香港中文大學
The Chinese University of Hong Kong

信息工程
Information Engineering
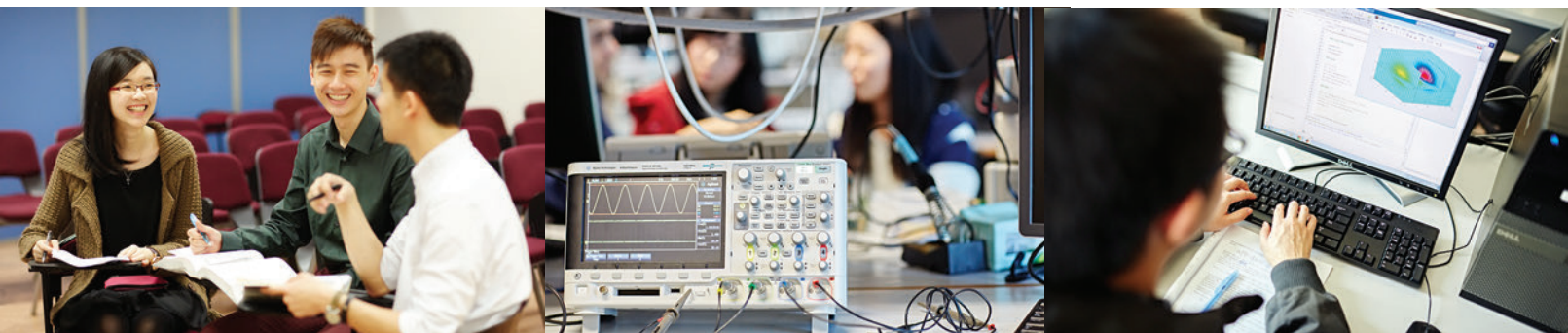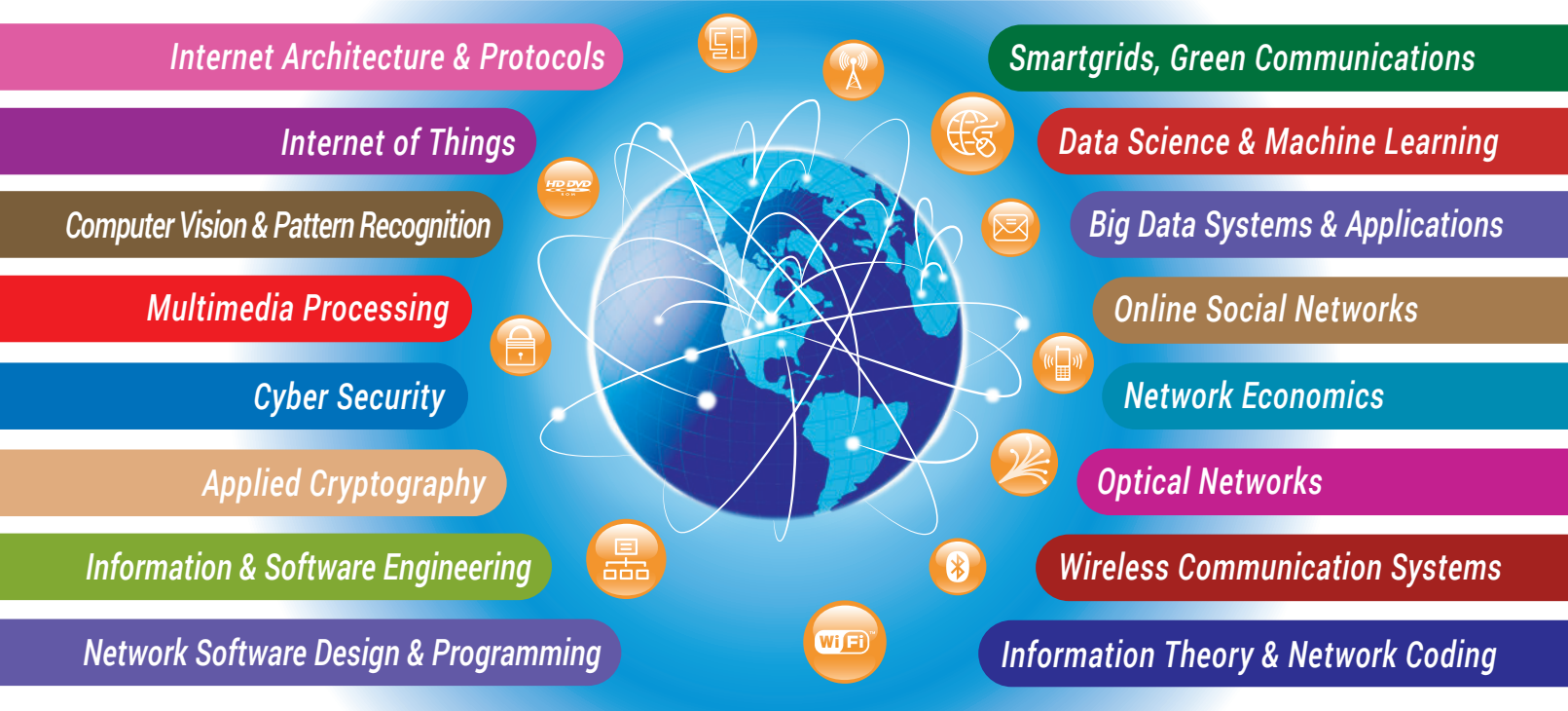
**Discover IE,
Discover Your Future!**

INFORMATION ENGINEERING

Principles, Technologies, Networks, and Applications

- Internet Architecture & Protocols
- Internet of Things
- Computer Vision & Pattern Recognition
- Multimedia Processing
- Cyber Security
- Applied Cryptography
- Information & Software Engineering
- Network Software Design & Programming

- Smartgrids, Green Communications
- Data Science & Machine Learning
- Big Data Systems & Applications
- Online Social Networks
- Network Economics
- Optical Networks
- Wireless Communication Systems
- Information Theory & Network Coding

Information

Data, Voice, Image, Video, Multimedia

- Transmission
- Networking
- Processing

Engineering

- **Understand the principles**
  (fundamental)
- **Solve problems**
  (scientific and systematic)
- **Create new technologies**
  (innovative)

To train engineering leaders who can **manage** and **create** new **information technologies** for all disciplines.

PROGRAMME

Programme Features

The mission of the Information Engineering Department is to nurture and educate engineering leaders of the Information World of today and tomorrow. We offer an all-round engineering education that focuses on:

* Sound engineering knowledge and creativity;
* Solid experience with innovative technologies;
* Good soft skills (communication, interpersonal, and business);
* Broad vision and exposure.

The Information Engineering Programme is accredited by the Hong Kong Institute of Engineers (HKIE).

Streams of Specialization

Students may choose to develop their engineering specialities in one or more of the following streams:

Stream	Topics
✳ Big Data -	Web-scale Information Analytics, Programming Big Data Systems, Internet of Things, Social Media and Human Information Interaction, Cloud Computing, Machine Learning, ...
✳ Internet Engineering -	Networking Protocols and Systems, Network Economics, Network Software Design and Programming, Mobile/Web Applications, Mobile Networking, Building Scalable Internet Services, ...
✳ Cyber Security -	Intro to Cyber Security, Applied Cryptography, Web Security & Programming, Secure Software Engineering, Digital Forensics, Security and Privacy in Cyber Systems, ...
✳ Communications -	Digital Communications, Signal Processing, Optical Communications, Wireless Communications, Broadband Switching Systems, Lightwave System Technologies, ...
✳ Enrichment -	Multimedia Coding and Processing, Stochastic Processes, Channel Coding and Modulation, Simulation and Statistical Analysis, Information Theory, Network Coding, Design & Analysis of Algorithms, ...

Internship, Work Study, Overseas Exchange

Students can acquire work experience by taking short-term or 7-15 month long paid internship in reputable companies in Hong Kong, or gain international exposure by going for a short term or year long overseas exchange. We offer overseas exchange scholarships to students with good academic results.

Pre-final year students can also participate in a Work Study Program on a voluntary basis. Each participant is required to spend about a year in a selected local company as a full-time employee and continue his/her final year of study after the internship.

Participating companies include HSBC, PCCW, SmartTone Telecommunications Ltd., MTR Corporation Ltd., CLP Power Hong Kong Ltd. and CLP Holdings Ltd., Hewlett-Packard (HP), Fujitsu PC Asia, IBM China/Hong Kong Ltd., Lenovo Group Ltd., Morgan Stanley, JP Morgan Chase, Thomson Reuters, The Hong Kong Jockey Club, Octopus Cards Ltd., Hong Kong Monetary Authority, and Office of the Government Chief Information Officer, etc.

Further Studies

The Information Engineering Department undertakes world-leading research and offers top quality Ph.D., M.Phil., M.Sc., and B.Eng programmes. Our graduates have been awarded full scholarships to enter Ph.D. programmes of top universities all over the world (e.g., MIT, UC Berkeley, Stanford, Caltech, UCLA, CMU, UIUC, Oxford and Cambridge, etc.)

Double-Degree Options

In collaboration with the Faculty of Business Administration, the Information Engineering Department is also offering the Double-Degree Programme in Information Engineering and Business Administration. Please refer to http://www3.erg.cuhk.edu.hk/erg/ergbba for detailed information about the double-degree option.

CURRICULUM

	Major Requirement including Faculty Package (75 units)		Wide Range of Elective Courses	
Year 4	Final Year Project I and Final Year Project II *plus major electives* *Specialized*		**Big Data**	Web-scale Information Analytics Programming Big Data Systems · Internet of Things Social Media & Human Info Interaction Image & Video Processing Machine Learning · Cloud Computing
Year 3	Microprocessor & Computer Systems, Computer Networks Information & Software Engineering Practice, Info Engineering Lab Microprocessor System Design Lab *plus major electives* *Professional*		**Internet Engineering**	Networking Protocols & Systems Network Economics Network Software Design & Programming Mobile Networking · Mobile/Web Applications Building Scalable Internet Services
Year 2	Data Structures, Signals & Systems, Engineering Practicum Basic Analog & Digital Circuits, Probability & Statistics for Engineers Complex Analysis & Differential Equations for Engineers Technology, Society & Engineering Practice Principles of Communications, Communications Lab *plus major electives* *Advanced*		**Cyber Security**	Intro to Cyber Security · Applied Cryptography Web Security & Programming · Digital Forensics Secure Software Engineering Security and Privacy in Cyber Systems
			Communications	Digital Communications · Signal Processing Optical communications · Wireless Communications Broadband Switching Systems Lightwave System Technologies
Year 1	**Faculty Package:** Intro to Engineering Design Problem Solving by Programming	**+** Engineering Physics Calculus for Engineers Linear Algebra & Vector Calculus Intro to Data Science *Fundamental*	**Enrichment**	Multimedia Coding & Processing Stochastic Processes · Channel Coding & Modulation Simulation and Statistical Analysis Information Theory · Network Coding Design & Analytics of Algorithms

Plus University Core Requirement, including English Language, Chinese Language, General Education, Physical Education & IT Training.

CAREER PROSPECT

Stage 3	**Leadership**	Chief Technology Officer	Chief Executive Officer	Entrepreneur
Stage 2	**Managerial**	Technology Expert	Project Manager	Business Consultant	Business Education Marketing Government Management Others
Stage 1	**Professional**	Project Engineers - hardware, software, networking System Engineers - systems, security, services Business Engineers - sales, marketing, product management Research / Training / Consulting	

Engineering Positions — *Non-Engineering Positions*

CONTACT US

Please refer to the brochure of the Faculty of Engineering or visit the website at http://www.erg.cuhk.edu.hk for admission details.

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Find us on

Our Professors

Our Professors are dedicated educators and world-class researchers who obtained their Ph.D. degrees from top universities like MIT, Berkeley, Harvard, Columbia, Stanford, as well as CUHK. Many of them have extensive industrial experience with leading institutions world-wide before joining the department. They are authors of seminal and award-winning publications, holding key patents for innovations in various fields. They maintain strong ties with the local industries and actively contribute to the international research communities. Most importantly, our professors love to interact with students and inspire them to become top-notch researchers, engineers, and leaders.
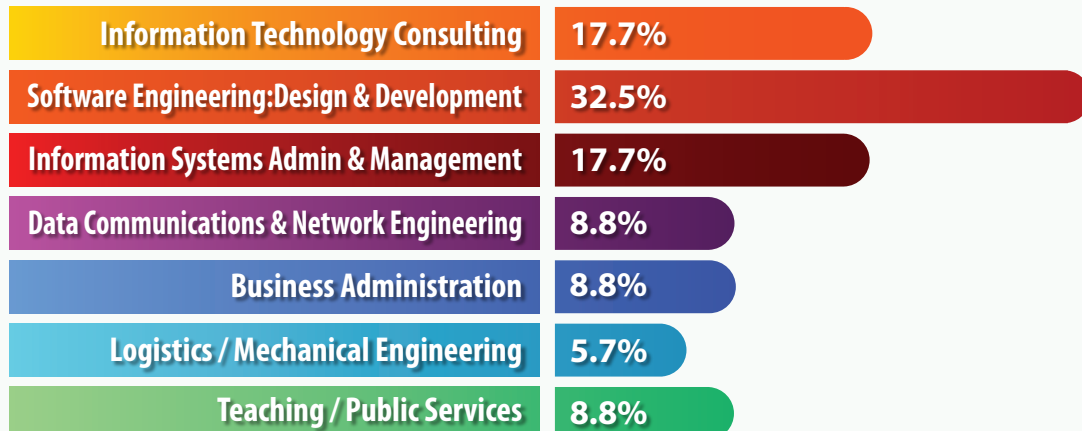
Employment Statistics

With solid IT knowledge, strong problem solving skills, and good communication abilities, our graduates have very promising careers. We have about 100 graduates every year that go for a diversified set of careers. Most of them start as engineering professionals, while others go to business or other disciplines. About 10% of our fresh graduates continue for full-time studies.

2014 IE Graduate Employment Survey in June, 2015

Job Nature

| Job Nature	Percentage
Information Technology Consulting	17.7%
Software Engineering:Design & Development	32.5%
Information Systems Admin & Management	17.7%
Data Communications & Network Engineering	8.8%
Business Administration	8.8%
Logistics / Mechanical Engineering	5.7%
Teaching / Public Services	8.8%

Graduates/Students Sharing

YIP Hui Sze

Graduated in 2014; Currently a Technical Account Manager at Microsoft Hong Kong Limited

Technology can change the world. This is what I have believed, and what drives me to pursue my study in Engineering. Joining CUHK in 2011, I chose Information Engineering as my discipline of study with great enthusiasm. Throughout the three years' journey, I was equipped not only with deep-dive technical skills such as networking, programming and multimedia processing, but also received great inspiration from professors and the well-designed courses to activate innovation.
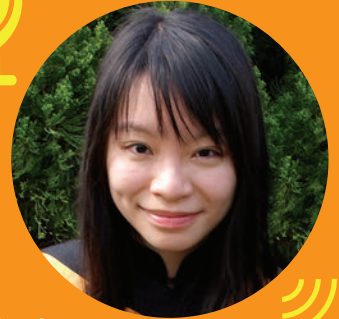
We have lots of hands-on lab to design and build your own products. You are solely responsible for the whole production cycle, from which you could acquire both hardware and software knowledge, and produce your unique work. It is this kind of encouragement that led me into designing a capacitive-sensing motion-detected DJ table, which was later nominated by the department to join the HKICT Award Best Student Invention Award Competition and the IEEE Final Year Project Competition. It is also these hard and soft skills I learnt that finally gave me a chance to start my journey in Microsoft. Now I am helping my enterprise customers to adopt optimal corporate IT environment on project basis, especially on the cloud field. I still believe in technology, and I am observing how it changes the world day by day.

YIN Ming

Graduated in 2013; Currently the founder and CEO of a startup

IERG helps students build decent foundation of of both mathmatics and engineering. The flexibility of course arrangements and wide range of modules gave me sufficient opportunities to try everything I was interested in. The course Web Programming and Security (IERG4210) brought me into the world of web development where I found my passion. After graduating from CUHK, I started my first tech company GradChef while studying at Cambridge as a postgraduate student, and the company was sold one year after. Then, the second startup XITU.io wad founded as the best tech discussion community in China.

Ying Xuhang

Graduated in 2013; Currently a Ph.D. student at the University of Washington at Seattle

When introducing my major, I will always say that Information Engineering (IE) is a subject between Computer Science (CS) and Electrical Engineering (EE). Indeed, this could be the most intuitive understanding of Information Engineering. Covering basic algorithms and data structures in CS, communication principles in EE as well as Internet engineering and information engineering, IE is so comprehensive and unique that its students can enjoy the chance to broaden their horizons, find their own interests in this subject and be better prepared for future careers.

Apart from courses, IE also offers precious opportunities such as research programs, exchange programs and internship. The research experience in my second summer was very beneficial for me. I gained much better understanding in time management, research methodology and so on. The exchange experience at University College London in the second term of my third year provided me with a great chance to immerse myself in a totally different culture and communicate with international students coming from various backgrounds. As you can imagine, IE students have more choices for every summer. They can either apply for an internship or join an overseas research program in a fine university, which is definitely beneficial for their future development.

All in all, as a subject dealing with information, Information Engineering does provide a lot of precious opportunities for its students. No matter what you want to do after four years' study, either work or further education, you will always have the chance to get what you want.