EMBRACE CHANGE
IN THE CENTURY OF
ENGINEERING
掌握變革・擁抱工程世紀

COMPUTER SCIENCE AND ENGINEERING

What is Computer Science (CSE)?

It is a very dynamic field, which entails the **development and maintenance of computer programs, software, and applications, which help people to have better access to useful information**. It is well-known today how leading computer science enterprises, like Microsoft, Apple, Google, IBM, Facebook, Twitter, WhatsApp, Tencent and Baidu, use creative ideas and technologies to integrate computing technologies into many walks of life.

The CSE Department consists of world-renowned educators and researchers with state-of-the-art knowledge in big data, cybersecurity, artificial intelligence, cloud computing, networking, graphics, social media, software development and computation theory.

What do students gain by studying Computer Science?

- Our undergraduate program equips graduates with cutting-edge and practical intellectual knowledge that enables them to contribute to various business and industry sectors.
- Our program is flexible, allowing students to delve into advanced topics of interest; it also ensures enough breadth so that students can gain exposure and acquire skills in various areas before graduation.
- Our program also enables students to enhance their academic qualifications by taking courses in other disciplines after they have identified their interests and/or careers.

Courses to develop personal interests

Courses to develop breadth

Courses for Computer Science specialties

Courses for Computer Science fundamentals

What do CSE students study?

Thanks to our distinguished faculty with a broad number of areas of expertise, our students study topics that prepare them for a good career. In addition to traditional course work, numerous opportunities exist for overseas exchanges, international competitions, scientific research, and internships.

Overview of CSE Curriculum

OPTIONAL	Practitioner, Entrepreneur and Researcher options: Software Engineering Lab, Operating Systems Lab, courses on IT Entrepreneurship, Fundamentals of Business Finance, Intellectual Property Law, Product Design, postgraduate level courses,...
COMPULSORY	Final Year Project / Final Year Thesis
CHOICES OF 5 ELECTIVES FROM 4 OTHER AREAS	**Graphics / Multimedia :** • Game Programming • Computer Music • Image Processing • Computer Vision • Computer Graphics ... **Software / Database :** • Search Engines • Data Mining • Big Data Management • Database Design • Mobile App Development • Programming Languages ... **Systems / Networking :** • Computer Architectures • Computer Networks • Social Information Networks • Computer Security ... **AI / Theory :** • Artificial Intelligence • Advanced Algorithms • Theory of Computation • Machine Learning • Image Processing • Natural Language Processing ...
COMPULSORY	**Fundamentals :** Programming, Data Structures, Algorithms, Computer Organization, Software Engineering, Discrete Mathematics and Operating Systems,...

Highlights

Detailed curriculum is available at

a. Care and advising: We care about our students and assign an academic adviser to each of them each year. Faculty members have an open-door policy, welcoming students to pop in and chat.

b. Enrichment opportunities: Students have numerous chances to take special honors computer science courses and participate in overseas exchanges, competitions, internships, industry-sponsored projects and scientific research.

c. Flexible curriculum: Students can enroll in additional minors or majors in other disciplines in order to pursue their own interests and strengthen their competitiveness.

What are the career prospects for CSE graduates?

Computer Science is a growing and rewarding field. CSE graduates are usually in high demand and have good job opportunities. Some join computer software or hardware companies, while others take up Information Technology (IT) positions in various fields. Employers of our graduates include:

- Google, IBM, HP, Compaq, Intel, Baidu, Microsoft, Yahoo!, and Oracle
- Morgan Stanley, Goldman Sachs, PricewaterhouseCoopers, HSBC, Hang Seng Bank, and Bank of China

Career Choices

- ☑ Entrepreneur
- ☑ Systems programmer
- ☑ Mobile app developer
- ☑ Database administrator
- ☑ Management/IT consultant
- ☑ Researcher
- ☑ Bioinformatics specialist
- ☑ System consultant
- ☑ Data analyst
- ☑ Web and content developer
- ☑ Systems administrator
- ☑ Network administrator
- ☑ Game designer/ programmer
- ☑ Medical imaging specialist
- ☑ Software engineer
- ☑ Systems analyst
- ☑ EDP auditor
- ☑ Network engineer
- ☑ Data miner
- ☑ Systems integrator
- ☑ Business analyst

CSE

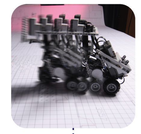
Start your company

Analyze big data and business intelligence

Help make physical distances vanish

Create Hollywood-level computer graphics

Design intelligent robots



Research on next generation computing

Develop robust and efficient software

Solve fundamental computation problems

香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

工學院
SCHOOL OF ENGINEERING

cse.ust.hk

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Data Science & Technology (DSCT)

The program is jointly offered by CSE and MATH, and will equip students to use a wide spectrum of mathematical tools and IT technologies and to **develop data analysis skills** that will allow them to **understand and analyze actual phenomena of massive datasets obtained from rich information sources**. In this program, students will undergo rigorous training in relevant mathematical and computational disciplines, like machine learning, classification, cluster analysis, uncertainty quantification, computational science, data mining, databases, and visualization. Students will also receive hands-on experience and expert guidance to acquire practical data analysis skills that will give them a solid foundation for their future careers.

dsct.ust.hk

Cybersecurity

The Department of Computer Science and Engineering has recently established the HKUST Cybersecurity Lab to conduct world-leading research in security, privacy, and cryptography. Since many aspects of our lives are now dependent on computer processing, the HKUST Cybersecurity Lab strives to develop and promote cyber safety through innovation, education, collaboration, and technology transfer.

What is Cybersecurity?

Cybersecurity defends computer systems against malicious attacks, such as identity forgery, disabling or compromising of trusted computation devices and the theft of personal or organizational data. Cybersecurity researchers develop algorithms, tools, and systems to detect security flaws of computer systems, to safeguard data through cryptography, and to protect people's privacy on the Internet.

What are the major applications?

SECURITY
Defense against Buffer Overflow attacks

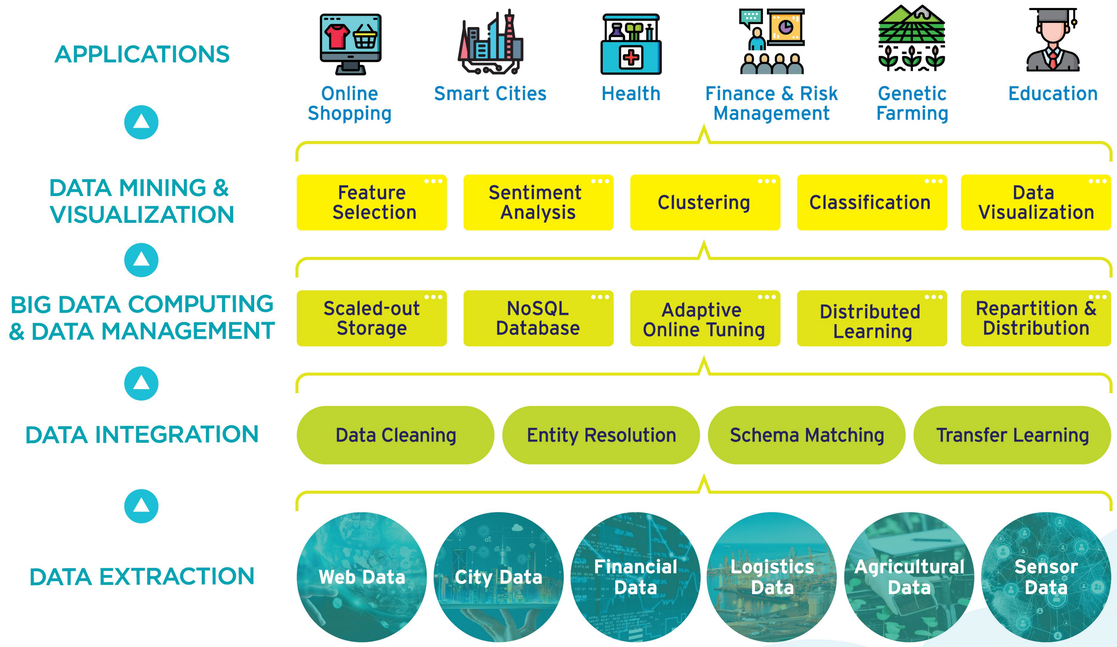
CRYPTOGRAPHY
Secure Sockets Layer (SSL) Communication

PRIVACY
Anonymity networks

BIG DATA PLATFORM

What is Big Data?

The last few years have seen the rapid increases in the sheer amount of data produced and communicated over the Web. Such Big Data is generated from all kinds of sources and applications, such as social network services, cloud services, knowledge bases and intelligent terminals; and they can often come in a wide variety of formats, such as structured, semi-structured and unstructured. Now, we have lots of faculty members, research staff, and PG students at work in more than 30 research groups. Their work includes fundamental research in big data as well as in real life applications, such as online shopping, smart cities, health, genetic farming, finance and risk management.



Application Examples

- Online Shopping: **Visual Advertising**
- Smart Cities: **Crowdsourcing System**
- Smart Cities: **Indoor Positioning**
- Funded Project: **Genetic Farming**
- Education: **Student Behavior Analysis**
- Health: **Automatic Negative Thought Detection**

Big Data Institute QR Code:

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