Introduction to CSE Department

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Professor and Head

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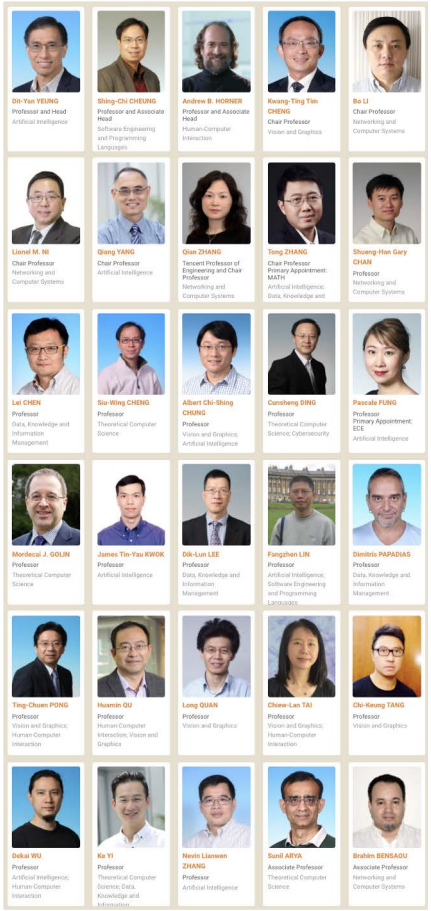
Visualizing locations and finding the way to a new destination are set to become simpler

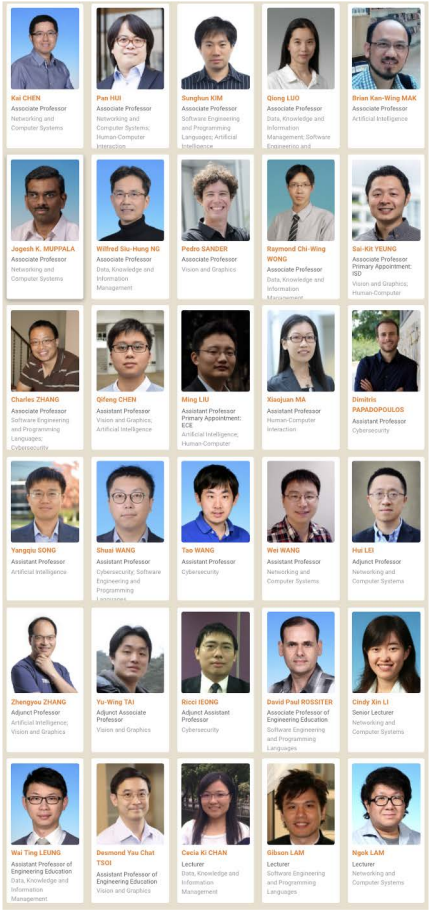
Quick Links for

- Undergraduates
- Postgraduates
- Faculty & Staff
- Alumni
- Job Seekers
- Employers & Industry Partners

Faculty

THE DEPARTMENT OF
COMPUTER SCIENCE
& ENGINEERING
計算機科學及工程學系





Research Areas

Artificial Intelligence (AI)

Cybersecurity (SEC)

Networking and Computer Systems (NE)

Software Engineering and Programming Languages (SE)

Data, Knowledge and Information Management (DB)

Human-Computer Interaction (HCI)

Theoretical Computer Science (TH)

Vision and Graphics (VG)

Artificial Intelligence (AI)

Artificial intelligence research studies how computers can be made to exhibit intelligent behavior in performing certain tasks, which, at the moment, are often done better by human beings. These tasks include speech and language processing, vision, motion control, reasoning, planning, decision making, and learning.

Subareas

Machine Learning: James Kwok, Qiang Yang, Dit-Yan Yeung, Nevin Zhang, Tong Zhang
Language Technologies and Text Mining: Brian Mak, Yangqiu Song, Dekai Wu, Nevin Zhang, Tong Zhang
Computer Vision and Image Processing: Qifeng Chen, Albert Chung, Dit-Yan Yeung, Tong Zhang
Knowledge Representation and Reasoning: Fangzhen Lin
AI Applications: Sunghun Kim, Ming Liu, Nevin Zhang

Affiliated Labs & Centers

Big Data Institute (BDI)
Human Language Technology Center (HLTC)
WeChat-HKUST Joint Lab on Artificial Intelligence Technology (WHAT Lab)

Cybersecurity (SEC)

The Cybersecurity group develops cutting edge ideas and tools to greatly strengthen the resistance of computer systems to malicious threats. The group works on all major areas of cyber security such as security, privacy, and cryptography. We aims to be a key voice of cyber security locally in Hong Kong, of greater China, and at the world stage.

Subareas

Cryptography: Cunsheng Ding, Dimitris Papadopoulos
Privacy: Dimitris Chatzopoulos, Tao Wang
System Security: Shuai Wang, Charles Zhang

Affiliated Labs & Centers

Cybersecurity Lab

Data, Knowledge and Information Management (DB)

Research in Data, Knowledge and Information Management draws upon techniques from the database, knowledge base, information retrieval, software engineering and networking areas and focuses primarily on the effective integration and application of technologies from these areas. It is driven by the need of existing and emerging data-, knowledge- and information-intensive applications in both centralized and distributed environments.

Subareas

Information Retrieval and Search Engine: Dik-Lun Lee, Wilfred Ng
Hardware Accelerated Data Processing: Qiong Luo
Graph Databases and Blockchain: Lei Chen, Qiong Luo, Wilfred Ng, Dimitris Papadias, Raymond Wong
Spatial Databases: Lei Chen, Dimitris Papadias, Raymond Wong
Database Theory and Stream Data Processing: Ke Yi
Data Integration and Knowledge Graphs: Lei Chen, Dik-Lun Lee, Wilfred Ng, Raymond Wong, Tong Zhang
Data-driven Machine Learning: Lei Chen, Dik-Lun Lee, Qiong Luo, Dimitris Papadias, Raymond Wong, Ke Yi, Tong Zhang

Affiliated Labs & Centers

Spatial-Temporal Crowdsourcing Group (STC)

Human-Computer Interaction (HCI)

Human-Computer Interaction research focuses on data-driven approaches to empowering the seamless integration of the digital realm and the physical world with an emphasis on designing technologies that better fulfill human needs and values. The major research areas include interactive data visualization, augmented reality, affective computing, computational linguistics, and HCI techniques for healthcare, education, e-commerce, robotics, and social welfare.

Subareas

Virtual Reality and Augmented Reality: Pan Hui, Xiaojuan Ma, Huamin Qu
Learning and Education: Xiaojuan Ma, Ting-Chuen Pong, Huamin Qu
Interaction Techniques, Devices and Modalities: Xiaojuan Ma, Chiew-Lan Tai, Dekai Wu
Visualization: Huamin Qu
Computer Music: Andrew Horner
Human-Robot Interaction: Ming Liu, Xiaojuan Ma

Affiliated Labs & Centers

Human-Computer Interaction Initiative

Networking and Computer Systems (NE)

Faculty members in Networking and Computer Systems are conducting cutting edge research that is at the heart of the Information Technology revolution. Their research covers wide and well integrated topics that can be classified as follows: networking equipment, networking applications, networking protocols and networking security.

Subareas

Wireless Networking: Brahim Bensaou, Gary Chan, Bo Li, Jogesh Muppala, Qian Zhang
Cloud Computing and Data Center Networking: Brahim Bensaou, Kai Chen, Pan Hui, Bo Li, Wei Wang
Internet of Things and Sensor Networks: Gary Chan, Qian Zhang
Mobile Systems and Applications: Gary Chan, Dimitris Chatzopoulos, Pan Hui, Jogesh Muppala, Qian Zhang
Big Data and Machine Learning for Networks and Systems: Gary Chan, Dimitris Chatzopoulos, Kai Chen, Pan Hui, Bo Li, Wei Wang, Qian Zhang

Affiliated Labs & Centers

HKUST-DT System and Media Laboratory (SyMLab)
Huawei-HKUST Innovation Laboratory
System Networking Research Group (SingLab)

Software Engineering and Programming Languages (SE)

Software Engineering and Programming Languages group aims to advance and develop solutions to real-world software development problems. Research in the group includes software analysis, testing, verification, debugging, synthesis, repository mining, empirical methods, application of AI in programming, language understanding, parallel programming and end-user programming.

Subareas

Program Analysis and Testing: Shing-Chi Cheung, Shuai Wang, Charles Zhang
Empirical and Mining Software Repository: Shing-Chi Cheung, Sunghun Kim
Verification and Language Understanding: Fangzhen Lin
Concurrency and Parallel Programming: Qiong Luo, Charles Zhang

Affiliated Labs & Centers

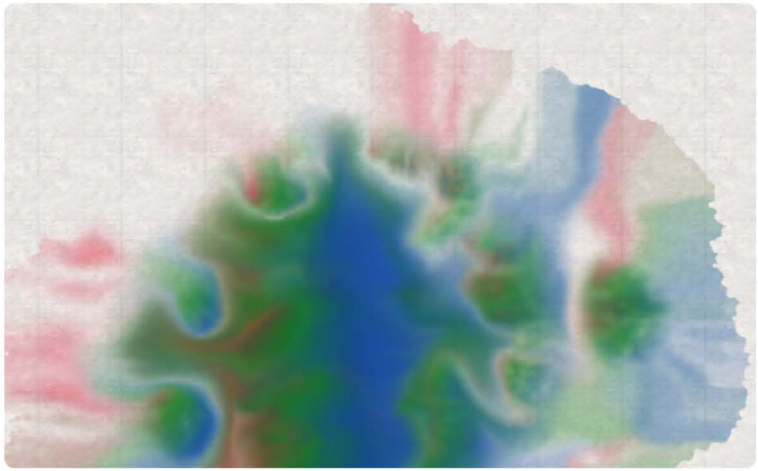
CASTLE Lab

Theoretical Computer Science (TH)

The Theoretical Computer Science group studies fundamental problems arising from a variety of computational applications, looks for efficient approaches to solving them, and determines their inherent complexity. In particular, the group's research covers the following topics: design and analysis of algorithms, data structures, computational geometry, information theory, coding theory, cryptography, and database theory.

Subareas

Computational Geometry: Sunil Arya, Siu-Wing Cheng
Design and Analysis of Algorithms: Mordecai Golin, Ke Yi
Coding Theory and Cryptography: Cunsheng Ding



Vision and Graphics (VG)

The Vision and Graphics group leads research in image analysis, computer vision and computer graphics. Computer Vision and Image Analysis focuses on the challenge of making computers see and understand images while Computer Graphics focuses on the challenge of making computers create pictures. The major research areas under investigation include computer vision, computer graphics, medical image, biometric systems and video processing.

Subareas

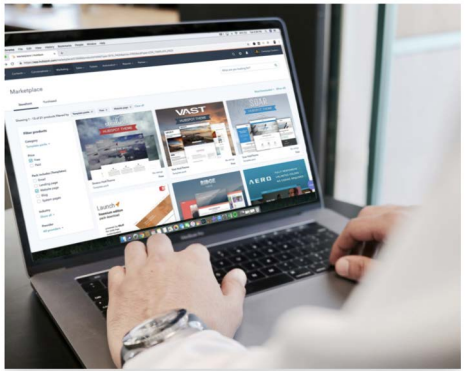
Vision, Recognition and Learning: Qifeng Chen, Tim Cheng, Albert Chung, Ting-Chuen Pong, Pedro Sander, Chi-Keung Tang
Graphics and Interactive Techniques: Huamin Qu, Long Quan, Pedro Sander, Chiew-Lan Tai, Chi-Keung Tang
3D Reconstruction: Long Quan
3D Visualization: Huamin Qu
Medical Image Analysis: Albert Chung

Affiliated Labs & Centers

VisLab

Joint Research Labs with Companies

Research Institutes



Sino Software Research Institute
Prof Shing Chi Cheung (Director)

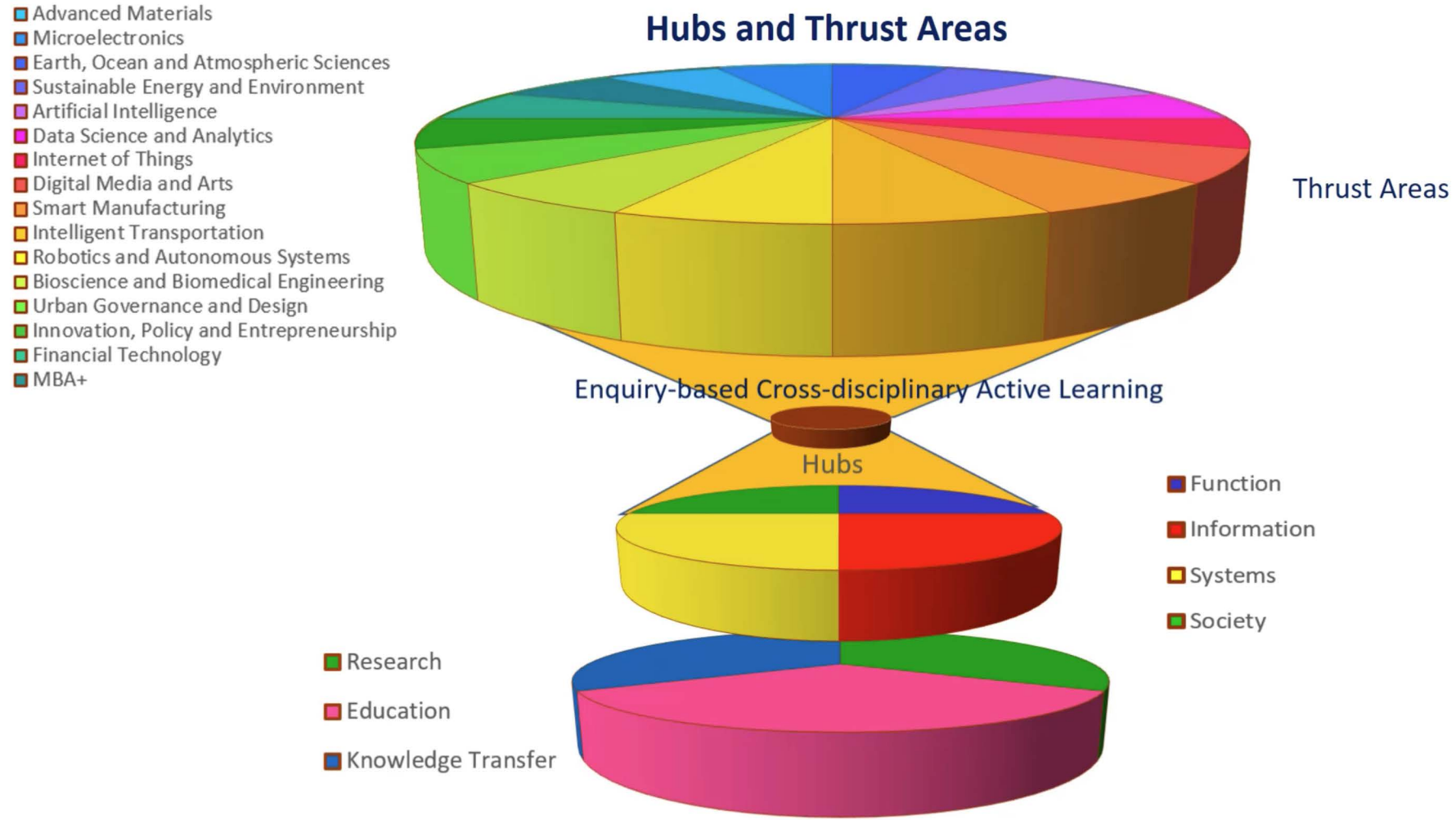
Big Data Institute
Prof Lei Chen (Director)

Robotics Institute
Prof Michael Wang (Director)

GREAT Smart Cities Institute
Prof Hong Kam Lo (Director)

HKUST(Guangzhou)

Hubs and Thrust Areas



Thank You