

Introduction to the CUHK MoE-Microsoft National Key Laboratory for Human-Centric Computing & Interface Technologies

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CRA Conference 2008

Introduction to CUHK



Introduction to CUHK

- Comprehensive research university
- Founded in 1963
- 18,600 students (9,800 undergraduates, 8,800 postgraduates), over 80,000 alumni
- Over 1,900 teaching and research staff



Comprehensive Programs

- Faculties: Arts
Business Administration
Education
Engineering
Medicine
Science
Social Science
School of Law
- 61 academic departments
- Over 300 undergraduate & postgraduate programs

Unique Features

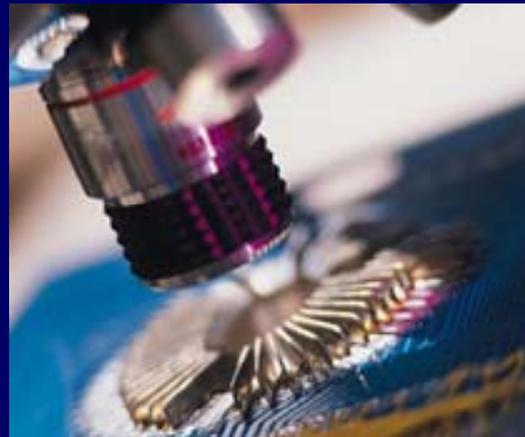
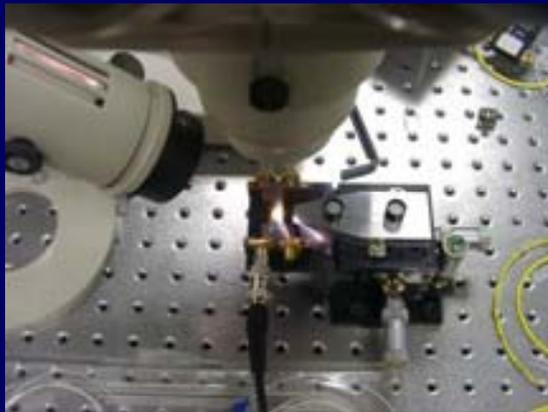
- Bilingualism: Chinese and English languages
- Bi-culturalism: meeting points of east & west
- College system
- General education programs in Colleges

Intro to CUHK Faculty of Engineering

History of the Faculty

Established in 1991 by Professor Charles Kao, "father" of Optical Fiber Communication and former Vice-Chancellor of CUHK

Focus on Information Technologies



Departments in the Faculty

Computer Science & Engineering
(since 1973)

Electronic Engineering (since 1970)

Information Engineering (since 1989)

Mechanical and Automation
Engineering (since 1994)

Systems Engineering & Engineering
Management (since 1991)

110 faculty members

1600 undergraduates (15.3% non-local)

420 research students (70% PhD)



R&D Centers

- Center for Advanced Research in Photonics
- Center for Innovation & Technology
- Center for Micro and Nano Research
- Center for Logistics Technologies and Supply Chain Optimization
- Distributed Digital Entertainment Center
- Institute of Optical Science and Technologies
- Institute of Precision Engineering
- Institute of Theoretical Computer Science and Communications
- Joint Center for Intelligent Sensing and Systems
- Microsoft-CUHK Joint Laboratory for Human-centric Computing and Interface Technologies
- Mobile Technologies Center
- R&D Center for Supply Chain and Logistics Management
- Shun Hing Institute of Advanced Engineering

R&D Centers – cont'd (collaboration with Mainland China)

- CUHK/CAS Shenzhen Institute of Advanced Integration Technologies (since 2007)
 - Partnership with Chinese Academy of Sciences and the Shenzhen Municipal Government
- CUHK-Tsinghua Joint Research Center on Media Sciences, Technologies and Systems (since 2007)
- CUHK-Tsinghua Joint R&D Program on Chinese Enterprise and Internet Operations (since 2006)
- Joint Center for Intelligence Engineering (since 1999)
 - Partnership with Peking University

Introduction to the Microsoft-CUHK Joint Laboratory

Background

- Before 2005
- **Individual** collaborative efforts between CUHK faculty members and MSRA researchers
 - Mutual visits, seminars, e.g. MS Computing in the 21st Century Conference, MSRA Faculty Summit
 - Co-organized workshops
 - Internship opportunities in Beijing
 - MSRA alumni enrolled in CUHK doctoral program
- Student awards and research grants from Microsoft
 - Microsoft Fellows
 - Microsoft Student Ambassador of Hong Kong
 - Microsoft Imagine Cup Championship 2004
 - Research grants in computer graphics, computer speech and language, etc.
- **Motivation to consolidate administration and logistics**

Theme: Human-Centric Computing and Interface Technologies

- Embrace **users' informational needs** and **natural communicative modalities** at the heart of **ICT** development
- **Information and communication technologies**
 - Unification of content, computing, communication
- **Users' informational needs**
 - Accessible, searchable, secure, adaptable
- **Natural communicative modalities in user interfaces**
 - Vision, hearing, touch, etc.
 - Human-computer interaction to resemble human-human interaction → **multimodal communication**

Establishment of MS-CU-JL (May 05)

- **Mission**
 - Build cohesion among the research areas of common interest to CUHK and MSRA, under the umbrella of **human-centric technologies**
 - Expand cohesion into an **open, innovative research program** that connects and inspires researchers from both institutions
 - Long-term, strategic research direction that unleashes the power of computing, communication and content for the **benefit of our society**
- **Research agenda – five thematic areas**
 - Computer vision (计算机视觉)
 - Computer graphics (计算机图形学)
 - Speech and multimodal UI (语音处理及多模态用户界面)
 - Multimedia processing and retrieval (多媒体信号处理与检索)
 - Networking and wireless communications (网络与无线通信)

Organization

Managing Directors (总监)



Professor
Peter Yum
任德盛教授



Professor
Hsiao-Wuen Hon
洪小文教授
(MSRA)

Co-Directors (主任)



Professor
Helen Meng
蒙美玲教授



Professor
Frank Soong
宋调平教授
(MSRA)

Academic Committee Members (学术委员会成员)



Professor
Dah Ming Chiu
邱达民教授



Professor
Pheng Ann Heng
王平安教授



Professor
Irwin King
金国庆教授



Professor
Helen Meng
蒙美玲教授



Professor
Xiaou Tang
汤晓鸥教授

Management Committee Members (管理委员会成员)



Professor
Dah Ming Chiu
邱达民教授



Professor
Ronald Chung
鍾志杰教授



Professor
Pheng Ann Heng
王平安教授



Professor
Wai Lam
林伟教授



Professor
Soung Liew
刘绍强教授



Professor
King Ngan
颜庆义教授

Organization (2)

International Advisory Board

Professor Andrew YAO 姚期智教授
Distinguished Professor-at-large
The Chinese University of Hong Kong
(Chairman)



Professor Fred JUANG 庄炳煌教授
Motorola Foundation Chair Professor and
Georgia Research Alliance Eminent Scholar
School of Electrical and Computer Engineering
Georgia Institute of Technology



Professor Victor ZUE 舒维都教授
Professor of Electrical Engineering and Computer Science
Co-Director, Computer Science and
Artificial Intelligence Laboratory
Massachusetts Institute of Technology



Organization (3): Members

- 38 faculty members, 2 Adjunct Professors (co-supervision)
- 57 continuing students (21 MPhil and 36 PhD)
- 24 graduates (11 MPhil and 13 PhD)
- Across five departments in the Faculty of Engineering
 - Computer Science & Engineering
 - Electronic Engineering
 - Information Engineering
 - Mechanical & Automation Engineering
 - Systems Engineering & Engineering Management
- 12 incoming intern students from mainland and overseas (e.g., Korea, India)

Research Grants and Outputs

MSRA Grants and Joint Publications

- **Trustworthy Computing (2006-2007)**

"On Security Issues of Network Coding"

– Profs Dah-Ming CHIU and John LUI



- **Gaming & Graphics (2006-2007)**

– *"Text Synthesis and Image Completion on Programmable Graphics Hardware (GPU)"*

– Profs Jiaya JIA, P.A. HENG and T.T. WONG
from August 2006 to August 2007



- **ASIA-SIGNOPEDIA (2007-2008)**

"An Online Sign Language Knowledge Base Composed Collaboratively by Internet Users"

– Profs Ronald CHUNG and Gladys TANG



- **Natural Language Processing (2008-2009, new)**

– Profs Irwin King and Jimmy Lee

– from August 2008 to July 2009



- **Joint Publications**

– Over 140 conference and journal publications between 2005-2007

Student Awards

- Microsoft Fellows

- Support young research talents, reward high-potential graduate students in early career (funding and internship in Beijing), build community for academic exchange
- Prestige: 120 recipients from 39 universities across 8 countries in Asia-Pacific (1999-2004 statistics)
- CUHK Fellows:

Yao Qian (03), Ida Hui (04), Zhenzhong Chen (05), Wei Liu (06)



Kelvin Chan (07)

Collaborative Activities

Conferences

- Annual Microsoft Joint Laboratory Symposium
 - 1 Dec 2006 at CUHK
 - 13 January 2008 at Harbin Inst. of Tech.
 - Participants
 - Representatives from Ministry of Education, MSRA and 8 universities (CUHK, Harbin Inst of Tech., HKUST, Peking University, Shanghai Jiaotong, Tsinghua, USTC, Zhejiang U)



Conferences (2)

- Beijing-HK International Doctoral Forum
 - Jointly organized by Tsinghua University & CUHK
 - Support from Ministry of Education and MSRA
 - Theme: “Network and Media Computing”
 - 2006 in Tsinghua University, Beijing



Conferences (3)

- Beijing-HK International Doctoral Forum
 - 2007 at CUHK
 - Over 100 participants



The Second Beijing-Hong Kong International Doctoral Forum 2007

Conferences (4)

- MSRA 10th Anniversary Innovation Forum
 - August 2008
 - Keynote speech by Dr. Bill Gates
 - Panel discussion among Dr. Bill Gates and Presidents of CUHK, HKU and HKUST. Topic of discussion is “Technology & Society”

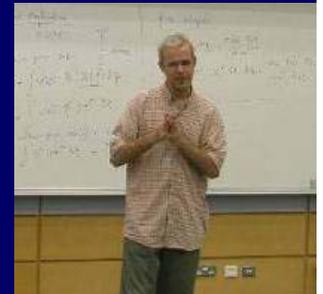
Seminars

- Distinguished Lecture Series
 - MSRA
Dr Harry SHUM on *Research 2.0*
 - Georgia Institute of Technology, USA
Professor Fred Juang on *Pattern Recognition*
 - Rutgers University, USA
Professor Lawrence Rabiner on *Multimedia Communications*
 - University of Sheffield, UK
Professor Roger Moore on *Language Processing*
- Seminar Series (partial listing)
 - MSRA
Dr. Frank K. Soong on *Hidden Markov Models*
Dr. Sing Bing Kang on *Interactive Visual Media*
Dr. Shipeng Li on *Interactive Media*
 - Honda Research Institute Japan Co., Ltd.
Dr. Mikio Nakano on *Model for Conversational Robot Intelligence*



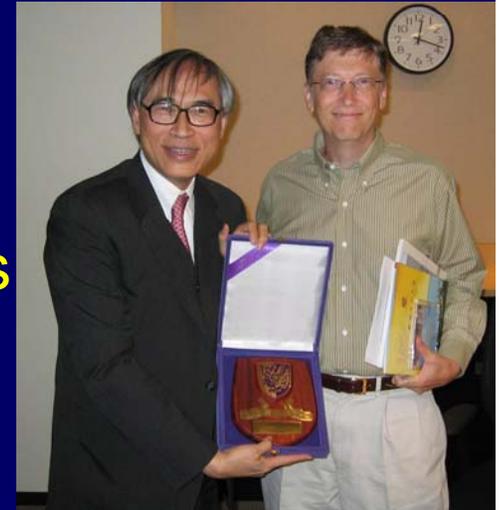
Short Courses

- MSRA 2006 Summer Course in Harbin Institute of Technology Shenzhen Graduate School
 - CUHK
Professor Helen Meng
Multilingual Spoken Dialog Systems
- At CUHK
 - University of California, San Diego
Professor Alon Orlitsky
Universal Compression and Probability Estimation
 - University of Southern California
Professor Jay Kuo
Advanced Video Coding and Emerging Visual Capturing and Display Technologies



Mutual Visits

- CUHK delegation visited Microsoft Research, Redmond (9.2005)
- Microsoft Research delegation visited CUHK's technology exhibition (11.2005)



Visiting Students

- Internships at MSRA
 - 5 students to Beijing per year
- Visiting students
 - Tsinghua University, Peking University, Beijing Jiaotong University, Zhejiang University, USTC, Huazhong UST, IIT etc.
- Summer Program – Research in Industrial Projects (RIPS)
 - Organized by MSRA, CUHK and UCLA



IP

Intellectual Property

- Research output mostly published in joint papers
- Joint Research IP resulting from cooperative efforts
 - Subjective to specific agreement between the two parties
 - Both parties are free to license to third parties without obligations to pay royalties to the other

Recognition

MoE-Microsoft National Key Laboratory

- MoE-Microsoft Great Wall Plan
 - Work with academia to nurture young talents in China
 - Joint labs may be evaluated for National Key Laboratory Status
- Upgrade in May 2008
 - CUHK MoE-Microsoft National Key Laboratory for Human-centric Computing and Interface Technologies
 - Two other partner labs from Peking University and Shanghai Jiaotong University
- Future Plans
 - Joint research, joint publications, co-supervision, expanding the collaboration within the (expanding) network of the joint laboratories
 - Cross-disciplinary research

谢谢

Thank you

