





Department of Information Engineering
The Chinese University of Hong Kong



# What was the Mission-Statement of Microsoft?



# What was the Mission-Statement of Microsoft?

A Computer on Every Desk and in Every Home



#### What are these Services all about?



















Caption (wiki mark-up OK):

Wiki [[maps]] for you!

save & close remove
42.358333, -71.060278

(559 meters) add points change color

avigation: C Large C Medium C Small C None Width: 450 V Height: 275

Boston

Below is the Wiki mark-up to create the map above. Clear all points

<googlemap lat="42.360193" lon="-71.060021" type="satelli</pre>



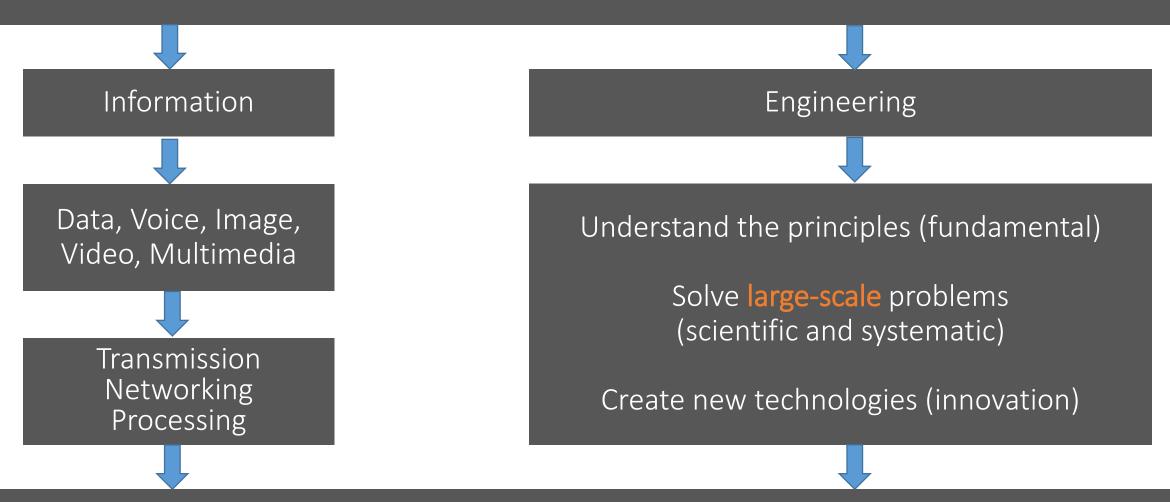




To organize the World's Information and make it Universally Accessible and Useful.

# Information Engineering

The Generation, Distribution, Analysis and Use of Information in Engineering Systems



To train engineering leaders who can manage and create new information technologies to serve all disciplines.

# What is Information Engineering?

Electronic

**Engineering** 

Applications/E-Commerce

Software

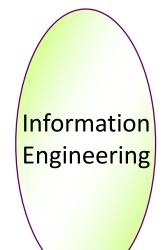
**Network** 

**System** 

Circuit

Device

**Physics** 



Computer Science

# Information Engineering Programme

#### **Core Subjects**

**Mathematics** 

Computer Programming & Software Engineering

Basic Circuits & Digital Systems

Microcontrollers & Embedded Systems

Signals & Systems

**Principles of Communication Systems** 

**Computer Networks** 

#### **Streams of Specialization**

Big Data: Systems & Application

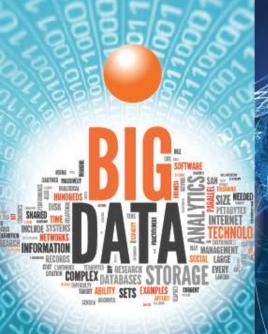
Communications

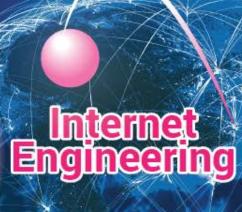
**Internet Engineering** 

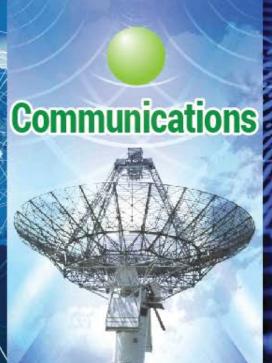
**Cyber Security** 

**Enrichment** 

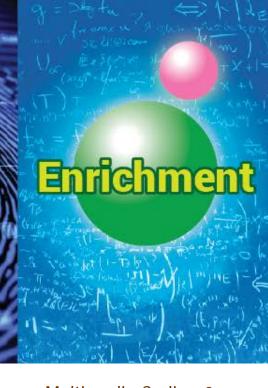
Final Year Project











- Web-scale Information Analytics
- Programming Big Data Systems
- Internet of Things
- Social Media and Human Information Interaction
- Cloud Computing
- Machine Learning

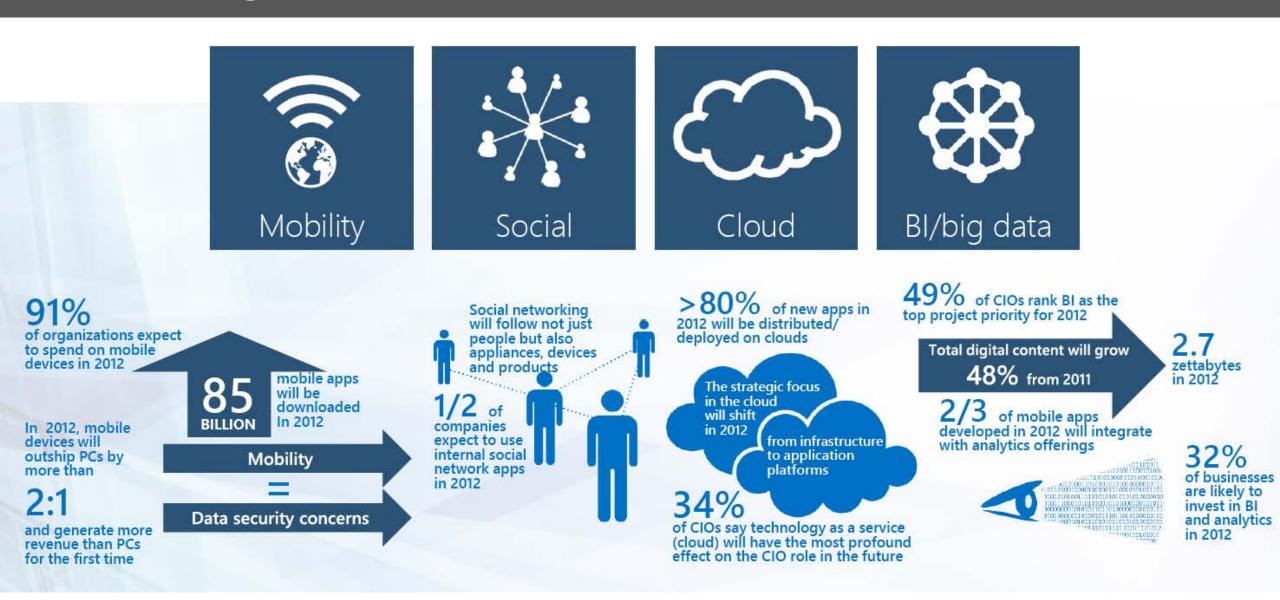
- Networking Protocols and Systems
- Network Economics
- Network Software Design and Programming
- Mobile/Web Applications
- Mobile Networking
- Building Scalable Internet Services

- Digital Communications
- Signal Processing
- Optical Communications
- Wireless Communications
- Broadband Switching Systems
- Lightwave System Technologies
- Internet of Things

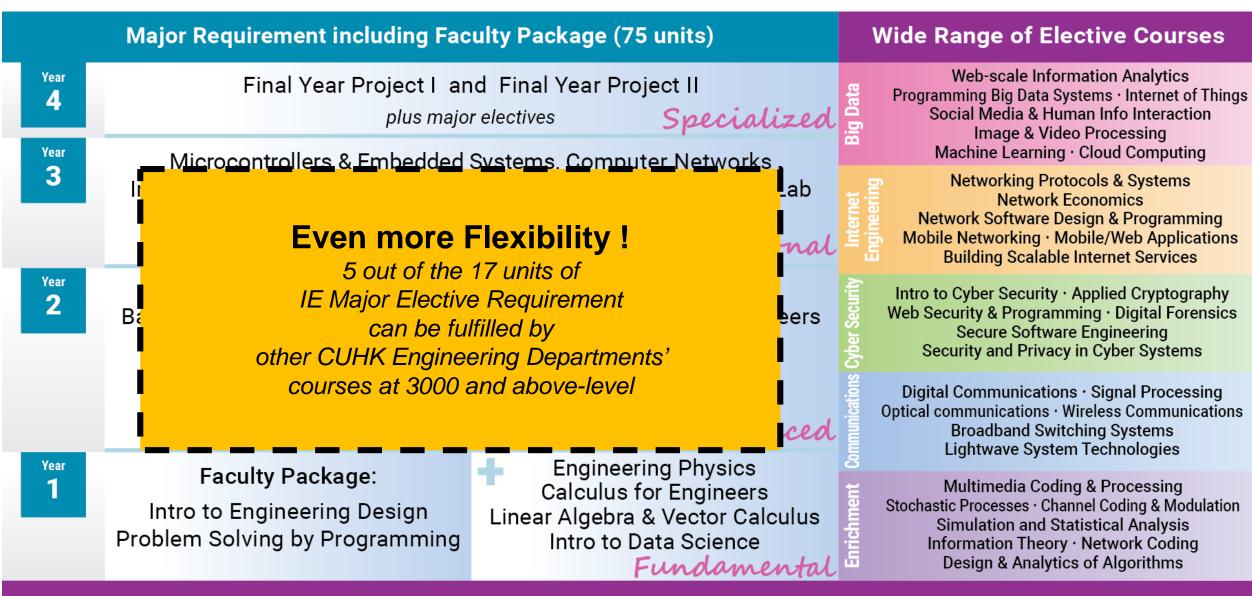
- Intro to Cyber Security
- Applied Cryptography
- Web Security & Programming
- Secure Software Engineering
- Digital Forensics
- Security & Privacy in Cyber Systems

- Multimedia Coding & Processing
- Stochastic Processes
- Channel Coding & Modulation
- Simulation & Statistical Analysis
- Information Theory
- Network Coding
- Design & Analysis of Algorithms

# Four Mega Trends which will Dominate the Next Decade



Source: "The Digital Transformation of Business," A Harvard Business Review Analytic Services Report, 2015.



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

People of Information Engineering





#### Our World-Renowned Professors

21 Full-time Professors ; 6 IEEE Fellows

**Graduated from:** MIT, Stanford, Berkeley, Caltech, Cornell, Harvard, Columbia, ETH, Northwestern, UT Austin, Purdue, CUHK...

Many have extensive Industrial Experience with Technology Powerhouses world-wide

•Bell Labs, Microsoft Research, HP Labs, Qualcomm, ...

Authors of Seminal, High-Impact Research; Prize Paper Awards from Top venues, including:

- USENIX Security / Facebook Internet Defense Prize 2018
- Top 3 Google Scholar Classic Papers in Computer Networks & Wireless Communications 2016
- IEEE Eric E. Sumner Award 2016 (for contributions in Network Coding)
- IEEE Information Theory Society Paper Award (Twice !! 2016 and 2005)
- IEEE Infocom Test-of-Time Paper Award 2015
- AAAI Outstanding Student Paper Award 2015
- ACM Multimedia Conference, Best Paper Award 2012
- IEEE Marconi Prize Paper Award in Wireless Communications 2011
- Neural Information Processing Systems, Best Student Paper Award 2010
- IEEE Computer Vision & Pattern Recognition Conference, Best Paper Award 2009
- IEEE Transactions on Multimedia Prize Paper Award 2009



#### Our World-Renowned Professors

Hold Key Patents on Innovations in various fields; Successful Technology Transfer, e.g.

- •SenseTime The most valuable AI Start-up in the World
- •Image-Search for Microsoft Bing and Google
- •X-Power (Commercial Adaptive Streaming Services) of Smartone HK

#### Awarded Area of Excellence by HKSAR Gov.:

- Information Technology
- Network Coding

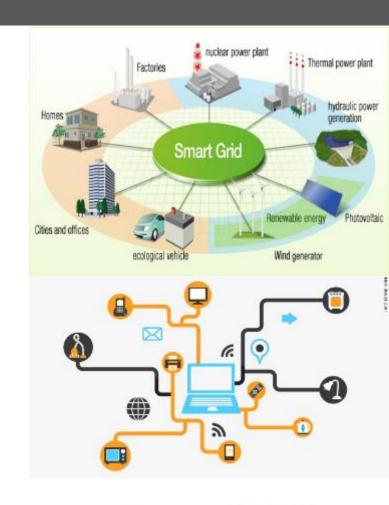
with total funding exceeding HK\$100Million

#### **Strong Ties with Local and Overseas Industries**

- •Set up the 1st Internet connection linking Hong Kong to the World
- •Established Hong Kong SchoolNet to bring Internet to Primary and Secondary schools in HK
- •Science Advisor of HK Innovation and Technology Commission (香港創新科技署)
- •Former CEO and CTO of HK ASTRI (香港應用科技研究院).

# Key Research Areas

- Information Theory, Network Coding
- Wireless Communication and Networking
- Optical Communication and Networks
- Network Economics, Internet and Applications
- Multimedia Processing
- Internet of Things, Cloud Computing, Social Networks
- Energy System, Power Grid Modernization and Optimization
- Cryptography, Security and Privacy
- Big Data Analytics, Deep Learning and Al





#### 湯森路透社(Thomson Reuters)發佈《開放未來:2015年全球創新現況》

#### Most Impactful Research Institutions In Telecomms (2004 - 2014)

Institution	Country	# of Papers (WoS)	Relative Citation Impact*
Rice University	U.S.	323	4.31
University of California Berkeley	U.S.	800	3.76
State University of New York (SUNY)	U.S.	341	2.89
Swiss Federal Institute of Technology	Switzerland	723	2.64
University of Texas, Austin	U.S.	1070	2.58
Carnegie Mellon University	U.S.	763	2.55
Princeton University	U.S.	641	2.47
Chinese University of Hong Kong	Hong Kong	959	2.45
New York University	U.S.	421	2.43
University of Washington, Seattle	U.S.	562	2.42

Source: Thomson Reuters Web of Science

<sup>\*</sup> Citation impact normalized against average for field and year of publication (n = 1.00)



# Innovative Network Coding Techniques Revolutionize Wireless Communications

Named by Thomson Reuters as one of the 10 research institutions in the world with the most impact on telecommunications

#### Deep Learning

With massive amounts of computational power, machines can now recognize objects and translate speech in real time. Artificial intelligence is finally getting smart.

**-**



# Top Ten Al/ Deep Learning Pioneers in the World

Announced at Global Technology Conference 2016 by Nvidia (the world leading GPU and AI platform production company with 70% of GPU world market).













Trevor Darrel



Russ Salakhutdinov



Xiaoou Sean Tang



Yann Lecun















urgen Schmidhuber

# Our Face Technology

「認人」準過肉眼中大系統冠全球(文匯報)

看圖20萬張特訓 勝面書睇5億張 (文匯報)

中大搜集20萬名人照研發 全球最勁 人面識別系統 準

確率99% (蘋果日報)

中大認人系統準確度冠全球 (大公報)

中大「人面識別系統」 準繩度冠全球 (東方日報)

中大研發99%準確認人系統 (太陽報)

中大人面識別系統準確冠全球 (星島日報)

人面識別系統全球最準(都市日報)

Science News

**Nature News** 

Discover

The Register

Tech Xplore

Technology

Rootnotion

I Programmer



Wednesday, April 23: 2014 - 4:45pm

LTICK SLAID IS BY LOTTE OWNER BRIDGE WILL ISS SAME.

#### Face Recognition Algorithm Finally Beats Humans

For computers, distinguishing one face from another is tough. Fluctuating factors like glasses, beards, makeup, hairstyles, and low lighting can easily trip up the system whereas people can see right through all of that. Until now, humans have outperformed face recognition systems when it comes to companing two images and determining if they are the same person. However, according to the Physics arXiv Diog, a new algorithm called Gaussian-Rob can beat humans. While people can distinguish faces with 97.53% accuracy, the algorithm has reached 98.52%. The system could make accessing smart phones or legging on to computer games with face verification possible.

要間洋間 2014年08月07日 中大被集20萬名人照研發 人面識別系統準確率99%

中大搜集20萬名人照研發 全球最勁人面識別系統 準確率99%





【本報訊】facebook有自動標籤相中人的功能,中大研發更先進的自動人面識別系統,讓搜尋更準確,達99.15%,稱是全球最高水平,料數年後可商業應用。中大信息工程學系教授湯晓鷗及電子工程學系教授玉晓剛的研究團隊,今年在自動人面識別系統研究有突破。王晓剛稱,10年前與湯晓鷗研究人面識別系統,當時只是利用簡單的參數建立計算模型,準確度不高,到2012年團隊研究深度學習模型(Deep Learning),模擬人類的神經網絡,採取更多數據。

#### 指超越肉眼識別準確度

今年上半年,facebook收集了700萬張用戶圖片,人像自動配對準確度達97%; 近日facebook再更新,搜集5億張用戶圖片,準確度提升至98%;中大的專家在 2011年,於網上搜集20萬名人圖片作數據庫,配合改良的計算方法,準確度達 99.15%,目前是全球之冠。 World's most valuable AI start-up SenseTime raise

#### World's most valuable AI start-up SenseTime raises US\$620 million to spearhead China tech ambitions

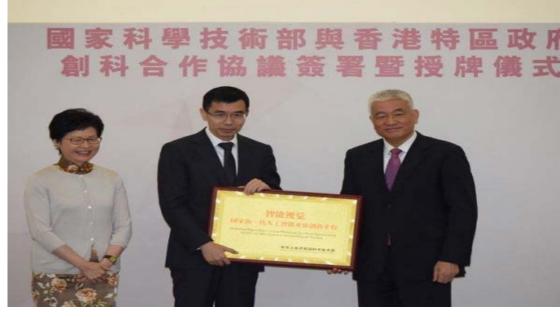
China has made the development of artificial intelligence and other advanced technologies a core pillar of its efforts to reform its economy and secure leadership in what has been dubbed a fourth industrial revolution

PUBLISHED: Thursday, 31 May, 2018, 9:26am UPDATED: Tuesday, 03 July, 2018, 9:07pm

COMMENT:

1





MIT and SenseTime announce effort to advance artificial intelligence research

Alliance will be part of new MIT Intelligence Quest.

Resource Development February 28, 2018



MIT and SenseTime today announced that SenseTime, a

# Network/ System Security & Privacy

Android社交網 中大揭保安

中大揭Android保安漏洞 刍

中大揭Android漏洞 憂泄個人資料 (星

中大團隊:Android和網站存保安漏洞

Android機「自言自語」洩私隱(蘋果

黑客遙控語音功能盜私隱(明報)

戶私隱堪虞 (am730)

中大程式揭手機社交網

日報)

(文匯報)

島日報

(成報)

日報)



今日头条 首页/科技/正文



#### 支付宝关闭一个功能: 骗子彻底没辙了

原创 快科技 2017-02-14 15:13









备线上转账付款功能,所有收款功能统一到"我要收款"页面。 支付宝表示,此举是为了强化付款码的产品定位,更好的服务用户的不同业务需求,但事实

支付宝方面今天宣布,**2017年2月20日起,支付宝的付款码功能将只能用于线下付款,不再具** 

上,这么做更多地应该是为了防范诈骗。 简单地说,支付宝的付款码相当于你的银行卡+密码,展示给别人后可以无需确认直接转账付 款,因此诈骗分子经常会诱骗用户向其出示付款码,轻松骗走钱财。

今后在超市、便利店等线下支付场景中,支付宝付款码依然可以正常使用,但在网上即便发给 别人,对方也无法转账。

事实上在此之前,支付宝已经禁止在付款码页面截图,而如今更是彻底杜绝了骗子的诈骗途 径。

如需通过支付宝收款,可以在支付宝首页点击右上角的"+",选择"我要收款",向对方展示其 中的二维码、也可将我要收款功能添加到首页九宫格。

# 亞洲首個團隊 中大奪fb防禦獎

喺互聯網世界 要搵任何資訊都相當方 但變相亦陷阱處處嚟!

就好似「單點式登入」咁 可利用漏洞直接控制受害嘅帳號 或偷睇你喺網上做緊咩喺呀

不過,中大信息工程學系 登錄漏洞嘅工具 "S3KVetter", 鐘就可以檢查程式源碼嘅邏

輯及安全漏洞。呢項發明仲得 到Facebook頒發互聯網防禦獎 第三名·係首個奪獎嘅亞洲團隊 呀·簡直係香港爭光!

#### 要保護好個人資料

中大信息工程學系副教授劉 永昌就託小記提提大家,要衡量 使用單點式登入嘅便利性同安全 隱憂,如果涉及重要個人資料, 就唔好用單點式登入喇!™



International Business Times

Technology

CyberSecurity

#### The little security flaw that enables you to immediately log into one billion Android app accounts

An OAuth 2.0 security bug makes it possible for hackers to steal data from Facebook and other ID providers.



By Mary-Ann Russon

f 💆 🔉 🚓 in

NOV 3, 2016 @ 12:32 PM 10,685 VIEWS

Security / #CyberSecurity

**≡** Forbes

This Hack Can Silently Break Into 1 Billion Android App

Accounts



Thomas Fox-Brewster.

FORBES STAFF 🤣

I cover crime, privacy and security in digital and physical forms. FULL BIO >



At least 1 billion Android apps are vulnerable to a simple hack, which can be carried out from anywhere on the planet, researchers claim. Photographer: Tony Avelar/Bloomberg

Hong Kong-based researchers have demonstrated an attack on a massive number of Android applications, allowing them remote access to whatever accounts lie within. The apps have been downloaded more than 1 billion times, they said, making the impact widespread and severe.

The trio of researchers - Ronghai Yang. Wing Cheong Lau and Tianyu Liu from



#### **Smart Buildings, Smart Grids and Smart Cities ...**





#### 優化太陽能板 書院作試點

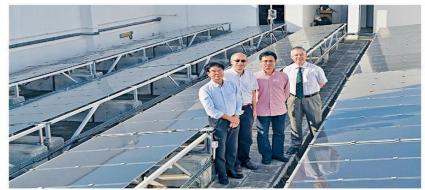
獲研究資助局資助,由中文大學領導為期五年的跨院校「智能化太陽能技術:採集、存儲及應用」項目,取得階段性成果。研究團隊在研發太陽能板、儲電電池、和發展微電網上均有突破,技術的研發更令香港在再生能源技術上領先全球。團隊下一階段將在中大和聲書院進行實地試驗,發展獨立的微電網,待技術成熟後,更會在香港的離島進行試點。

中 大聯同理工大學、科技大學、香港大學於一三/一四年獲研資局資助六千多專於一三/一四年獲研資局資助六千多 獲資助最多的「主題研究計畫」。由中大工程學院院長汪正平教授領導的太陽能項目,從採集、儲存和應用三方面,提升太陽能系統的效能。當中研發的「理想調度追蹤算法」(CHASE),有助進一步發展自給自足的微電網系統。

#### 選用較平電源

微電網是一套自治、供給平衡的小型電力系統,可做到地區供電自給自足,或配合主要電網使用。好處是減低大型電網故障型來停電的影響、增加使用再生能源,以及過過自由調配電源提升經濟效益。然而,徵電網有一大限制,因其依賴再生能源發電,當天氣不穩定時會影響供電量;加上電網覆蓋

# 中大研發新技術建自給自足微電網



■中大工程學院院長汪正平(左一)領導的「太陽能系統」研究項目,在和聲書院進行實地 關鍵。

節閥小,其田雲景較數個地區難預測。

#### 技術領先全球

面對這個挑戰,國隊研發CHASE計算 法,在沒有或極少預測資訊的條件下,成功預 測網絡覆蓋範圍的用電量。與大數據量的實 驗結果相比,CHASE算法的誤差少於百分之 十。另一方面,和大電網配合的微電網,可自 由選用接駁傳統大電網買電,或使用本地再生 能源發電。這個穩定的預測方法,能讓系統選 用當時較便宜的電源,達至可觀的經濟效益。 中大訊息工程系教授陳名華指,CHASE的分 标可節省全年約兩成的成本開支。

Over \$200 Million Granted for Pushing Knowledge Frontier

(Theme-based Research Scheme, HK\$ 60.33M) Participating Institutions: CUHK, HKUST, PolyU

Prof. **Wong Ching-ping**, Dean of Engineering, and his team members study the new technology in energy harvesting, storage and utilization

Source: Sing Tao, 16 Oct 2017



#### Our World-Renowned Professors

#### **Dedicated Educators**

- Love to interact with Students
- •Inspire Students to become Top-notch Engineers, Researchers, Entrepreneurs, and Leaders

#### Our Mission:

To help Our students to Achieve their Dreams!











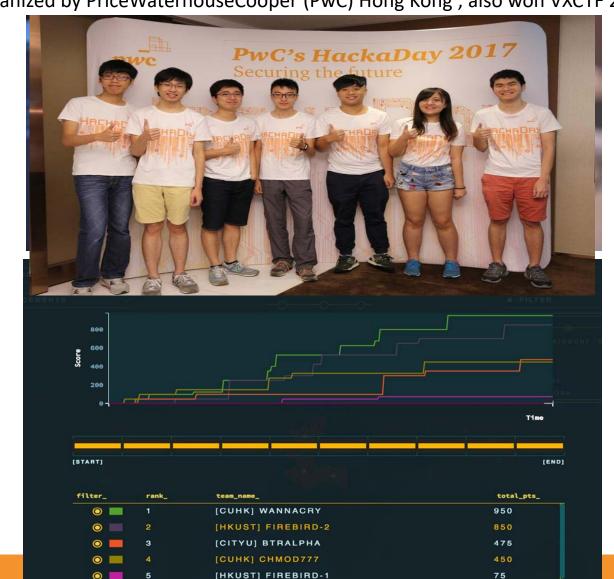




#### **Champion of Inter-University Hacking Competitions**



For both 2018 and 2018, CUHK Team won the 1st Inter-University Cybersecurity Hacking Competition organized by PriceWaterhouseCooper (PwC) Hong Kong; also won VXCTF 2018!







# **Exchange Opportunities**



- Exchange Destinations for our students in the past few years:
  - MIT, UC Berkeley, Caltech, UIUC, U of Toronto, Purdue, Dartmouth, U. of Wisconsin-Madison, SUNY Buffalo, Stony Brook, Liverpool, U. of Hawaii, National University of Singapore, ...

# IE Award to support Exchange Study

## Eligibility

- IE and MIE full-time students who have completed at least 1 term in the IE Department and with cum. GPA >= 3.3
- Got Exchange offer from the Office of Academic Link, CUHK

#### Award

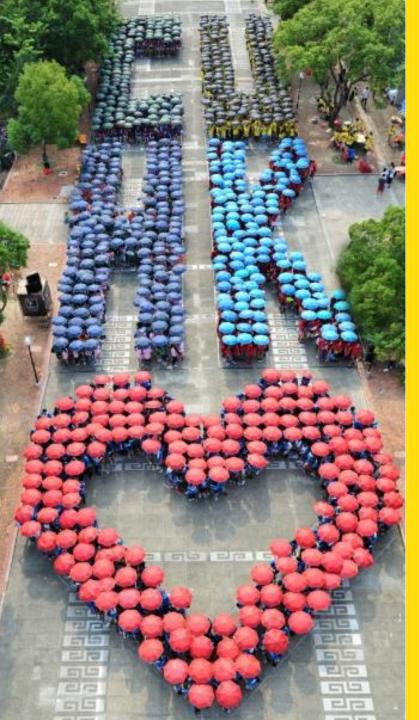
- For GPA >= 3.5: HK\$30,000 to support Exchange expenses
- For 3.5> GPA >= 3.3: HK\$20,000 for Exchange expenses

### Application Procedure detailed in the IE website:

http://www.ie.cuhk.edu.hk/programmes/ie\_award.shtml

# After Graduation





#### Employment..



NG Chung Yin Arthur Associate (Technology & Data)

Morgan Stanley

WANG Jingyu 2017 IE

Software Engineer

**ZHONG Xiang** 

2014 IE

Software Engineer

facebook

**ZHANG Qiming** 

2015 IE

Software Engineer



LAM Hoi Shan Analyst

Goldman Sachs

YUAN Yuehao

2015 IE Software Development Engineer amazon

LIU Tianyu

2016 IE

Software Engineer

**WANG Cheng** 

Software Engineer



LEUNG Shing Yuet 2018 MIE Associate (Cybersecurity)

LEUNG Chi Wai, Augustine 2018 IE Associate

pwc (Innovative Leadership)



CAO Yuan 2016 MIE Assurance Associate



LAI Yat Kan 2018 IE Analyst Programmer



**YEUNG Hong Kiu** lectronic Engineering Graduate





HO Ka Man 2015 IE Construction Engineer

**\*MTR** 





LAM Man Sze **Graduate Trainee** 



#### Further Study..



LIU Zihan 2016 MIE PhD in EECS



MSc in Electrical Engineering LIU Litian 2016 IE







LI Chenghui 2018 MIE MSc in Information Technology



DAI Yaxu 2017 MIE MSc in Computer Science **TIAN Peida** 

UCSan Diego



**HUANG Cen** 

2018 MIE

MSc in Statistics &

Data Science

Yale

UNIVERSITY

**SONG Jianhan** 2017 IE PhD in ECE **TEXAS** 

YU Ankun

2016 MIE

PhD in IE



2018 MIE

MPhil in IE

2016 MIE

PhD in Electrical Engineering

ZHOU Nan 2016 IE PhD in IE





MA Pui Kit



2016 MIE PhD in IE



LIU Hang 2017 MIE PhD in IE





# Partial List of Grad School Destinations for IE & MIE Alum (2015-2018)

MIT (EECS PhD)

CMU (Data Science, ECE, Info Security, IT)

Stanford (EE)

Columbia (CS)

UC Berkeley (EECS PhD)

Georgia Tech (CS)

Caltech (EE PhD)

Rice (CS)

**Cornell (ECE)** 

Northwestern(CS)

U of Texas at Austin (CS PhD, ECE PhD) Yale (CS, Data Science)

UC San Diego (CS, EE PhD)

UCL (CS)

U of Maryland (ECE PhD)

U of Edinburgh (Computational Finance)

NYU (CS)

CUHK, HKU, UST (IE, CS, Big Data, Finance, Math)

# Career Prospects

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

# 2017 IE Graduate Employment Survey in March, 2018 Job Nature of Graduates



# YOUR CAREER



# **Information &** Communications **Technologies**

Be an Engineer in Telecomm, Networking, System, Software, Cybersecurity or Solution Architect?













































# MODERN DATA SCIENTIST

Data Scientist, the sexiest job of 21th century requires a mixture of multidisciplinary skills ranging from an intersection of mathematics, statistics, computer science, communication and business. Finding a data scientist is hard. Finding people who understand who a data scientist is, is equally hard. So here is a little cheat sheet on who the modern data scientist really is.

#### MATH & STATISTICS

- ☆ Machine learning
- ☆ Statistical modeling
- ☆ Experiment design
- ☆ Bayesian inference
- ☆ Supervised learning: decision trees, random forests, logistic regression
- ★ Unsupervised learning: clustering, dimensionality reduction
- Optimization: gradient descent and variants

#### DOMAIN KNOWLEDGE & SOFT SKILLS

- ☆ Passionate about the business
- ☆ Curious about data
- ☆ Influence without authority
- ☆ Hacker mindset
- ☆ Problem solver
- ☆ Strategic, proactive, creative, innovative and collaborative



#### PROGRAMMING & DATABASE

- ☆ Computer science fundamentals
- ☆ Scripting language e.g. Python
- ☆ Statistical computing package e.g. R
- ☆ Databases SOL and NoSOL
- ☆ Relational algebra
- ☆ Parallel databases and parallel query processing
- ☆ MapReduce concepts
- ☆ Hadoop and Hive/Pig
- ☆ Custom reducers
- **☆** Experience with xaaS like AWS

# COMMUNICATION & VISUALIZATION

- Able to engage with senior management
- ☆ Story telling skills
- ☆ Translate data-driven insights into decisions and actions
- ☆ Visual art design
- ☆ R packages like ggplot or lattice
- ★ Knowledge of any of visualization tools e.g. Flare, D3.js, Tableau

### MODERN DATA SCIENTIST

Data Scientist, the sexiest job of the 21th century, requires a mixture of multidisciplinary skills ranging from an intersection of mathematics, statistics, computer science, communication and business. Finding a data scientist is hard. Finding people who understand who a data scientist is, is equally hard. So here is a little cheat sheet on who the modern data scientist really is.

#### MATH & STATISTICS

- ☆ Machine learning
- ☆ Statistical modeling
- ☆ Experiment design
- ☆ Bayesian inference
- ☆ Supervised learning: decision trees, random forests. logistic regression
- ★ Unsupervised learning: clustering, dimensionality reduction



#### PROGRAMMING & DATABASE

- ☆ Computer science fundamentals
- ☆ Scripting language e.g. Python
- ☆ Statistical computing packages, e.g., R
- ☆ Databases: SOL and NoSOL
- ☆ Relational algebra
- ☆ Parallel databases and parallel query processing
- ☆ MapReduce concepts
- ☆ Hadoop and Hive/Pig
- ☆ Custom reducers
- ☆ Experience with xaaS like AWS

#### DOMAIN KNOWLEDGE & SOFT SKILLS

- ☆ Passionate about the business
- ☆ Curious about data
- ☆ Influence without authority
- ☆ Hacker mindset
- ☆ Problem solver
- ☆ Strategic, proactive, creative, innovative and collaborative



# COMMUNICATION & VISUALIZATION

- ☆ Able to engage with senior management
- ☆ Story telling skills
- ☆ Translate data-driven insights into decisions and actions
- ☆ Visual art design
- ☆ R packages like ggplot or lattice
- ☆ Knowledge of any of visualization tools e.g. Flare, D3.js, Tableau

# YOUR CAREER



#### Research & Academia

Be a Research Engineer, Computer Scientist, Professor?

Carnegie Mellon University

























香港應用科技研究院有限公司



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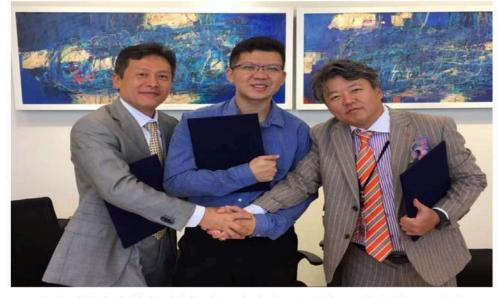


李英豪小檔案

#### 錢方好近獲日本企業投資2.2億元

By StartupBeat on November 25, 2016

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錢方創辦人李英豪(中)在日本東京與昭文社行政總裁黒田茂夫 (左)、Whiz Partners 營運總監松村淳(右)簽署合作協議。

2006 香港中文大學崇基學院工程學士

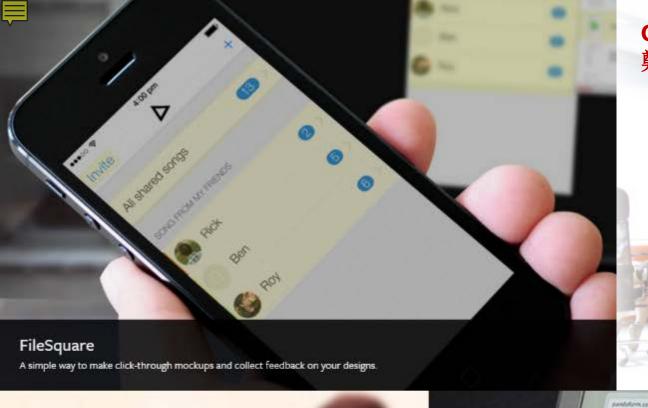
2009 首次創業,與團隊一同開發移動社交平台「多樂趣」

2011 成立移動支付平台「錢方」

2013 「錢方」被清科集團評為《2013年中國最具投資價值20強》

「錢方」被美國著名科技博客Techcrunch譽為中國的Square 2013

一錢方 | 入選《中國企業家》雜誌「未來之星100強企業 | 2014











鄭文輝 Jordan Cheng, Founder and CEO of MAD MAD Group - 中大2008年信息工程畢業生









產品:防遺失物件晶片連手機程式

創業者:中大校友郭瑋強(左起)、3年級生劉栢林和梁逸然

簡介:小晶片(透明盒内)有GPS定位、溫度感應等功

能,當放有晶片的銀包等重要物品離開手機一定距

離,手機程式會發聲或提示通知用戶。

#### 郭瑋強 - 中大2015年 信息工程畢業生







