competition at the 5th Asian Australasian Conference on Composite Materials for his paper "Functionalization of Multi-Walled Carbon Nanotubes Using Silane".



## SENG Students' Research Skills Recognized



Students from the School of Engineering have won two of the three top awards in the annual President's Cup, a University-wide contest organized by HKUST to encourage students to pursue research and enhance their presentation skills.

Suen Po-Chi and Chan Hiu-Tik, Civil Engineering, took the Gold Award for their innovative design project on coupling beam performance in tall building structures.

The project employed steel fibers in coupling beams to solve the shear strength bottleneck in conventional concrete materials. The innovative approach would significantly improve shear resistance of reinforced concrete structures simply and cost-effectively.

Lee Chi-Yan, Cheng Ka-Fai and Clement Ng Chu-Fung, Electronic and Computer Engineering, received the Silver Award for research utilizing Surface Plasmon Resonance technology to perform large-area real-time parallel processing for bio-sensing applications.

The overall winner was Ma Man-Lung, a Yr 3 Chemistry major who developed a novel compound of molecular hydrogels to assist the growth of cells and speed up the healing of wounds.

## 'Green Bus' Offers Intelligent Route to Future



An enterprising, environmentally friendly "Green Bus" project has brought three final-year undergraduates from the School of Engineering an eYouth Certificate of Merit in the first Hong Kong Information and Communication Technology (ICT) Awards.

"Green Bus", designed by Edward Lok Cheong-Kin, Cloud Chan Shu-Wing and Eric Kong Chi-Kin, Computer Science and Engineering, offers a novel way to enhance the reliability and predictability of public bus services by direct monitoring of a vehicle's location, load and efficiency. This, in turn, would allow up-to-date schedule information to be made available to passengers and help bus companies to optimize their bus routes and frequency of vehicles. It could also enable the vehicle to monitor ambient conditions and adjust its internal lighting and temperature accordingly.

The intelligent system uses eBoxll and WiFi through which a

large amount of data can be gathered from the vehicle in real time, analyzed and transmitted to the bus company's headquarters for management action. "The biggest challenge was to set up the 'operating system' and customize the eBoxll driver and WiFi system," Eric said.

The ICT Awards aim to build awareness and recognition, locally and internationally, of the achievements of Hong Kong ICT professionals and organizations and help to inspire the next generation of solution-providers. In the eYouth section, awards are presented to the most innovative ICT software and/or hardware projects from full-time post-secondary students. The presentation ceremony was held in November.

Postgraduate Zhu Jinhao, Computer Science and Engineering, was another HKUST eYouth winner. He received a Certificate of Merit for his "Soul Envoy" project, which features an interactive and powerful physics-based 3D game engine. His project was also presented at ITU Telecom World 2006 held in Hong Kong in December.



## Life as a Microsoft Intern in Germany

It is all go for Jonathan Cheung Chin-Fai, a Yr 3 Dual Degree Program in Technology and Management (T&M) student who is currently hard at work as an intern at Microsoft's regional office in Munich, Germany.

As Microsoft's global/regional enterprise and partner marketing intern, Jonathan is assisting the director of Microsoft EMEA (Europe, Middle East and Africa) Enterprise and Partner Group to deliver marketing strategies to drive enterprise revenue growth across 30 European countries. "I am helping the regional manager

in managing enterprise partners/clients such as HP, SAP, Accenture, Daimler Chrysler, and BMW, among others," he said.

To secure the highly competitive place, Jonathan (Dual Degree in Computer Science and General Business Management) had to go through three rounds of interviews and compete against talented applicants from numerous different countries. He took up his nine-month internship at the end of November and has been learning German since he moved to Munich.

Jonathan, now on study leave from HKUST, said his work at Microsoft has been giving him fresh insights into T&M. "I am learning one of the most important T&M lessons of my life: what technology and management actually means in the business world and how a mix of technology and management can change the world."



## Early Work Experience Proves **Just the Job**

Taking one year out for an internship was not an easy decision for Patrick Kwan Kwok-To, Yr 2, Electronic and Computer Engineering. However, despite having to delay his graduation, calm his family's worries and leave his university friends, he was sure such work experience would enhance his future job prospects. "I think practical experience is essential for engineers," he explained.

Currently a Design Engineering Trainee in Solomon Systech Limited (SSL), a leading semiconductor company providing integrated circuit products for display applications, Patrick is extremely happy with his



decision. He has spent 9 months in the Physical Layout Team and the Product Engineering Department where he had added a completely new learning experience to his academic studies.

At first he was shy about asking questions for fear of disturbing his colleagues. However, he gradually realized his colleagues were ready to help and he now enjoys discussing work issues with co-workers and learning from their hands-on circuit analysis experience. Supervisors and colleagues also offer feedback on his work and let him study their designs.

Patrick said that performing in a real work setting has helped him realize his strengths and weaknesses.

"When I return to HKUST for my final year in a few months, I will be able to make the best use of the study time I have left to boost my knowledge and skills."



## Ready to Make a Difference



Chi-On Chui graduated from HKUST with a first class Bachelor of Engineering in Electronic Engineering in 1999 and the HKUST Academic Achievement Medal. He has since continued his outstanding success story with a Master of Science and PhD at Stanford

and employment at Intel in California. Now working as an Assistant Professor in Electrical Engineering at UCLA, recently selected for the first edition of *Who's Who of Emerging Leaders*, and already named in two editions of *Who's Who in America*, Chi-On explains what has helped him move ahead.

### *What created your initial interest in engineering?*

It all began in Secondary 3 when physics, chemistry, and biology started to be taught as individual subjects. The teachers at Tuen Mun Government Secondary School where I studied were proficient and dedicated and the hands-on classroom experiments they designed were particularly inspiring. More importantly, they made me realize the key to success in science and engineering is all about understanding not memorization.

### *Why did you choose HKUST?*

It stemmed from SENG's Engineering Summer Camp in 1995 - one of the best events of my life. I was particularly impressed with the faculty presentations and talks I had with professors. I still clearly remember a chat that I and some fellow "campers" had with then Dean Ping Ko, a world-renowned Hong Kong academic who simply sat down on the lecture theater stairs to share his experience, enthusiasm and future vision with us one night. This motivated me to pursue a career like his, to believe many things are possible if you work hard for them, and to make HKUST my first choice.

### *Did HKUST meet your expectations?*

Yes. First and foremost was the similarity between HKUST and many US universities in terms of its teaching style. In addition, the close connection between the HKUST faculty and their US counterparts benefited my graduate studies substantially. HKUST professors were very willing to write recommendation letters and even to help me "lobby" top-tier US universities for graduate research assistantships! The current Dean Philip Chan was especially supportive.

### *What motivates your research work?*

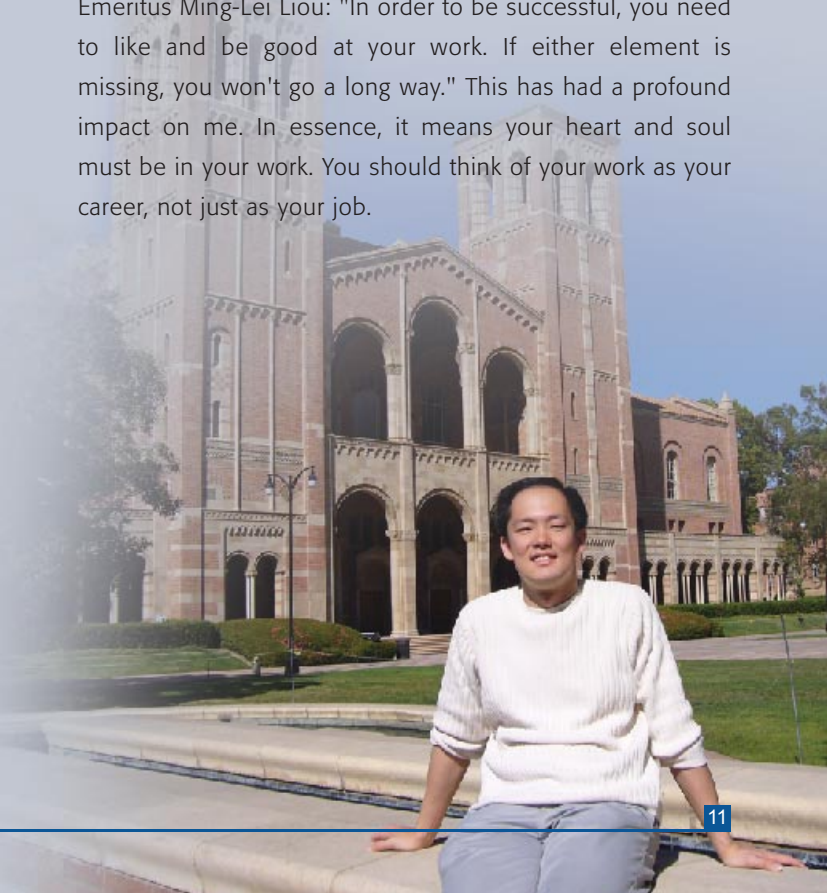
I am a person who likes to identify and solve problems. I really enjoy the process of putting things together and the sense of accomplishment at the end. I also find it exciting to see how my research sparks new, international scientific interest.

### *Tell us about your achievements*

I was the first in the field to demonstrate significant carrier mobility enhancement in germanium transistors with a sub-nanometer gate insulator stack. This contribution overcame a four-decade technology bottleneck and instantly generated international interest within both the academic and industrial communities. At UCLA, I will conduct research on heterostructure semiconductor physics and technology involving the application of novel device concepts and fabrication techniques to explore the quantum-mechanical and strain effects at the nanoscale. I am also looking forward to exploring new research areas. I hope that there may be graduate students from HKUST or collaborations with the University that can assist in this.

### *How have you become so successful?*

I've still a long way to go before I can be considered successful. However, I would like to share one secret that I learnt from Electronic and Computer Engineering Professor Emeritus Ming-Lei Liou: "In order to be successful, you need to like and be good at your work. If either element is missing, you won't go a long way." This has had a profound impact on me. In essence, it means your heart and soul must be in your work. You should think of your work as your career, not just as your job.



## Bridge design contest inspires student engineers

Four closely matched teams from St Catharine's School for Girls, Kowloon True Light Middle School, Po Leung Kuk Wu Chung College and Baptist Lui Ming Choi Secondary School provided an exciting finale to this year's Secondary School Bridge Design Competition, organized by the Civil Engineering Students' Society, HKUSTSU and the Civil Engineering Department.

The student teams, selected from 12 original entrants, each spent over two months in their bid to

design the most effective cable-stayed bridge. In the finals, held in January, the four model bridges were subjected to load-carrying tests to test their strength and judged on their appearance. Each team also had to give a five-minute presentation explaining their design concept.

Baptist Lui Ming Choi was eventually named the overall winner. The contest was sponsored by Alris Technology Ltd.



## SENG Ambassadors to Visit Schools



The 2nd SENG Student Ambassador Program got underway on 14 April with a training workshop conducted by Prof Edmond Ko, Senior Advisor to the Dean of Engineering, and an inauguration lunch. A total of 29 student ambassadors have been nominated to visit secondary schools and assist recruitment over the year.

Workshop topics included knowledge of HKUST and business etiquette and professionalism. There was also an experience-sharing session in which three inaugural SENG ambassadors explained how working on the program had helped to build their own communication skills and confidence as well as give school students more understanding of engineering and university life.

Dean Philip Chan said the first program had been a great success with student ambassadors proving a valuable way to widen interest in engineering among young people.



## Calendar of Events

### April to August, 2007

#### Information Technology Enrichment Project Course for Gifted Students

Co-organized by the Computer Science and Engineering Department and the Education and Manpower Bureau

### May 4-5, 2007

#### Hong Kong RoboCupJunior 2007

Organized by the Computer Science and Engineering Department, the Hong Kong Federation of Education Workers and Electronic Technology Publishing Group

### June 4-8, 2007

#### 9th Asian Symposium on Visualization

Organized by the Mechanical Engineering Department

### July 16-21 and 23-28, 2007

#### IT Youth Summer Camp

Run by the Computer Science and Engineering Department together with the Hong Kong Federation of Education Workers

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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