

School of Engineering Goes LIVE

The Engineering School is accelerating Hong Kong's transition into a knowledge-based society with the introduction of its enterprising *LIVE* philosophy – which stands for **Leadership, Innovation, Vision** and **Entrepreneurship**.

LIVE learning enables our students to gain both the first-rate engineering training to excel in a company, and the know-how and personal skills to create careers for themselves and others by setting up their own businesses. The *LIVE* philosophy helps foster the creative engineering and technology talent required to drive the economy forward into better days.

Speaking recently at the opening of the School of Engineering Summer Camp for Honor Students, Dean of Engineering Kang L Wang explained the *LIVE* philosophy. "It means gaining broad-based knowledge, developing a dynamic outlook, being adaptable to changing circumstances, and having the vision to look ahead," he said. "To be a technology leader, you need to see better than others."

The School is already well underway with its *LIVE* philosophy. At the second session of the three-part HKUST Forum on the Future Development of Hong Kong in June, students on the School's High-Tech Entrepreneur Program (HTEP) demonstrated this with a wide-ranging series of presentations on how to turn innovative engineering ideas into practical ventures. The HTEP was introduced in 2001 to help undergraduates explore issues relevant to starting businesses.



Dr John Cho-chak Chan, Managing Director of the Kowloon Motor Bus Company (1933) Ltd and HKUST Council Chairman, speaks at the second Forum session focused on innovation and entrepreneurship in Hong Kong.

Speakers at the session included chairman and CEO of Perception Digital Prof Jack Lau and chairman of Googol Technology Prof Zexiang Li. Both these companies provided examples of how HKUST start-ups, headed by School of Engineering faculty members, are successfully taking hi-tech ideas to the market place.

At all three Forum sessions, participants — including representatives from academia, think-tanks, business and government organizations — emphasized the need for creativity and innovation for Hong Kong's future success, thus reinforcing the importance of *LIVE*.

Chairperson of the Engineering Students' Union Ping Tong Au also welcomed the move. "Engineers definitely need this kind of outlook these days," he said.

Ping Tong Au, Chairperson of the Engineering Students' Union, is enhancing his **Leadership** skills by organizing student activities.



The annual **Innovative design competition** at the Engineering Summer Camp.

Students need **Vision** to lead the way forward, according to Dean of Engineering Prof Kang L Wang.



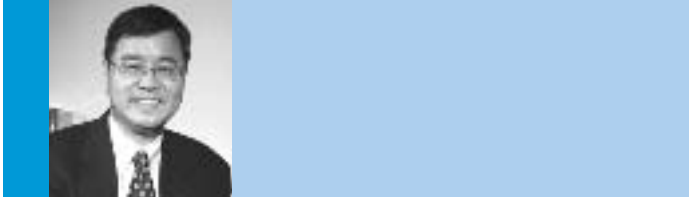
Prof Yuk Shee Chan, Vice-President for Academic Affairs (far right), presents a plaque to the winners of the **Entrepreneurship Competition** at the second Forum session.



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Message from the Dean



With our *LIVE* dynamic, quest for excellence and dedicated management team, the School of Engineering is taking on the future.

With warmest regards,

Kang L Wang
Dean of Engineering

Globalization and the pace of technological change have increased rapidly, requiring fresh directions in both the education of the next generation of engineers and research of innovative technologies.

The School of Engineering has been quick to adapt to these changes with its *LIVE* philosophy – Leadership, Innovation, Vision, and Entrepreneurship. Building on our solid foundation of academic training, *LIVE* inspires our students and graduates to become “frontier leaders”, front-runners who will not only think of innovative ideas but also develop them into pioneering industries for Hong Kong and the global society.

The School's management sets the pace for *LIVE* with our new team members: Associate Deans of Engineering Prof Helen Shen and Prof Chi Ming Chan, Head of Chemical Engineering Prof Ka Ming Ng, and Head of Computer Science Prof Lionel Ni.

Many former administrators have contributed to building up the School. I would like to thank Prof Ting Chuen Pong, former Associate Dean of Engineering and now Associate Vice-President for Academic Affairs, Prof Po Lock Yue, former Head of Chemical Engineering, Prof Roland Chin, former Head of Computer Science, and Prof Derick Wood, Acting Head of Computer Science, for their service over the past years.



(From left in front row) Associate Dean Prof Chi Ming Chan, Dean of Engineering Prof Kang L Wang, Associate Dean and Acting Head of Civil Engineering Prof Yeou-Koung Tung and Associate Dean Prof Helen Shen.

(From left in back row) Head of Computer Science Prof Lionel Ni, Head of Mechanical Engineering Prof Tongxi Yu, Head of Electrical and Electronic Engineering Prof Philip Chan, Head of Chemical Engineering Prof Ka Ming Ng and Head of Industrial Engineering and Engineering Management Prof Chung-Yee Lee.

New Faces for School Management Team

A warm welcome to the four distinguished professors who joined the School of Engineering's management team this summer.



Prof Helen Shen
Associate Dean of Engineering (Development)

Prof Shen's responsibilities include coordination of School activities related to development of continuing and professional education, industrial liaison, alumni relationship, and fundraising.

She is Director of the Master of Technology Management programs and was Associate Dean of Engineering (Undergraduate Study) from 1996-1999. Prof Shen received her PhD from the University of Waterloo.



Prof Ka Ming Ng
Head of Department of Chemical Engineering

Prof Ng is an expert in process systems synthesis with applications in the manufacture of organics, polymers, biochemicals, pharmaceuticals and various consumer products. He joined HKUST from the University of Massachusetts in August 2000, and has since established the Consortium of Chemical Products and Processes. Prof Ng received his PhD in chemical engineering from the University of Houston.



Prof Chi Ming Chan
Associate Dean of Engineering (Undergraduate Study)

Prof Chan will oversee undergraduate studies, exchange programs, accreditation, and outreach matters. He has led the Engineering Appointments and Substantiation Committee since 2000 and served as the Director of the Advanced Engineering Materials Facility from 1997-2000. Prof Chan received his PhD from California Institute of Technology.



Prof Lionel Ni
Head of Department of Computer Science

Prof Ni specializes in computer networks, parallel processing and distributing computing. He was previously Professor of Computer Science and Engineering at Michigan State University, where he had worked since 1981. He has been editor of several prestigious international computing journals and program director of the US National Science Foundation Microelectronic Systems Architecture Program. Prof Ni received his PhD in electrical engineering from Purdue University and is a fellow of IEEE.



World-Class Micro-Fabrication Opportunities

The Institute of Integrated Microsystems (I²MS) continues to enhance HKUST's strength in micro-science and micro and nano technologies by facilitating multidisciplinary projects, promoting interaction with local industries and collaborating with institutions on the Chinese Mainland and overseas.

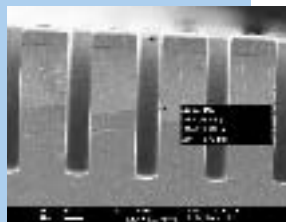
In the past two years, I²MS has built up strong ties with the State Key Laboratory of Nonlinear Mechanics at the Chinese Academy of Sciences' Institute of Mechanics. The two institutes have established a Joint Lab on Microsystems and embarked on academic exchanges and research collaborations.

With financial support from the University, I²MS has acquired top-class equipment, including a STS Deep RIE Etcher. The equipment is unique in Hong Kong and is capable of deep trench etching on silicon wafers at 500 microns. Traditional machines only work in the several-micron range.

I²MS has also funded 10 research projects for developing micro devices and relevant technology, and hopes to attract government funding or industrial support for this work in the near future.



The STS Deep RIE Etcher enables fabrication of high-aspect-ratio MEMS structures with excellent profile control and uniformity, according to Prof. Yi-Kuen Lee of Mechanical Engineering (above), who is conducting a research project funded by I²MS.



Scanning electron micrograph (SEM) for the array of the 222-micron deep trenches on a silicon wafer etched by I²MS' STS Deep RIE machine.

Distinguished Contribution to Unsaturated Soil Mechanics



(From left) Prof Delwyn Fredlund, Prof J.F.T. Juca, Organizing Chairman of the Third International Conference on Unsaturated Soils, and Prof Milton Vargas, the "Brazilian grandfather" of soil mechanics.

Prof Delwyn G Fredlund, Adjunct Professor of Civil Engineering, was honored with an award from the Brazilian Society for Geotechnical Engineering at the Third International Conference on Unsaturated Soils in Brazil held from March 10-13, 2002.

Prof Fredlund, the conference's opening keynote speaker, was recognized for his contributions to the technical, scientific and educational development of unsaturated soil mechanics around the world. The award was presented by Prof Milton Vargas, the "Brazilian grandfather" of soil mechanics.

Prof Fredlund has been Chairman of the Technical Committee on Unsaturated Soils (TC6) of the International Society of Soil Mechanics and Geotechnical Engineering for the past 12 years.

Research and Development

HKUST Joins Hand with WebEx to Strengthen Hong Kong's IT Capabilities

HKUST and the San Jose-based WebEx Communications, Inc. (WebEx), signed an agreement of cooperation in developing education, training, and commercialization potential in information technology.

The cooperation is designed to strengthen the overall IT capability of Hong Kong, and help create a leading position for the territory in IT in the Chinese Mainland market and the region.

A Nasdaq-listed company founded by Mr Min Zhu and Mr Subrah S Iyar, WebEx is the world leader in real-time communications infrastructure for business meetings on the Web.

Speaking at the signing ceremony on May 27, 2002, Prof Paul Ching-Wu Chu, President of HKUST, described the cooperation with WebEx as an exciting development in

HKUST's continuous efforts to form partnerships with multinational technology companies.

Mr Min Zhu, President and Chief Technical Officer of WebEx, said: "WebEx will leverage on the research outputs and business development opportunities at HKUST, and make use of such opportunities to position Hong Kong as the potential hub for WebEx's future development in the Chinese Mainland and the region."



Mr Min Zhu, President and CTO of WebEx (left) and Prof Paul Chu, President of HKUST at the signing ceremony.

Customization Technology to Enhance Competitiveness of Hong Kong Industry

HKUST is outfitting local industries for the future with two innovative projects to push forward customization in the garment and shoe industries respectively.

Value-added garment business

As manufacturers experience smaller and more frequent orders, with customers demanding special requirements, HKUST's Advanced Manufacturing Institute (AMI) is leading the way in the field of Mass Customization, seen internationally as a key technology for industry competitiveness.

Recently, the University was funded to advance mass customization technology in the garment industry in a project jointly sponsored by the Government's Innovation and Technology Fund and Esquel Enterprises Ltd. AMI will establish a men's shirt business for Esquel that can fulfill individual requirements at a cost comparable to mass production.

"This project will not only revitalize Hong Kong's apparel industry with value-added services and efficiency, but also offer a valuable opportunity to advance mass customization technology in the industry," said Prof Mitchell Tseng, Director of AMI.

The University has developed theories in mass customization and championed relevant technologies in various industries, including watch and electronic products. In 2001, it also initiated and successfully hosted the first World Congress on Mass Customization and Personalization with delegates from 17 countries.

Speeding up shoe manufacturing

Meanwhile, Industrial Engineering and Engineering Management Department faculty has successfully developed a low-cost 3D CAD/CAM system for shoe moulds, which can reduce the overall lead time for making sample shoes from 15 to five or six days.

The software, known as Sole CAD/CAM, was built in collaboration with Intelligent CAD/CAM Technology Ltd and runs on top of the popular SolidWorks™ CAD system. The software is cost-effective even for small- to medium-sized enterprises.



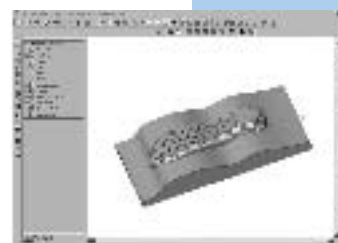
Prof Mitchell Tseng (sixth from right) and AMI's research team meet Esquel's Mr Michael Yee, Chief Information Officer and Chief Supply Chain Services Officer (seventh from right) and his co-workers at Esquel's production plant in Gaoming, Guangzhou.

"The system can enhance the competitiveness of the local footwear industry by enabling a quick response and production of high quality samples," said Prof Ajay Joneja, who worked with Prof Mitchell Tseng and Prof Ravindra Goonetilleke on the project.

The project was supported through the Innovation and Technology Fund, and developed with local shoe manufacturer PTG Ltd.



Prof Ajay Joneja (second from right) and his students show samples produced by Sole CAD/CAM.



Sole CAD/CAM can convert customers' designs into a 3D CAD model of the shoe outsole and automatically generate instructions to machine sample moulds.

Early Admission Students Start their Studies

It has been a summer of hard work, as well as fun, for HKUST's first group of Early Admission Program (EAP) students who undertook a six-week, broad-based intensive preparation program in July and August to help them make the leap from Form Six to undergraduate life.

Twenty-three EAP students join the School of Engineering this autumn, the highest number in any school. A total of 56 were admitted to the University.

Sarah Ka Ying Cheng and Richard Yuk Ming Li, both 17, are two of four EAP students to join the Computer Engineering program. "Although time has been very tight on the summer course, staying on campus has created a very good atmosphere," said Sarah.

Both students chose HKUST after taking a computing course through the Cyber University program. This community-wide project, launched in 2001, was set up by Associate Vice-President for Academic Affairs and former Associate Dean of Engineering Prof Ting Chuen Pong to enable secondary school students to undertake university-level courses for credit.

Other attractions for Sarah and Richard were HKUST's up-to-the-minute facilities, equipment and teaching, the strong exchange program offered by the School of Engineering, and a guaranteed hall of residence place for the first year. Richard said: "I think HKUST is competitive with universities overseas. Maybe I will go abroad for my postgraduate study to gain new experience, but I wanted to take my Bachelor's here."



During the intensive summer program, EAP students gained international insight from the lecture series on "How to be successful in the 21st century" by Mr Ronnie Chan, Chairman of the Hang Lung Group and HKUST Council member (third from left in front row).

To be accepted at HKUST via EAP, local students had to gain five As or more at HKCEE and undergo a five-hour interview. "I haven't seen problems for students who start early in the US and Canada. In some countries, it is common that students don't all follow the same path," said Prof Pong, who helped kick-start the program.

Prof Mounir Hamdi, Director of the Computer Engineering program, is mentoring all the EAP students accepted for his program. "I shall be here if they need to seek advice, and to make sure the environment is right," he said. "I expect they will do well!"



A happy dinner gathering with faculty mentors.



Early admission program students Sarah Cheng (left) and Richard Li got to know HKUST through the Cyber University program.



"Hall life is fun," Sarah said.



(From left) Dr Chris Wong, Director of Hong Kong Polytechnic University's Industrial Center, Chi Chuen Lo, and Mr Joseph Leung, Executive Vice-President, Group Human Resources, IDT Limited.

Outstanding Student Wins Industrial Scholarship

Chi Chuen Lo, a final-year undergraduate student of Mechanical Engineering, was awarded the Integrated Display Technology (IDT) Limited Scholarship by the Industrial Center (IC) of the Hong Kong Polytechnic University.

The IDT scholarship supports the well being of the local economy by offering a generous scholarship to three outstanding final-year undergraduate students in Hong Kong each year. The award is based on students' performance in industrial training, academic merits, creativity and leadership potential.

Turning Top Postgraduates into First-Rate Faculty

Inspiring supervisors, great research ideas and the desire to share their knowledge with other students are just some of the factors that turn School of Engineering postgraduates into high-flying young professors — and draw many back to work at HKUST.



(From left) Alumni James Kwok, Albert Chung and Chi Keung Tang are now Assistant Professors of Computer Science at their alma mater — HKUST.



Prof Chung shares his excitement about winning the BMVA Sullivan Thesis Award.



Prof Helen Shen, Associate Dean of Engineering and Associate Professor of Computer Science (right) was Prof Chung's MPhil supervisor.

Prof Albert Chung, Assistant Professor in the Department of Computer Science, first arrived at HKUST in 1996 as an MPhil student. "At HKUST, I gained a great deal from the interaction with professors and classmates, and learnt how important teamwork can be in research."

Prof Chung went on to gain a PhD from Oxford University in 2001 and recently won the 2002 British Machine Vision Association (BMVA) Sullivan Thesis Award for the best doctoral thesis submitted to a UK university in the field of computer or natural vision. Last year, he rejoined HKUST as a faculty member.

His MPhil supervisor Prof Helen Shen, now Associate Dean of Engineering, said: "Although Prof Chung had many opportunities to continue his work overseas — at Oxford University and MIT — he chose to return as he wanted to contribute to Hong Kong education and research. Prof Chung really has a heart for Hong Kong."

Alumni-turned-faculty in Singapore

For Prof Ivan Siu-Kui Au, HKUST's BEng (1995) and MPhil (1997) graduate in Civil Engineering, a PhD graduate of California Institute of Technology and now Assistant Professor at Singapore's Nanyang Technological University, it was research work as an undergraduate that first inspired him towards research. "My MPhil supervisor Prof Lambros Katafygiotis was also superb," said Prof Au. "He was very smart as well as hard-working and expected the same from his students. But he was also always concerned about them. We are still in touch."



Other alumni-turned-faculty include Prof Jack Lau, HKUST's first PhD graduate in 1994 and now Associate Professor in the Department of Electrical and Electronic Engineering; Prof James Kwok who gained a PhD at HKUST in 1996 and joined the School

of Engineering as Assistant Professor of Computer Science in 2000; and Prof Chi Keung Tang, an MPhil graduate in Computer Science of HKUST in 1994, a PhD graduate of University of Southern California and now HKUST's Assistant Professor of Computer Science since 2000.

Prof Tang said: "The most valuable lesson I learnt at HKUST was how to do quality research. You can't just sit around expecting someone to feed you." And in today's competitive job market, learning how to learn and gaining the desire to excel are messages he intends his own students to receive.

Hello My Friend!



Judy Hang Fa Tong

BEng IEEM 1997, MPhil IEEM 1999

After eight-year's hard work, I am pleased to share with you the fact that I won the bronze medal in the International Judo Tournament held in Vietnam in August. I am now Senior Business Analyst in the Information System Department of an international container transportation company. I would like to say hello to all my classmates and old friends in the IEEM department and Hall 3 "Glacier".



Wing Cheong Chan

BEng COMP 2001

I am now doing an MSc in Computer Science at Oxford University. The workload was quite heavy for the first six months. I managed to catch up quicker than my classmates thanks to HKUST's training. I very much enjoy taking short trips to Europe. It's easy and costs little!

Top Engineering Graduates Honored

Congratulations to the following 13 Engineering graduates of 2002 on winning HKUST Academic Achievement Awards. These students will be honored with the Academic Achievement Medal in the 10th Congregation to be held on November 6.

The Academic Achievement Medal is awarded to graduates with outstanding academic performance in the year of their graduation, who should be graduating from a bachelor's degree program, have achieved a final cumulative grade average of at least 10.75 (upper A grade) on at least 60 (for three-year programs) or 80 (for four-year programs) HKUST credits, and have no record of course failures during the study at HKUST.

Department of Chemical Engineering

- Ng, Nga Lee

Department of Computer Science

- Lee, Hon Sang
- Wong, Ka Wah
- Sun, Jimeng
- Yiu, Wai Pun

Computer Engineering Program

- Ho, Hon Pong
- Tsang, Kin Ting
- Tam, King Ho

Department of Electrical and Electronic Engineering

- Cao, Jian
- Shi, Ling
- Feng, Jing
- Wong, Chi Wah
- Lam, Yiu Man

Continuing and Professional Education

Networking East and West

The School of Engineering's Continuing and Professional Executive Program is expanding participants' networking opportunities east and west by forging fresh links with internationally renowned universities.

Executive move

The School recently became the first to gain approval by the Chinese State Council's Ministry of Education and Academic Degree Commission to run and award degrees for a Master of Technology Management (MTM) program in China. The new Executive Master of Technology Management program, which commenced in September 2002, is being offered in partnership with Shanghai Jiao Tong University (SJTU) and will offer students on the Shanghai program and the Hong Kong 2002-2003 MTM the chance to get to know each other during a joint module in Hong Kong in March 2003.

Strategic alliance

In February, opportunities for student and faculty exchanges with the United States were increased when representatives of the School of Engineering and the University of Pennsylvania (Penn) School of Engineering and Applied Science signed a Statement of Strategic Alliance at HKUST.

In the wake of this, a study trip to the US has been planned for students on the 2002-2003 MTM program in October, with participants enrolling in a credit-bearing course on "Emerging Technologies" taught by faculty from Penn's School of Engineering and Wharton School. The trip includes visits to companies in the Philadelphia area hosted by the Penn EMTM Program Office.

Master plan

Meanwhile, the School is also extending studies on the Chinese Mainland by offering a Master of Science in IC Design Engineering program in major cities. China has stated its intention to build a strong integrated circuit industry and it is estimated the country will need between 100,000 to 300,000 IC design engineers in the next decade. The program, offered by the Department of Electrical and Electronic Engineering, is due to commence in 2003. Further details about the program can be found on the program web site at <http://www.seng.ust.hk/msc/icde>.



(From left) Prof Hongmin Chen, SJTU's MTM Program Director, Prof Weigang Zhang, Vice-Dean of SJTU's Graduate School, Prof Kang L Wang, HKUST's Dean of Engineering, and Prof Helen Shen, HKUST's MTM Program Director, at the MTM information session in Shanghai.



(Seated from third left to right) Prof Lyle Ungar, Penn's EMTM Program Director, Prof Kang L Wang, HKUST's Dean of Engineering, Prof Yuk Shee Chan, HKUST's Vice-President for Academic Affairs and Prof Helen Shen, HKUST's MTM Program Director at the signing ceremony.



Prof Philip Chan, Director of the MSc in IC Design Engineering announces the new program at an IC Design Engineering forum at the Shenzhen-Hong Kong Industrial, Educational and Research Center on August 22.

Campus News

Rockets Fuel Honor Students' Interest in Engineering

A rocket design competition at this year's Engineering Summer Camp for Honor Students proved a soaring success with 48 projectiles taking to the air. The multi-disciplinary project called on campers to utilize knowledge from a range of engineering disciplines and was the highlight of the camp, held from July 17-21.

Groups of students were asked to design an electronic music countdown system and a rocket, and integrate them with a chemically propelled launcher. Prizes were awarded in categories including Best Aesthetic and Creative Design, Best Music Countdown System, Maximum Launching Distance, and Greatest Shooting Accuracy.

At the camp's closing ceremony, HKUST President Prof Paul Ching-Wu Chu pointed out that the first rocket in human history was made by the Chinese, giving extra meaning to the competition.

The camp, the eighth hosted by the School of Engineering, aims to develop students' interest in engineering and draw more female students to the profession. Other activities included orientation talks by faculty members, laboratory sessions and social events.



(From left in front row) Prof Kang L Wang, Dean of Engineering, Prof Paul Chu, President, Prof Chi Ming Chan, Associate Dean of Engineering, and Prof Ting Chuen Pong, Associate Vice-President for Academic Affairs, enjoy a memorable moment with the campers.



A chemically propelled rocket launcher with electronic music countdown system.



"Our rockets are the best," said the camp participants.

Revamp for HKUST Web Site

The HKUST web site at <http://www.ust.hk> was re-launched in September, after a redesign to make it even more user-friendly and easier to locate information.



Teaching Excellence Appreciation Award

Five Engineering faculty members were presented Teaching Excellence Appreciation Awards in the Engineering School Board Meeting on April 22. The Fall 2001 awardees were Prof Chun Man Chan of Civil Engineering, Prof David Mount of Computer Science, Prof Ross Murch of Electrical and Electronic Engineering, Prof Jiyin Liu of Industrial Engineering and Engineering Management and Prof Tianshou Zhao of Mechanical Engineering.

Calendar of Events

October JUST Walk - Every step counts



HKUST's first walkathon to raise funds for the new student hostel project will be held on October 20. Visit http://www.ust.hk/just_walk now for details. We need your strong support. Come and join JUST Walk with your family and friends and let's make this a memorable and successful event!

November 10th Congregation

The 10th Congregation will be held from November 6-8. Engineering degrees will be conferred on the first day of the Congregation. (Enquiry: 2358-6314)

February 2003 Civil Festival

The Civil Engineering Students' Society will host the annual Civil Festival in February 2003 with a series of enjoyable activities: exhibition, high table dinner, professional talk, and the camp's highlight "The 3rd Civil Structure Modeling Competition - Bridges" for secondary school students. (Enquiry: su_civil@stu.ust.hk)

All titles and dates are subject to revision.

In Focus is published biannually by the HKUST School of Engineering. Its purpose is to communicate the School's developments and activities of interest to members, alumni and friends of the School. Comments, suggestions and contributions are welcomed.

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Don't be the Missing Link ...

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

Stay connected and keep in touch!