

# Hong Kong PhD Fellowship Opportunities

Department of Computer Science  
Hong Kong Baptist University



Department of  
**COMPUTER SCIENCE**  
HONG KONG BAPTIST UNIVERSITY



# Outline

- **Welcome to Hong Kong**
- **About Hong Kong PhD fellowship scheme**
- **Hong Kong Baptist University**
- **Computer Science Department**
- **Q&A**

# Welcome to Hong Kong



# Welcome to Hong Kong

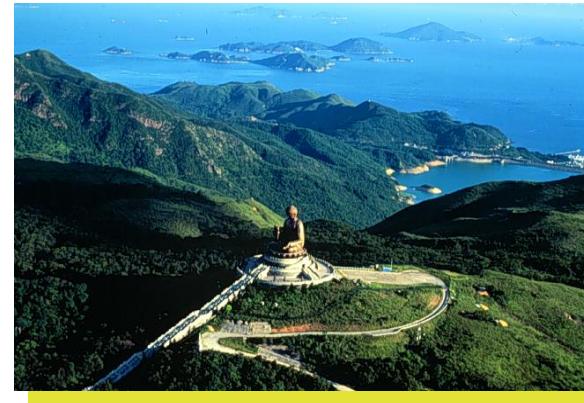
## ■ Fact Sheet

- Population ~ 7 millions
- Size: 1,104 km<sup>2</sup>



# Welcome to Hong Kong

- Hong Kong is a free and dynamic society where creativity and entrepreneurship converge
- Strategically located in the heart of Asia, it is a cosmopolitan city offering global connectivity, security and rich diversity, and is home to a unique network of people who celebrate excellence and quality living



# Welcome to Hong Kong



# Outline

- Welcome to Hong Kong
- Hong Kong PhD Fellowship Scheme
- Hong Kong Baptist University
- Computer Science Department
- Q&A

# Hong Kong PhD Fellowship Scheme (HKPFS)

- **HKPFS:** The HK PhD Fellowship Scheme was established by the HK Research Grants Council (RGC) in 2009 with the aim to attract the best and brightest students in the world to pursue their PhD studies in Hong Kong's institutions
- Students from all over the world can apply

# Fellowship Award

	HKPFS during 4-year study		
	Offered by RGC	Additional Support offered by HKBU and our Department	Total Amount
<b>Stipend (tax-free)</b>	HK\$975,600	Additional HK\$944,400 for 4-year study subject to satisfactory performance	HK\$1,920,000
<b>Extra Award</b>	HK\$25,000	HK\$30,000 (Scholarship for Outstanding Performance)	HK\$55,000
<b>Tuition Waiver</b>	NA	First year tuition waiver; tuition waivers for subsequent years of study are subject to satisfactory academic progress	
<b>Overseas Exchanges / Attachments and Research-related Activities</b>	HK\$96,300	Plus HK\$60,000 for student's 4-year study period	HK\$156,300
<b>Procurement of research materials, books, equipment, etc</b>	-	HK\$75,000	HK\$75,000
<b>Accommodation</b>		Shared-room accommodation will be provided in the student's first year of study subject to availability	Approximate HK\$70,000

# Timeline (tentative)

- **1 September 2023:** Application starts
- **1 December 2023:** Application deadline
- **Late-March 2024:** RGC announces result
- **April 2024:** Make offers and confirm acceptance with awardees
  
- Please refer to our departmental website for up-to-date information: <http://www.comp.hkbu.edu.hk/hkpfs/>

# Requirements

- Applicants seeking admission to the PhD degree programme should possess:
  - A bachelor's or master's degree from a recognized university or comparable institution;
  - Or any other qualification deemed by the Graduate School to be acceptable for this purpose. Candidates may be required to take a qualifying examination, in which event their progress shall be reported to the Graduate School at the end of their first year of study

# Selection Criteria

- Academic Excellence
  - Outstanding academic record of current/immediate past affiliated institution(s);
  - Open test results (widely recognized tests such as IELTS, TOEFL)

An applicant seeking admission on the basis of a qualification from a university or comparable institution outside Hong Kong of which the language of teaching and/or examination is not English is required to obtain a minimum score in the Test of English as a Foreign Language (TOEFL) at 79 (Internet-based Test) or International English Language Testing System (IELTS) at 6.5. Consideration will also be made for applicants with a minimum overall score in the College English Test (CET)<sup>^</sup> Band 6 at 500 and grade B in the CET-SET (Speaking English Test). The TOEFL institution code of the Hong Kong Baptist University is 9467.
- Research Ability and Potential
  - Publication(s), if available;
  - Specific research statement and past research training;
  - Proposed supervisor in the nominating institution
- Leadership Ability and Societal Responsibility
  - Proven record/experience in extracurricular activities and volunteer work;
  - Good to have activities involving organizing, leading or coordinating elements.  
Communication, Interpersonal Skills
- Cultural Diversity

# Outline

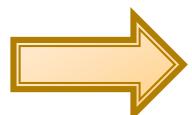
- Welcome Hong Kong
- Hong Kong PhD fellowship scheme
- Hong Kong Baptist University
- Computer Science Department
- Q & A

# Hong Kong Baptist University (HKBU)

Funded by the Government

Established in **1956** –  
the **2<sup>nd</sup>** oldest university in HK

**About 50** undergraduate and  
**Over 50** postgraduate programmes

 > About **12,000** current students



# Excellent Facilities



Library with one million of books and subscription to about 3,500 journals



Well-equipped classrooms



Excellent computer hardware/software



Sport centers and swimming pools



Medical and dental clinics

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# People

28 Professors with PhD degrees awarded by world renowned universities in *Australia, Belgium, Canada, Singapore, Switzerland, UK, US, HK*

<http://www.comp.hkbu.edu.hk/v1/?page=faculty>



清华大学  
Tsinghua University



STANFORD UNIVERSITY  
STUDENT ASSOCIATION



THE  
UNIVERSITY OF  
BRITISH  
COLUMBIA



香港中文大學  
The Chinese University of Hong Kong



北京大学  
PEKING UNIVERSITY



# Faculty Profile

- 3 IEEE Fellows
- 2 IAPR Fellows
- 1 AAAS Fellow
- 10 Top 2% Scholars by Stanford University
- Editor-in-Chief
  - [ACM Transactions on Recommender Systems](#)
  - [IEEE Transactions on Emerging Topics in Computational Intelligence](#)
- Associate Editors of various top-tier journals
  - [ACM Transactions on Interactive Intelligent Systems](#)
  - [IEEE Internet of Things Journal](#)
  - [IEEE Transactions on Cybernetics](#)
  - [IEEE Transactions on Information Forensics and Security](#)
  - [IEEE Transactions on Knowledge and Data Engineering](#)
  - [IEEE Transactions on Neural Networks and Learning Systems](#)
  - [Proceedings of the VLDB Endowment \(PVLDB\)](#)

A full list is available at: [http://www.comp.hkbu.edu.hk/v1/?page=journal\\_editorship](http://www.comp.hkbu.edu.hk/v1/?page=journal_editorship)

# Students

- **100+** research postgraduate students and research staff
- **300+** M.Sc. students
- **300+** undergraduate students

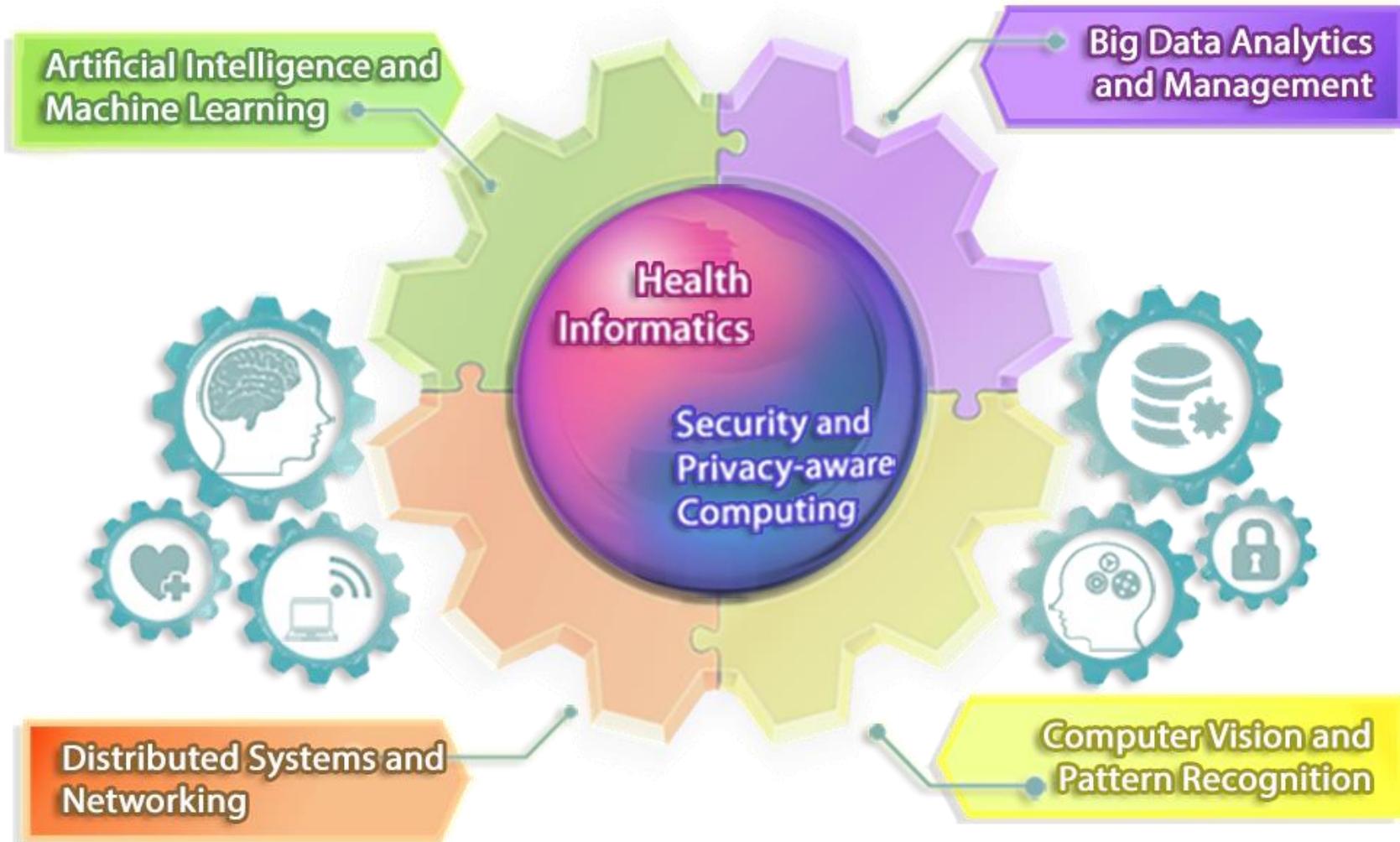


# High-tech and Advanced Computer Facilities

- **GPU Clusters**
  - 1 GPU node with eight Nvidia Tesla A100-SXM4-40GB
  - 2 GPU nodes, each with eight Nvidia Tesla A100-80G
  - 4 GPU nodes, each with two Nvidia Ampere A100-80G
  - 2 GPU nodes, each with two Nvidia Ampere A100-40G
  - 14 GPU nodes, each with four Nvidia Tesla V100
  - 1 AI node with eight Ascend 9100 NPU-32G
- **Big Data Cluster**
  - Hadoop + Spark
  - 5 dual-Xeon servers with 120TB of storage
- **Research Cluster**
  - More than 26 dual-Xeon and 6 dual-AMD EPYC servers
  - Attached with 1PB storage system
- **Top-500 Supercomputer (256 nodes)**



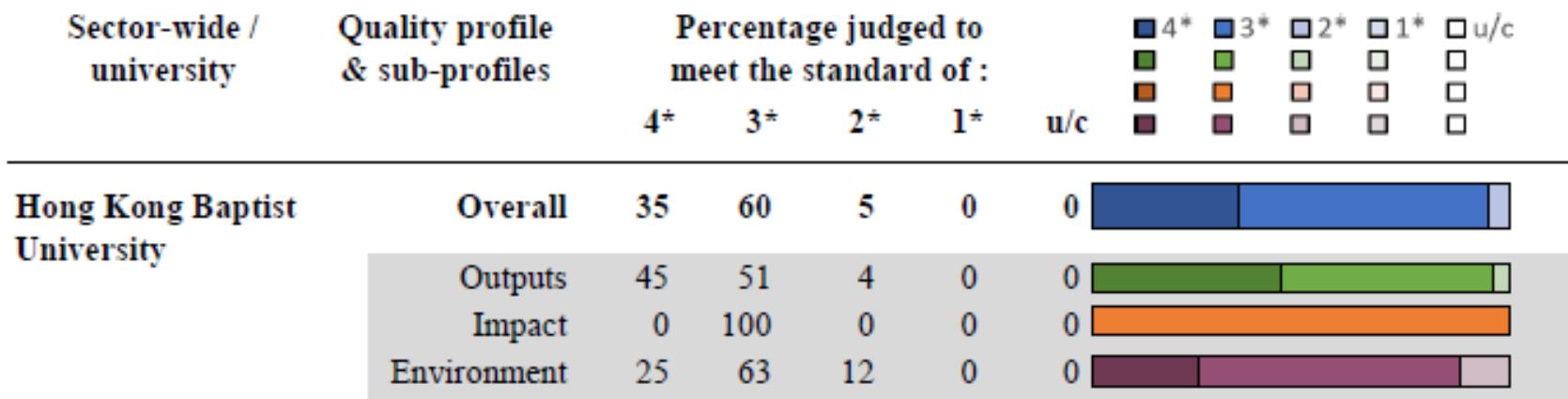
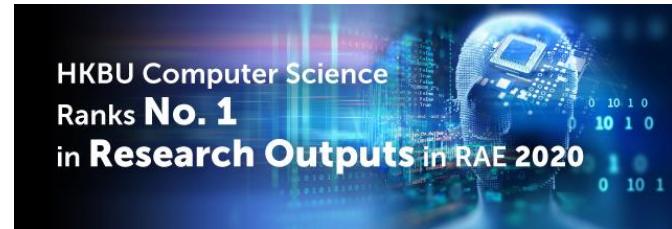
# Research Areas



# Research Outputs

#1

## Research Outputs



- **4-Star:** world leading
- **3-Star:** internationally excellent
- **2-Star:** internationally standing
- **1-Star:** regional standing

# Subject Ranking



Source: [THE World University Rankings 2022](#)

# Subject Ranking

CSRankings

Artificial Intelligence (2018-2022)

#3

Hong Kong

#26

Asia

#51

World

Databases (2018-2022)

#3

Hong Kong

#8

Asia

#23

World

Source: [CSRankings](#)

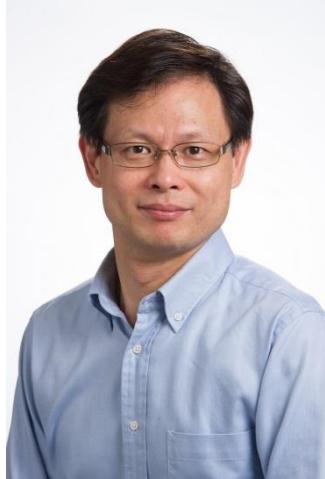
# Artificial Intelligence and Machine Learning (AIML)

Artificial Intelligence; Machine Learning

Big Data Analytics; Data Mining

Intelligent User Interface; Autonomy-Oriented Computing; Web Intelligence

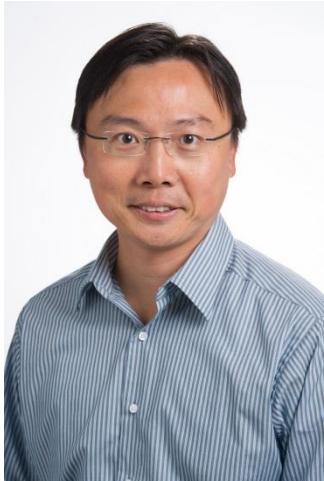
# Faculty members (AIML)



**Prof. Jiming Liu**

- Chair Professor
- IEEE Fellow
- Editor-in-Chief
  - Web Intelligence (IOS Press, The Netherlands)
  - Brain Informatics (Springer)
- Associate Editor
  - IEEE Transactions on Knowledge and Data Engineering
  - IEEE Transactions on Cybernetics
  - Computational Intelligence
- Chair of IEEE Computer Society Technical Committee on Intelligent Informatics
- Co-Founder/Co-Chair of Web Intelligence Consortium (WIC) with Centres in over 20 countries

# Faculty members (AIML)



**Prof. William Cheung**

- Programme Co-chairs and PC Members
  - A number of IEEE/ACM international conferences/workshops on Data Mining, Artificial Intelligence, Web Intelligence, Health Informatics and E-commerce
- Managing Editor
  - IEEE Intelligent Informatics Bulletin
- Track Editor (Network Science)
  - Web Intelligence Journal (IOS Press, The Netherlands)
- Guest Editor
  - Computational Intelligence *An International Journal (Special Issue on Knowledge Grid and Grid Intelligence)*
  - Journal of E-Commerce Research and Applications (*Special Issue on Intelligence in e-Application*)
  - International Journal of Web Services Research (*Special Issue on Services Discovery and Composition Systems*)
- Director of Centre for Health Informatics

# Faculty members (AIML)

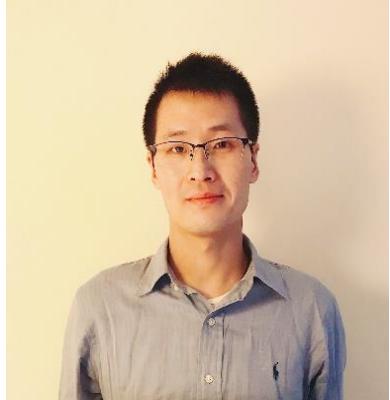


**Dr. Li Chen**

<https://www.comp.hkbu.edu.hk/~lichen/>

- Associate Head (Research) and Associate Professor
- Google scholar profile:
  - h-index 44, i10-index 87, citations 8039
- Education:
  - PhD degree in Computer Science, **Swiss Federal Institute of Technology in Lausanne (EPFL)**, Switzerland
  - Bachelor and master degrees, **Peking University**, China
- Professional activities:
  - **Co-Editor-in-Chief**, ACM Transactions on Recommender Systems (TORS), since 2022
  - **Associate Editor**, ACM Transactions on Interactive Intelligent Systems (TiiS)
  - **Editorial Board Member**, User Modeling and User-Adapted Interaction: The Journal of Personalization Research (UMUAI)
- Research interests:
  - Human-Centered AI, Web Personalization, Recommender Systems, Intelligent User Interfaces

# Faculty members (AIML)



**Dr. Han Bo**

- Assistant Professor
- BAIHO Visiting Scientist of RIKEN AIP (with Prof. Sugiyama's Team)
- Top 10 Highly-cited Papers in NeurIPS'18 (Co-teaching)
- Monograph accepted by MIT Press (Machine Learning with Noisy Labels)
- RGC Early Career Scheme and NSFC Young Scientists Fund
- MSRA StarTrack Program and Tencent AI Lab Focused Research Award
- Area Chairs of NeurIPS, ICML and ICLR
- Action Editor of TMLR; Guest Editor of MLJ; Editorial Board of JMLR
- ICLR'21 Outstanding Area Chairs and ICML'20 Top Reviewers

Homepage: <https://bhanml.github.io/>

Google Scholar: <https://scholar.google.com.au/citations?user=nTNjqHwAAAAJ>

Recruiting Information: [https://bhanml.github.io/prospective\\_students.pdf](https://bhanml.github.io/prospective_students.pdf)

# Faculty members (AIML)



**Dr. Liu Yang**

- Assistant Professor
  - B.Eng. and M.Eng. (National University of Defense Technology, 2004 and 2007)
  - Ph.D. (Hong Kong Polytechnic University, 2011)
  - Visiting scholar (Carnegie Mellon University, 2010)
  - Postdoc (Yale University, 2011-2012)
- Research Interests
  - Artificial Intelligence, Machine Learning
  - Computational Epidemiology, Infectious Disease Modeling
- Publications
  - Lancet's EClinicalMedicine, T-NNLS, T-Cyber, T-IP, T-AC, T-AMD, T-IST, PR, NeuroImage, etc.
  - AAAI, IJCAI, SIGIR, ACMMM, etc.
- Expected qualification of students:
  - Solid mathematical background
  - Familiar with Matlab, C/C++, Java, or Python
  - Personality traits: Proactive; self-motivated; strong planning, critical thinking, problem solving, effective time management skills; and the ability to multitask

# Faculty members (AIML)



**Dr. Lu Zhang**

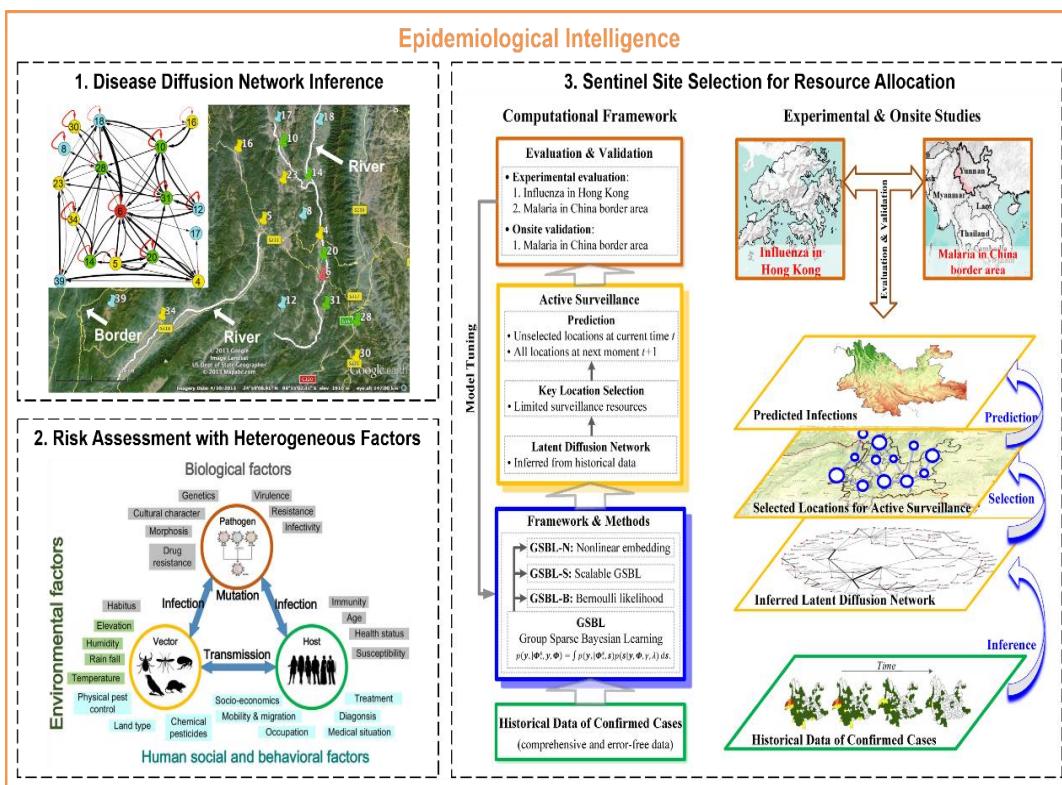
Email:  
[ericluzhang@comp.hkbu.edu.hk](mailto:ericluzhang@comp.hkbu.edu.hk)

Webpage:  
<https://www.comp.hkbu.edu.hk/~ericluzhang/>

- Assistant Professor :
  - **B.E.** Software engineering, Tianjin University
  - **MPhil** Bioinformatics, The University of Hong Kong
  - **PhD** Computer Science, City University of Hong Kong
  - **Postdoc**, Computer Science, Stanford University
  - **Visiting Student**, Mathematics, UC Berkeley
  - **Honor Research Officer**, Imperial College London
- Collaborators:
  - Stanford University, UC Berkeley, Vanderbilt University, BGI, etc.
- Publications :
  - Briefings in Bioinformatics, Bioinformatics, Nature Communications, PNAS, et al.
- Research Interests:
  - AI in drug discovery (small molecule, Aptamer, Chinese Medicine)
  - AI in genomics (use deep learning to decipher the genome of viruses and bacterial)

# Machine Learning for Combating Diseases: From Theories to Impacts

(Jiming Liu, Yang Liu, et al.)



## Novel ML framework design

- Heterogeneous source integration; multi-scale dependency characterization; etc.

## Theoretical formulation and mathematical proof

- Configuration determination; convergence analysis; error bound guarantee; etc.

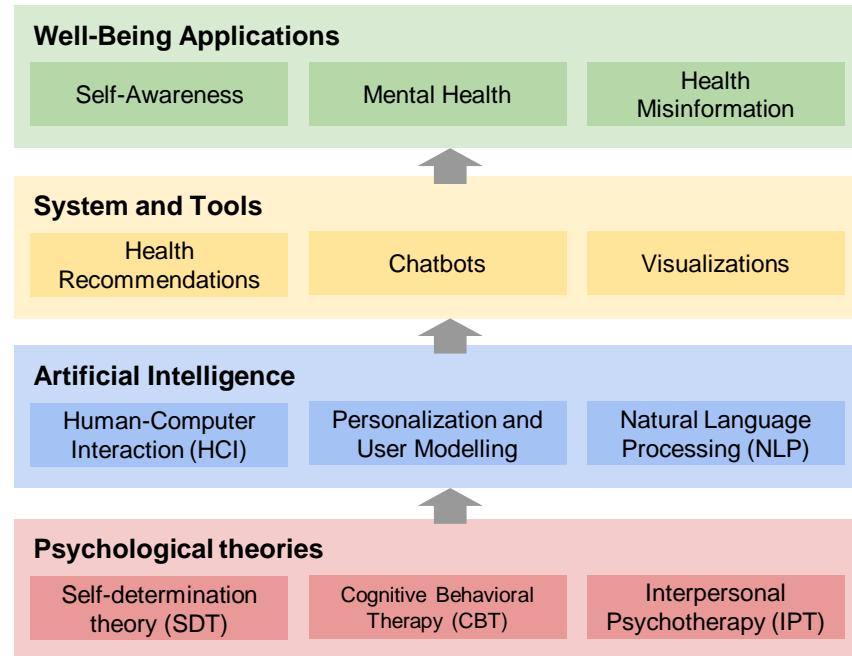
## Systematic validation and deployment

- Theoretically derived ML behavior characterization
- Validation on publicly available datasets
- Impacts:** disease transmission modeling, risk assessment, healthcare resource allocation, etc.

# Empathetic and Personalized Conversational AI for Promoting Human Well-Being

(Li Chen, Yucheng Jin, et al.)

We aim to develop a broadly accessible AI-empowered solution to promote people's psychological well-being. We will base our long-term research experiences on the areas of artificial intelligence, psychology, and digital communication to develop empathetic and personalized conversation systems for this goal.



**Self-Awareness**  
Keeping track of the users' mood through friendly and casual chats for increasing their self-awareness.

The top screenshot shows a music listening interface titled "Listen to Music - Listen to Yourself". It displays a song by Montane K titled "Together with you in the spring". The lyrics are shown, and a message from the AI says: "Let's start today's music time! You can choose a music tag according to your current emotion: Satisfied." Below this is a list of songs and their descriptions, including "Step by Step into Your Heart" and "When listening to this song, some listeners said: 'I find a lovely common ground in this song, it makes me feel good for those whom they meet.'".

The bottom screenshot shows a chat interface with a blue header "Percy". The AI says: "Hi there! I am Percy. I would like to help you know yourself better through an interview." The user asks: "Can you tell me what you are studying at HKBU?", and the AI replies: "I hope you enjoy studying at HKBU. I know many students feel low during the pandemic of COVID-19." The user then asks: "How are you feeling now?", and the AI provides a series of mood buttons: Excited, Happy, Relaxed, Calm, Sad, Depressed, Upset, and Nervous.

**Mental Health**  
Mitigating users' loneliness, lack of meaning, and stress by providing in-time, personalized service and support.

**Health Misinformation**  
Enabling the mixed-initiative fact-checking for health information.

# Towards Trustworthy Learning and Reasoning with Noisy Data

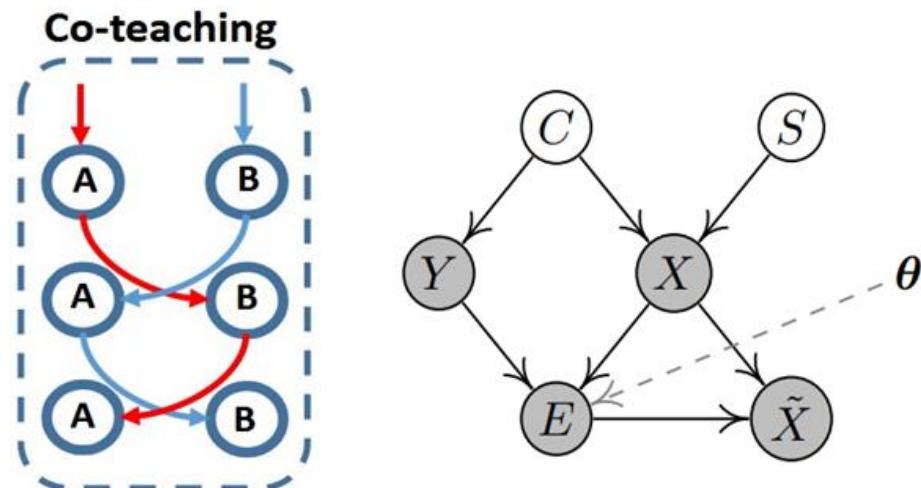
(Bo Han et al.)

## Collaborators:

- RIKEN AIP & MPI EI
- CMU & UT Austin
- USYD & UNIMELB

## Cultivation:

- Hands-on in first two years
- Hands-off for internships
- Group & 1-on-1 meeting



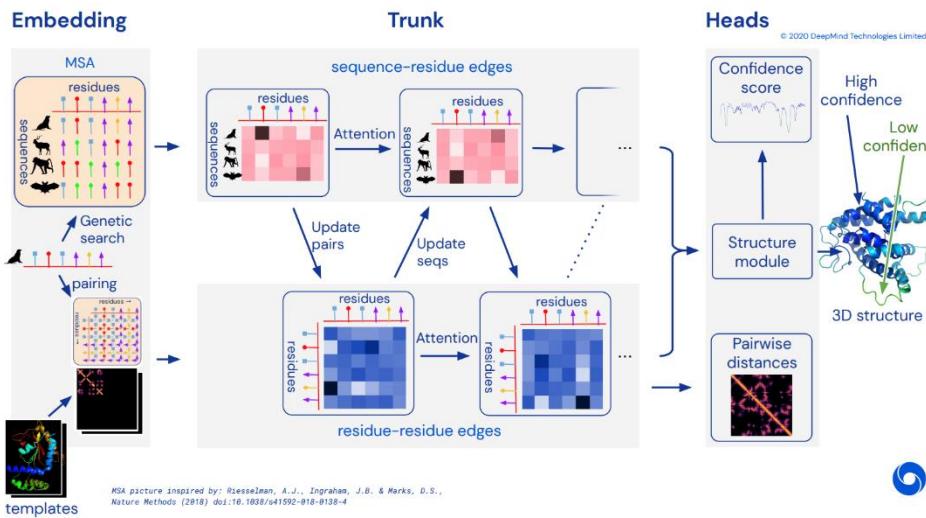
Research: <https://bhanml.github.io/research.html>

Contact: with title “Prospective students and visitors” via [bhanml@comp.hkbu.edu.hk](mailto:bhanml@comp.hkbu.edu.hk)

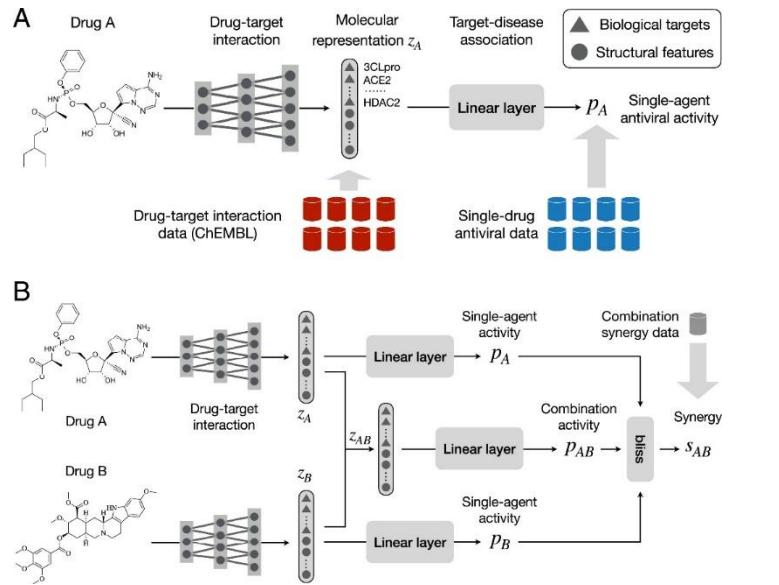
# Artificial Intelligence in Big Data and Drug Discovery

(Lu Zhang)

## Breakthrough of AlphaFold 2



## Drug combination for COVID-19



**Challenge:** Discovering new drug targets and different types of drugs using the deep learning techniques in **natural language processing** or **computer vision**.

**Methodology:** Generative model, multi-source data integration, transformer et al.

# Big Data Analytics and Management (BDAM)

Data Analytics; Graph/social/spatial data management; Blockchain

Databases; Query Processing

Data Privacy and Security

Natural Language Processing

# Faculty members (BDAM)



Prof. Jianliang Xu

- **Associate Editor of SCI Journals**
  - IEEE Transactions on Knowledge and Data Engineering (**TKDE**)
  - Proceedings of VLDB (**PVLDB**)
  - International Journal of Information Science and Engineering (**JISE**)
  - International Journal of Distributed Sensor Networks (**IJDSN**)
- **Review Board Member**
  - Proceedings of VLDB (2018-2021)
- **Chair of Major International Conferences**
  - General Co-Chair, IEEE MDM 2022
  - Program Committee Co-Chair, IEEE BlockDM 2021
  - Program Committee Co-Chair, IEEE MDM 2019
  - Program Committee Co-Chair, NDBC 2019
- **TPC Member of Top International Conferences**
  - SIGMOD, VLDB, ICDE, WWW, etc.

# Faculty members (BDAM)



Prof. Byron Choi

- **PhD (University of Pennsylvania, USA, 2006)**
- **Previous work experience**
  - University of Edinburgh (UK)
  - Nanyang Technological University (SG)
- **Research interests:** graph queries, database securities, time series analysis
- **On-going projects:**
  - GRF: Semantic Indexing for Keyword Search on Graphs (HKBU12201119, 2020)
  - RIF: Exploring the role of big data analytics (BDA) in promoting smart low-carbon cities: A human-centered, community-based, and deep engagement approach in HK
- **Professional services**
  - Director of Croucher Advanced Study Institute on “Frontiers in Big Data Graph Research” 2015
  - Program committee: SIGMOD ‘24-‘23, EDBT ‘23 (senior), PVLDB ‘22-‘21, ICDE ‘22, CIKM ‘21 (senior)
  - Information Director of SIGMOD (including sigmod.org and DBWorld)

# Faculty members (BDAM)



**Dr. Xin Huang**

- Associate Professor
  - B.Eng. (Xiamen University, 2010)
  - Ph.D. (The Chinese University of Hong Kong, 2014)
- PC Members: VLDB, ICDE, KDD, WWW, AAAI, IJCAI, CIKM.
- Supervised student achievements
  - Best Paper Nomination, ACM CIKM 2020
  - Best Paper Award, WISE 2019
  - Best Student Paper Award, IEEE ICSC 2017
- Expected qualification of students:
  - Solid in mathematics, data structure, and algorithm
  - ICPC programming experience is a **plus**
  - Interested in writing codes that run **fast** on big data

# Faculty members (BDAM)



## Dr. Ma Jing

Assistant Professor

[2020.04--now]

Email:

[majing@hkbu.edu.hk](mailto:majing@hkbu.edu.hk)

Webpage:

<https://majingcuhk.github.io/>

- **PhD (The Chinese University of Hong Kong, 2020)**
- **Previous work experience**
  - Nanyang Technological University (Visiting Scholar) 2018.12 – 2019.08
  - Institute for Basic Science (Visiting Scholar) 2019.12 – 2020.02
- **Research interests:**
  - Natural language Processing
  - Information Verification: Fake News Detection, Rumor Detection, etc.
  - Opinion mining, stance detection
  - Social Network analytics
  - Explainable Machine Learning
  - Question and Answering, Dialog System
- **Conference/Workshop services**
  - More than 30 publications in refereed journals, conferences and workshops, including ACL, WWW, EMNLP, IJCAI, CIKM, TKDE and TIST.
  - Program Committee Member: WSDM 2023, EACL 2023, ACL 2022, WWW 2021 2023, CIKM 2020, AAAI 2019-2022, ACL 2019, EMNLP 2018-2019, AI 2019, etc
  - Journal Reviewer: TKDE, TOMM, TIST, TNNLS, PLOS ONE, etc

# Faculty members (BDAM)



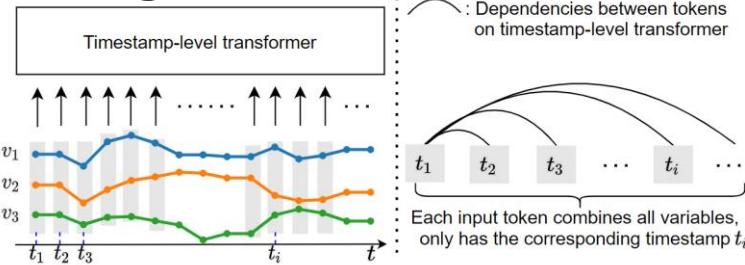
**Dr. Renchi Yang**

- **Assistant Professor**
  - PhD (Nanyang Technological University, 2021)
  - B.Eng. (Beijing University of Posts & Telecommunications, 2015)
- **Previous work experience**
  - National University of Singapore (SG)
- **Research interests:** graph query processing, web search, social network analysis, graph representation learning, etc.
- **Research Recognition:**
  - Best Paper Award Nominee in WWW 2022
  - 2022 ACM SIGMOD Research Highlight Award
  - Best Research Paper Award in VLDB 2021
- **Conference/Workshop services**
  - Program committee: KDD 2022-2023, WWW 2022-2023, WSDM 2023, ECML-PKDD 2022, etc.

# Shape-level Variable-Position Transformer for Multivariate Time Series Classification [AAAI'23]

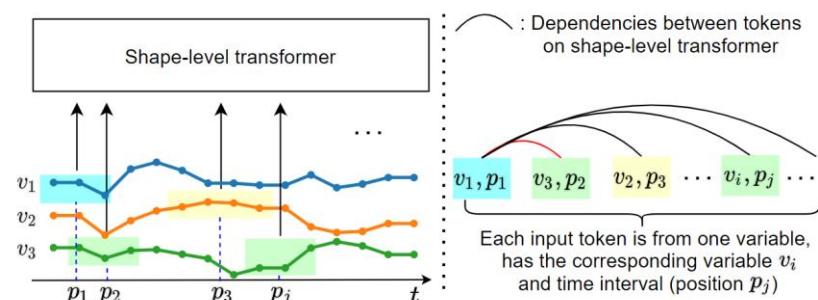
(Byron Choi)

## Existing work



(a) LHS: the timestamp-level transformer; RHS: the dependencies (lines) of all tokens (timestamps) to first token learned by the transformer. The input token of timestamp-level transformer combines all variables at one timestamp, the transformer only captures the temporal dependencies.

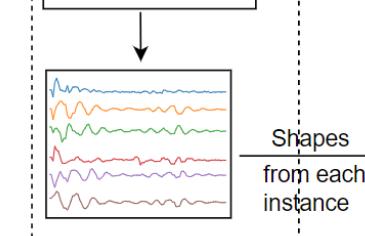
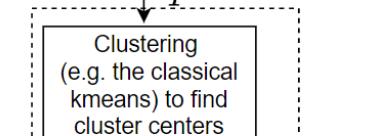
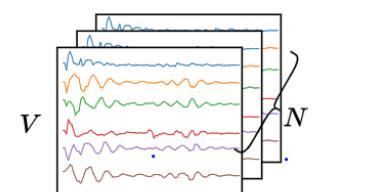
## Our ideas



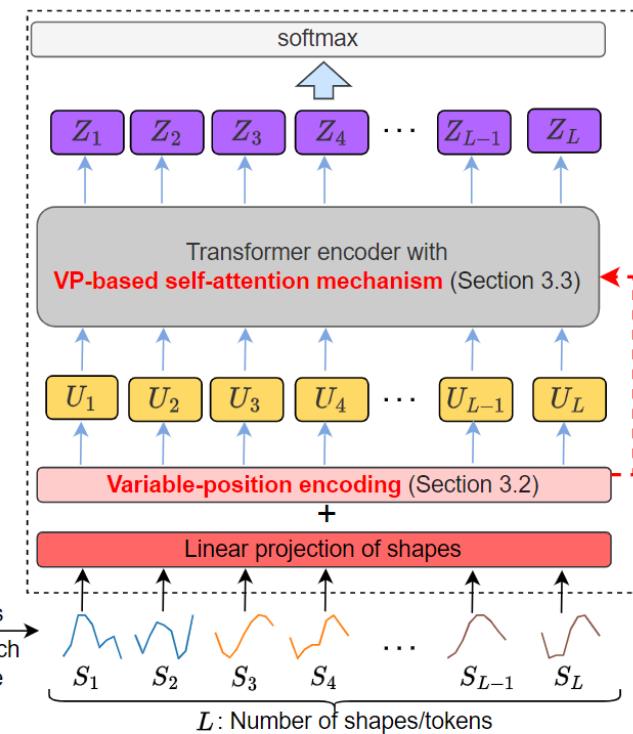
(b) LHS: the shape-level transformer; RHS: the dependencies (lines) of all tokens (shapes) to first token learned by the transformer. The input token of shape-level transformer is from one variable  $v_i$  with the corresponding time interval (position  $p_j$ ). By capturing the dependencies between shapes, the dependencies of variables and positions are learned. The red line denotes the dependencies between  $v_1$  and  $v_3$ .

## Overview of our transformer (Novelties highlighted in red)

$N$ : Number of instances  
 $V$ : Variables  
 $T$ : Series length



① Preprocessing (Section 3.1)



② Shape-level variable-position transformer (SVP-T)

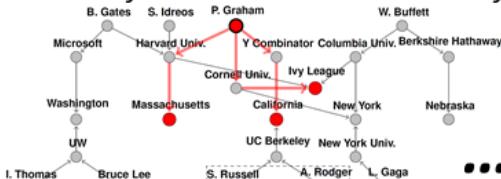
# Semantic Indexing for Keyword Search on Graphs

## (HKRGC GRF HKBU12201119)

### (Byron Choi)

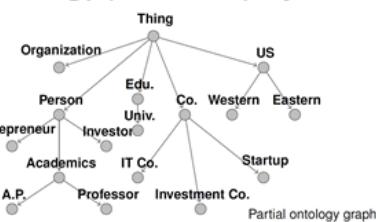
#### Database research 1: Query performance [1]

1. Data: Resourceful knowledge graphs  
(millions of nodes and tens millions of edges)

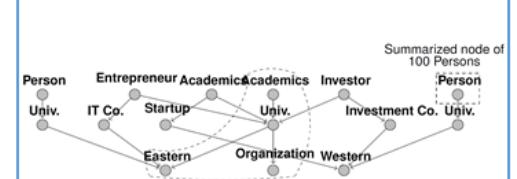


Keyword search example : { Massachusetts, Ivy League, California) at "Paul Graham"

2. Well annotated with ontology (semantic) info



3. Indexing knowledge with semantics



The size is roughly reduced to less than half!  
Keyword search times are significantly reduced.

#### Database research 2: Novel applications – public-private social networks [2]

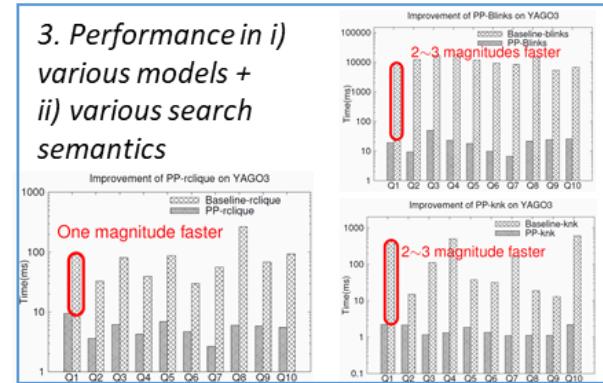
1. Public social network



2. Private network within a company



3. Performance in i) various models + ii) various search semantics



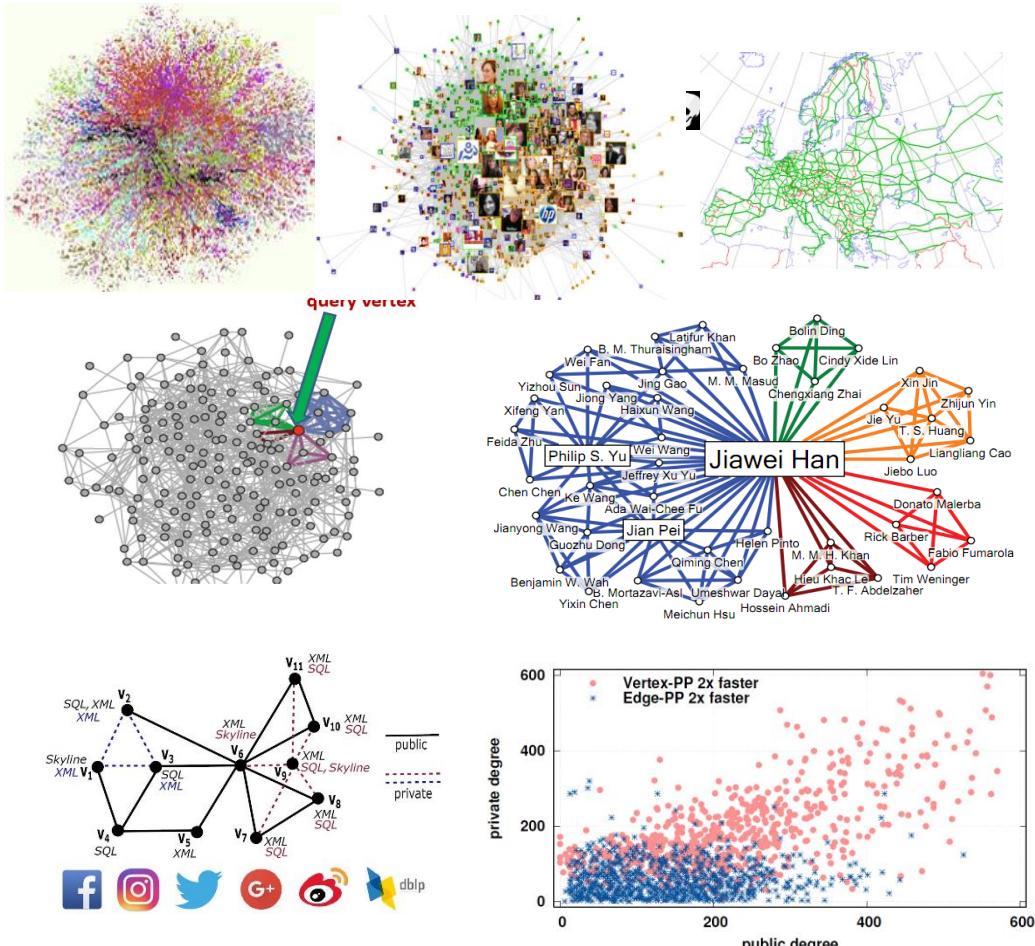
Sample publications by a recent PhD graduate J. Jiang:

- [1] J. Jiang et al. A Generic Ontology Framework for Indexing Keyword Search on Massive Graphs. IEEE TKDE, 2019.
- [2] J. Jiang et al. PPKWS: An Efficient Framework for Keyword Search on Public-Private Networks. IEEE ICDE, 2020

# Large-scale Graph Data Management, Mining, and Learning

(Xin Huang et al.)

## ■ Big Graph Data

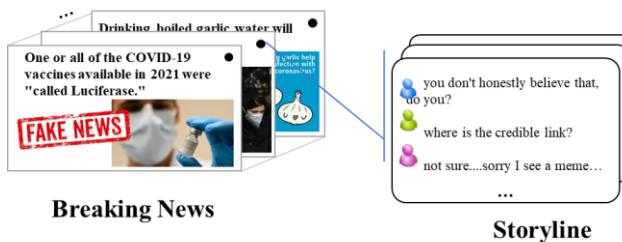


- Graph Data Management
  - Graph Indexing, Graph Query Processing, Keyword Search
- Graph Mining
  - Community Search, Graph Decomposition, Graph Summarization, Graph Visualization
- Graph Learning
  - Graph Embedding, GCN
- Social Network Analysis
  - Public-Private Graph Analytics

# AI for Information Verification and Retrieval (Ma Jing et al.)

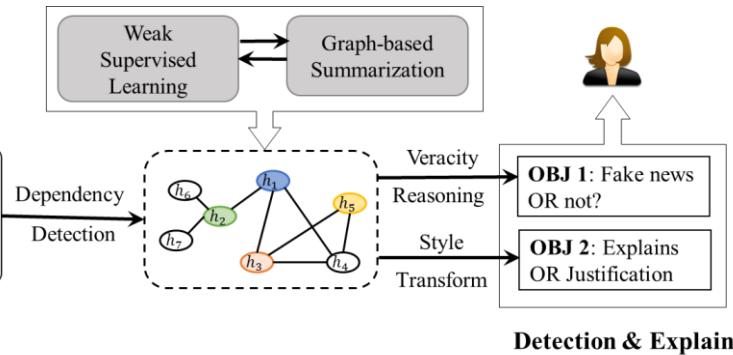
## ■ Explainable Fake News Detection :

- Verify Truthfulness and generate justifications to explain.
- Weakly-supervised evidence retrieval



## ■ Question & Answering:

- Questions to find truth for a dubious statement;
- Retrieve & generate credible answers from the crowd of wisdom



## ■ Low-resource Rumor Detection:

- Domain Adaption
- Multi-language alignment

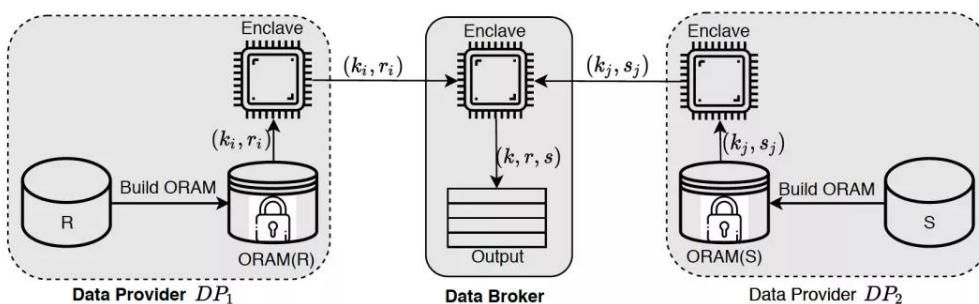
## ■ Explainable AI Model:

- Explain pre-trained language model
- Image-text retrieval

# Responsible Big Data and Blockchain Technologies

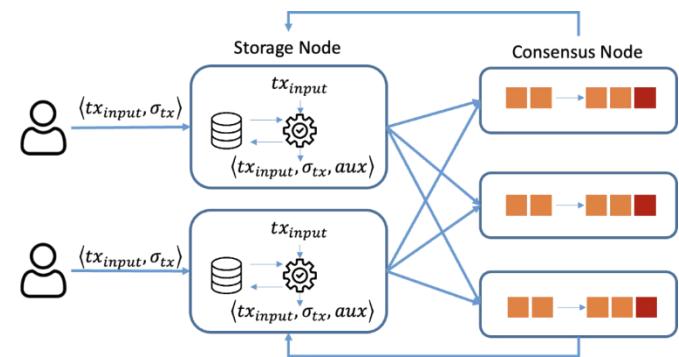
(Jianliang Xu et al.)

- **Federated analytics**: enabling collaborative analytics on decentralized sensitive data without invading privacy
- **Challenge**: susceptible to side-channel attacks
- **Solution**: *oblivious and efficient* index-based data access and query processing



Federated Data Analytics  
with Hardware Enclaves

- **Stateless blockchain**
  - Move **states** and **transactions** to off-chain nodes
  - Maintain only **small digests** on chain
  - Execute transactions by off-chain nodes, and verified and committed by consensus nodes



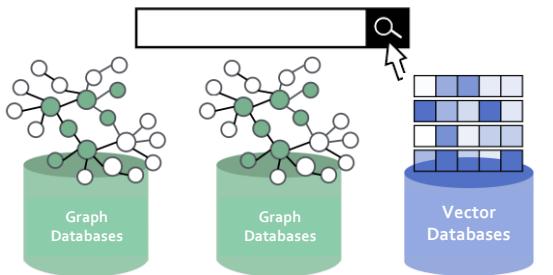
Stateless Blockchain

# Efficient and Effective Big Graph Data Science

## (Renchi Yang et al.)

### Graph Data Management

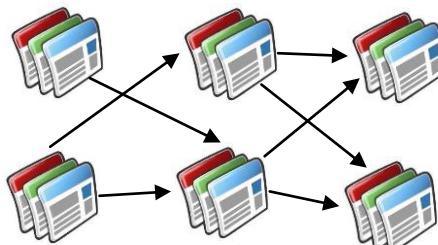
- Graph Query Processing
- Graph Storage & Indexing
- Graph Visualization



Sampling, Indexing, Pruning  
GPU computing, Distributed  
computing

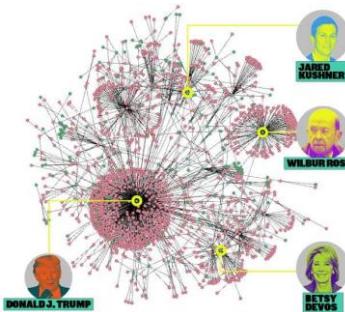
### Web Search & Mining

- Search & Ranking
- Combating Web Spam
- Query Analysis, etc.



### Social Network Analysis

- Community Detection
- Anomaly Detection
- Recommendations, etc.



Graph theory, Network  
Embedding,  
Graph Neural Networks, etc.

# Computer Vision and Pattern Recognition (CVPR)

Computer Vision; Facial Recognition

Biometric System Security

Medical Informatics; Medical Image Processing

Intelligent Video Surveillance

Computational Photography

# Faculty members (CVPR)



**Prof. Pong Chi Yuen**

- Chair Professor
- Associate Editor: IEEE Transactions on Information Forensics and Security
- Editorial Board Member: Pattern Recognition
- HK Research Grants Council (RGC) Engineering Panel member
- Advisory Board
  - IEEE Seventh International Conference on Biometrics: Theory, Applications And Systems (BTAS), 2015
- Program Co-chair
  - International Conference on Pattern Recognition (ICPR), 2006
  - IEEE Fifth International Conference on Biometrics: Theory, Applications And Systems (BTAS), 2012
- Director of Croucher Advanced Study Institute on Biometrics 2004 and 2007
- IAPR Fellow

# Faculty members (CVPR)

Always looking for strong applicants for PhD students!



- PhD, FIEEE, FAAAS, FIET, FBCS
- Chair Professor in Artificial Intelligence, Department of Computer Science, HKBU
- Changjiang Scholars (Chair Professor)
- Ranked the World's Top 1% Most-cited Scientists in the field of Artificial Intelligence and Image Processing by Stanford University ( 2020-2022 )
- **Research Interests:**
  - Machine Learning
  - Visual Computing
  - Data Science
  - Pattern Recognition
  - Multi-objective Optimization
  - Information Security
- **Selected Publications (Within the Past Three Years):**
  - M.K. Li, **Y.M. Cheung\*** and Z.K. Hu, "Key Point Sensitive Loss for Long-tailed Visual Recognition", IEEE Transactions on Pattern Analysis and Machine Intelligence, in press, DOI: 10.1109/TPAMI.2022.3196044.
  - Y.Q. Zhang and **Y.M. Cheung\***, "Learnable Weighting of Intra-attribute Distances for Categorical Data Clustering with Nominal and Ordinal Attributes", IEEE Transactions on Pattern Analysis and Machine Intelligence, 44(7): 3560-3576, 2022.
  - X. Liu, K. Hu, H.B. Ling and **Y.M. Cheung\***, "MTFH: A Matrix Tri-Factorization Hashing Framework for Efficient Cross-Modal Retrieval", IEEE Transactions on Pattern Analysis and Machine Intelligence, 43(3): 964-981, 2021.
  - Y. Zhou and **Y.M. Cheung\***, "Bayesian Low-Tubal-Rank Robust Tensor Factorization with Multi-Rank Determination", IEEE Transactions on Pattern Analysis and Machine Intelligence, 43(1): 62-76, 2021.
  - Y. Lu, **Y.M. Cheung\*** and Y.Y. Tang, "Bayes Imbalance Impact Index: A Measure of Class Imbalanced Dataset for Classification Problem", IEEE Transactions on Neural Networks and Learning Systems, 31(9): 3525-3539, 2020.
  - **Y.M. Cheung\***, F.Q. Gu, H.L. Liu, K.C. Tan and H. Huang, "Objective-Domain Dual Decomposition: An Effective Approach to Optimizing Partial Differentiable Objective Functions", IEEE Transactions on Cybernetics, 50(3): 923-934, 2020.

## Prof. Yiu Ming Cheung

E-mail: ymc@comp.hkbu.edu.hk

Tel.: (+852) 3411 5155

<https://www.comp.hkbu.edu.hk/~ymc/>

# Faculty members (CVPR)



- Assistant Professor, Department of Computer Science, HKBU
- Research Interests



Computational Photography



3D Vision



Motion



Art Tech

## Dr. Jie Chen

- Professional Activities
  - **Associate Editor:** The Visual Computer Journal, Springer
  - **Area Chair,** ICME (IEEE International Conference on Multimedia & Expo), VCIP (IEEE International Conference on Visual Communications and Image Processing)
  - **TPC Member** for CVPR, ECCV, ICCV, ACM MM, NeurIPS, CGI (Computer Graphics International), EUSIPCO (European Signal Processing Conference)
  - **Reviewer** for IEEE TIP, TSCVT, TCI, SPL, TOB, ACM TOG

# Faculty members (CVPR)

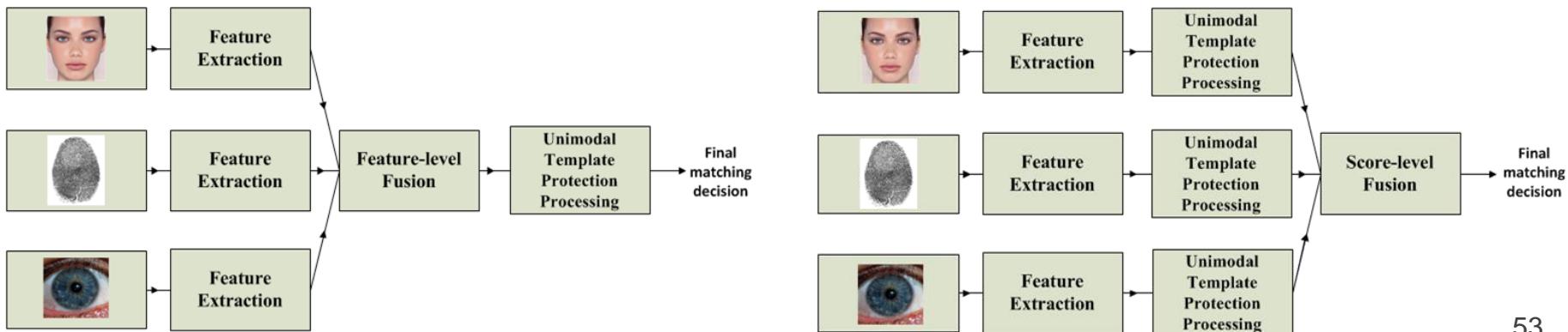


**Dr. Renjie Wan**

- Assistant Professor
- Professional Activities
  - Area Chair, VALSE
  - Reviewer of CVPR/ICCV/ECCV/NeurIPS/AAAI/IJCAI/ICML/TIP/TPAMI/IJCV
  - Outstanding reviewer of ICCV
- Experiences
  - Assistant Professor, Department of Science, HKBU
  - Wallenberg-NTU Presidential Postdoctoral Fellow, NTU · Singapore, and Lund University, Sweden
  - PhD Nanyang Technological University, Singapore
  - BEng. University of Electronic Science and Technology of China

# Multi-Modality Biometric template Protection ( P C Yuen et al.)

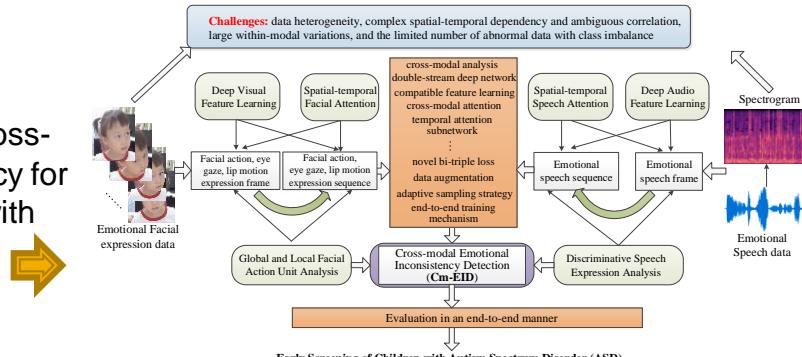
- **Project goal:**
  - To seek for an effective multi-modal template protection technique for optimal preservation of user privacy, security and discrimination power.
- **Research Challenge:**
  - Overcome inherent tradeoff between security and discrimination power in the existing template protection techniques
  - Seek for the best template protection architectures among those involving multimodal fusion at different levels, which offer different degrees of security/privacy protection and performance accuracy
  - Put forward an effective feature transformation technique to convert multimodality features into a common form for effective feature level fusion



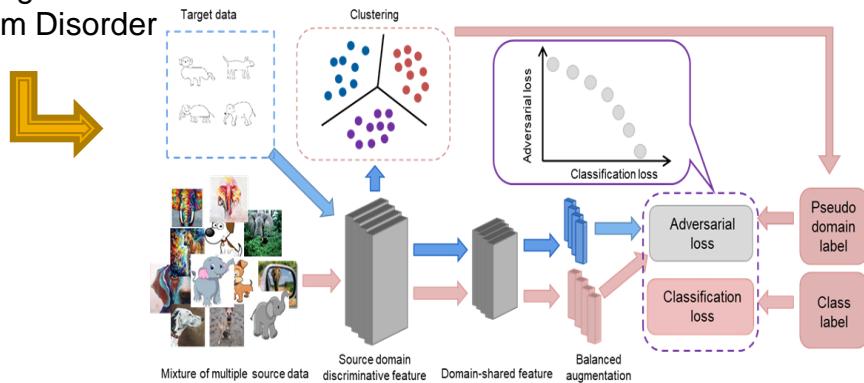
# Selected Research Projects: (Yiu-ming Cheung)

Always looking for strong applicants for PhD students!

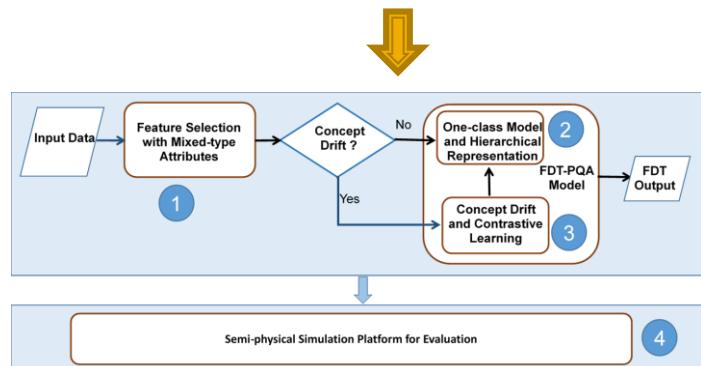
**Project 1:** On Detecting Cross-modal Emotional Inconsistency for Early Screening of Children with Autism Spectrum Disorder



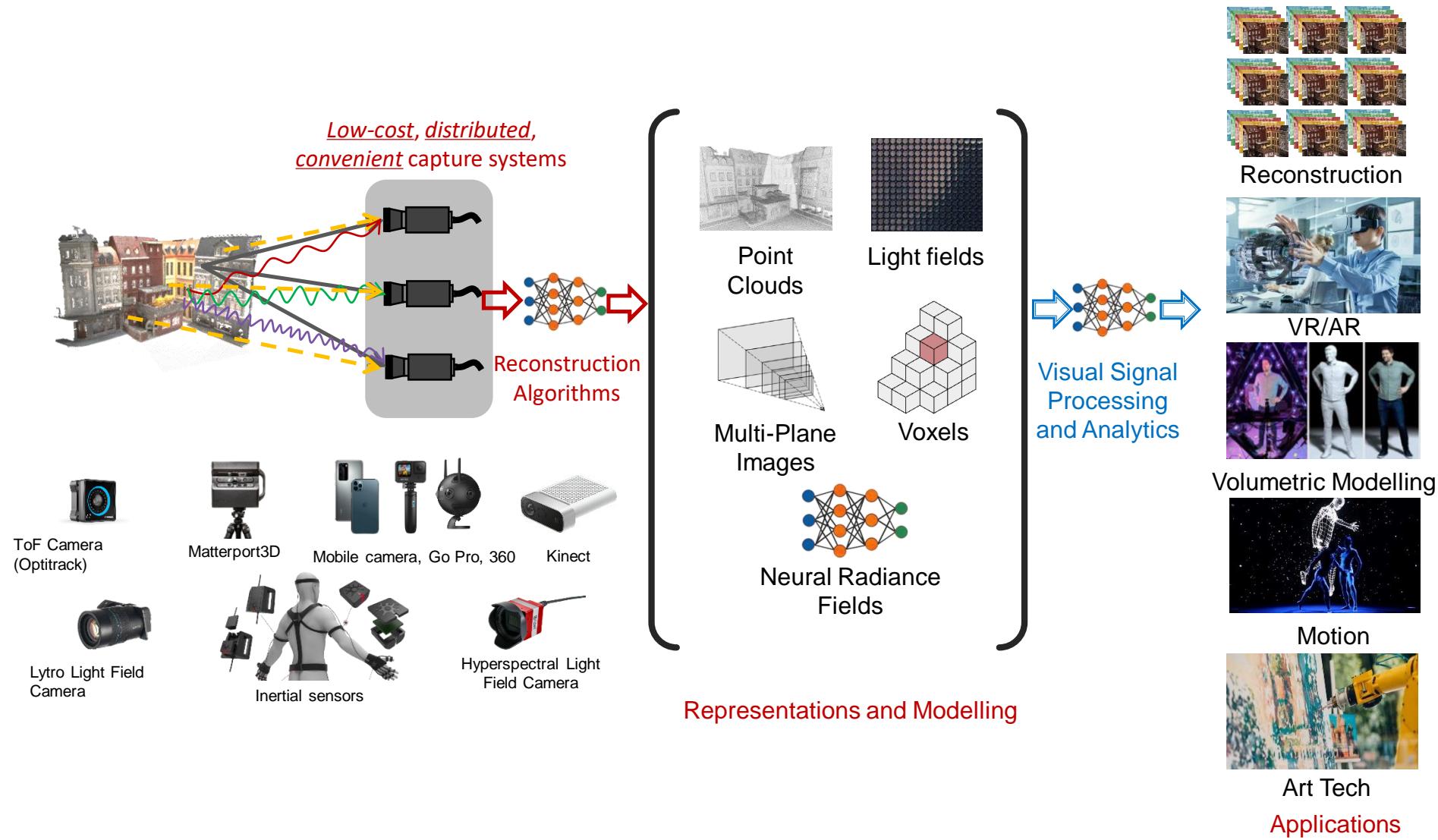
**Project 2:** On Detecting Cross-modal Emotional Inconsistency for Early Screening of Children with Autism Spectrum Disorder



**Project 3:** Developing Machine Learning Methods for Industrial Big Data Analysis and Traceability of Product Quality Abnormality



# Multimedia Capture, Processing and Content Synthesis (Jie Chen et al.)



# Visual Restoration and its beyond (Renjie Wan et. al.)



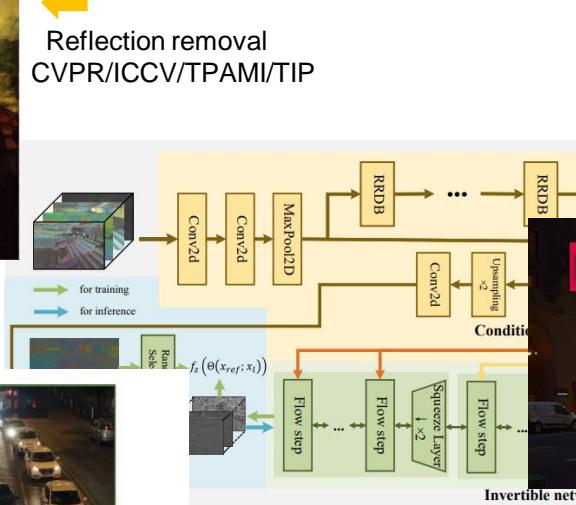
Reflection removal  
CVPR/ICCV/TPAMI/TIP



Windshield image

Li et al. [16]

WIRE-GAN



Low-light image enhancement  
AAAI (SOTA in the world)

**BEFORE** **AFTER**

Generated high-light image

Restoration for Recognition  
IJCV/ACM MM/ICME

56

56

# Distributed Systems and Networking (DSAN)

High-Performance GPU Computing

Internet of Things (IoT) and Sensor Networks

Cloud Computing; Data Center Networks

Wireless and Mobile Networks

# Faculty members (DSAN)



**Prof. Yiu-Wing Leung**

- **BSc and PhD, Chinese University of Hong Kong, Hong Kong**
- **Research interests:**
  - Networking,
  - Cloud computing,
  - Internet computing
- **Publications:**
  - Publications in major conferences and journals (e.g., IEEE INFOCOM, IEEE ICDCS, IEEE/ACM ToN, IEEE TMC, IEEE TC, IEEE TPDS, etc.)
- **Recognitions:**
  - Name is listed in "*Top 2% most-cited scientists in the world*" by Stanford University.

# Faculty members (DSAN)

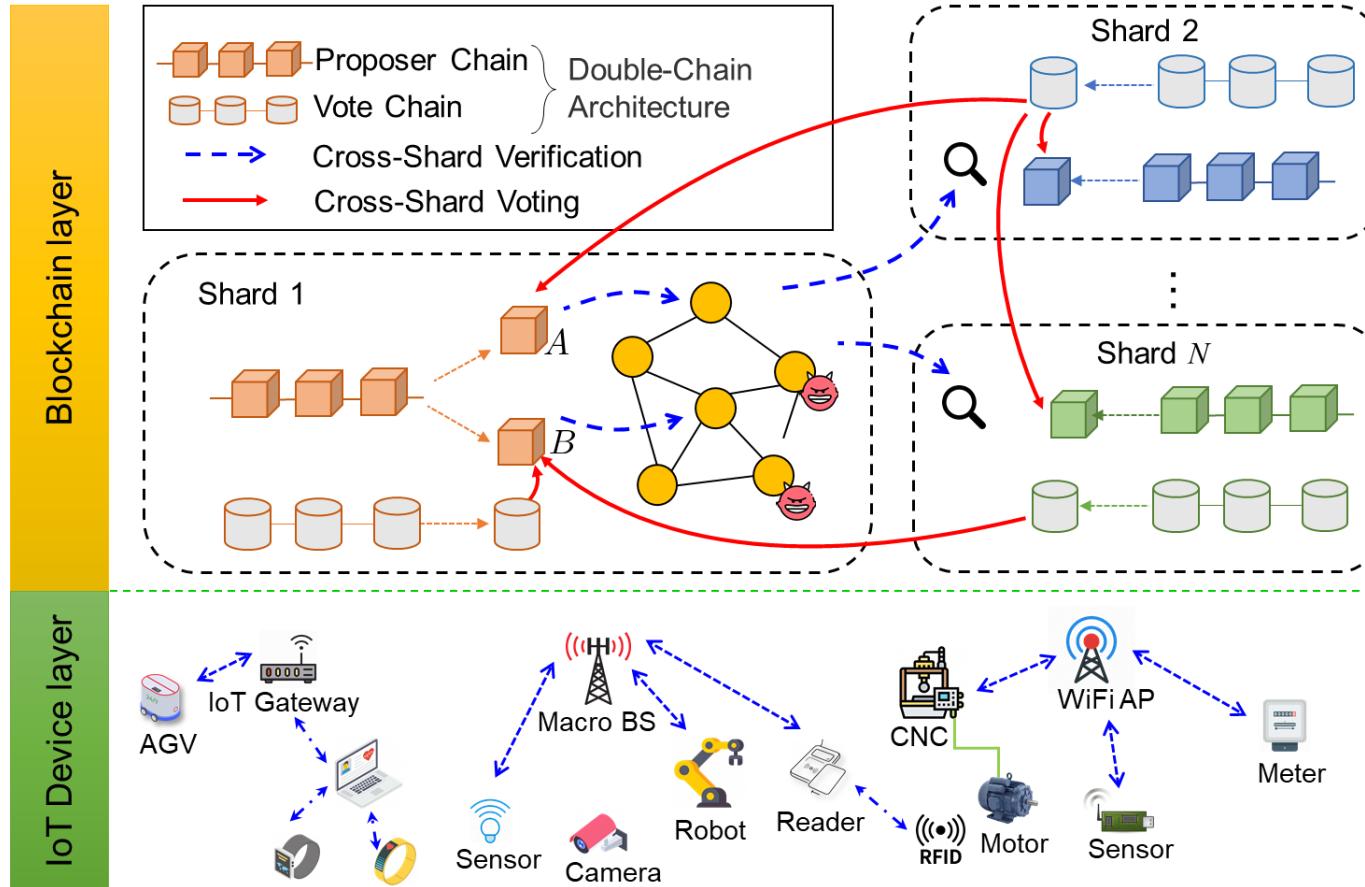


**Dr. Henry Hong-Ning Dai**

<https://www.comp.hku.edu.hk/~henrydai/>

- **Associate Professor**
- **Education**
  - PhD, Chinese University of Hong Kong
- **Previous work experience**
  - Lingnan University, Hong Kong
  - Macau University of Science and Technology, Macao
  - Chinese University of Hong Kong, Hong Kong
- **Research Interests:**
  - Internet of Things, blockchain, and big data analytics
- **Associate Editor of International Journals:**
  - IEEE Communications Surveys & Tutorials
  - IEEE Transactions on Intelligent Transportation Systems
  - IEEE Transactions on Industrial Informatics
  - IEEE Transactions on Industrial Cyber-Physical Systems
  - Ad Hoc Networks (Elsevier)
- **Conference Services**
  - General Chair: BlockSys'21
  - PC Chair: IEEE Blockchain Symposium'21, Airbone and Maritime Mobile Systems and Services of VTC-Fall'21, BlockSys'20

# Key technologies to improve performance of blockchain system for future IoT (Hong-Ning Dai)

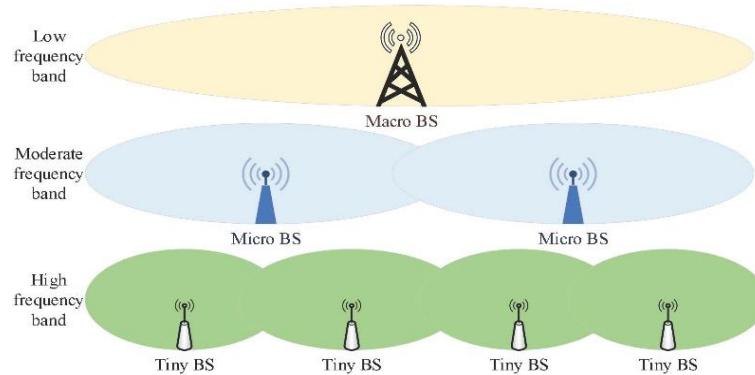


The proposed project aims to improve the performance of blockchains by distributed artificial intelligence (AI)-enabled **sharding** and **off-chain routing** schemes in terms of high throughput, low latency, ensured security, and high reliability for supporting diverse IoT applications.

# Placement Optimization of Base Stations for 6G Networks

## (Yiu Wing Leung et al.)

- **6G networks:** The sixth generation (6G) networks are being researched to fulfill the mobile communication demands of the future digital society. To support ultra-high data rate, ultra-low latency and massive connections, 6G networks would adopt new communication technologies such as cell-free massive MIMO and non-orthogonal multiple access.
- **Placement optimization of base stations:** 6G networks would adopt different types of base stations at different frequency bands for different coverage. In the planning phase, it is necessary to determine the number and locations of each type of base stations while fulfilling some quality-of-service requirements and real-world constraints based on the new 6G communication technologies. This project is to formulate and solve the placement optimization problems.



# PhD Program Structure

- 22 units of coursework
  - Typically, 3 units @ course
- A research project
- Opportunity to present research paper in International Conferences
- **Guaranteed overseas exchange**
  - Mandatory **1 to 6-months** research in an overseas university or research laboratory
- **Overseas post-doctoral scheme**
  - Support fresh graduates to gain more research experience at renowned overseas universities or research institute for half to one year

# Where Our Graduates Go?



Industry



Academia



Further Research



Tencent 腾讯



大疆創新



HUAWEI | NOAH'S ARK LAB



Machine Intelligence  
Center



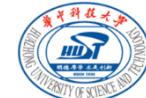
香港科技大學  
THE HONG KONG  
UNIVERSITY OF SCIENCE  
AND TECHNOLOGY



中科院計算所  
INSTITUTE OF COMPUTING TECHNOLOGY, CAS



哈爾濱工業大學  
Harbin Institute of Technology



復旦大學  
FUDAN UNIVERSITY  
UNIVERSITY OF SCIENCE AND TECHNOLOGY



UC San Diego



SIMON FRASER  
UNIVERSITY



CHINESE CENTER FOR DISEASE CONTROL AND PREVENTION  
NATIONAL INSTITUTE OF PARASITIC DISEASES

# Ye Mang (PhD, 2019)



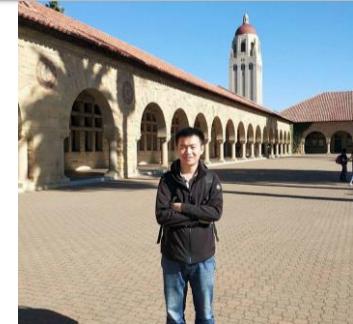
BSc, MSc  
(2009-2016)



PhD, HKPFS Awardee  
(2016-2019)



Exchange  
(2018.07-12)



*Full Professor  
Wuhan University*

## □ Achievement highlights

- Published **20+** first-authored **CCF-A** papers
- Awarded NSFC Excellent Young Scientists Fund 2021
- Google Scholar Citations: **4700** and H-index: **31**
- Unsupervised Deep Learning without Human Annotation (**ICCV 17, ECCV 18, CVPR 19, TIP 19, CVPR 20**)
  - *Cited by famous researchers, such Geoffrey Hinton (Godfathers of Deep Learning), Kaiming He (Facebook), Trevor Darrell (UCB),....*
- Robust Deep Learning in the Open-world (**AAAI 18, IJCAI 18, TIFS 20**)
  - *Reported in media and attracted attention from many high-tech companies*

# Shi Shaohuai (PhD, 2020)



华南理工大学  
South China University of Technology



BSc  
(2006-2010)

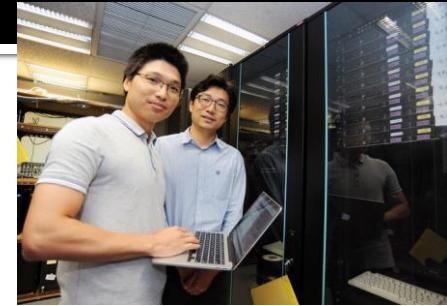


MSC  
(2010-2013)

PhD  
(2016-2020)



Research Intern  
(2019-2020)



*Assistant Professor  
Harbin Institute of Technology,  
Shenzhen*

## ❑ Achievement highlights

- Published 14 papers including **3 CCF-A** and **3 CCF-B** first-authored papers, and **one US patent**
- 海外优青
- Google Scholar Citations: **1694** and H-index: **20**
- Performance benchmarking for deep learning frameworks (**250+ citations** and **Best Paper Award**)
  - *Much attention from Google, Microsoft, and Amazon in discussing performance issues*
- Highly scalable deep learning training systems (**IJCAI 19**, **ICDCS 19**, **INFOCOM 19 & 20**)
  - *The world's fastest training on the ImageNet dataset using 2048 GPUs in July 2018 (Collaborated with Tencent)*

# Yin Kejing (PhD, 2021)



华南理工大学  
South China University of Technology

BSc  
(2011-2015)



PhD  
(2016-2021)



Exchange  
(2019-2020)



*Research Assistant Professor  
HKBU*

## □ Achievement highlights

- Published 8 papers including 4 CCF-A and 1 CCF-B first-authored papers
- Awarded Honorable Mention of 2021 Hong Kong Young Scientist
- Received Departmental RPg Performance Awards for three consecutive years
- Google Scholar Citations: 158 and H-index: 7
- Serve as reviewers for top conferences including NeurIPS, ICML, IJCAI, and AAAI

# Hong Kong is the window to China

Our collaborating universities in China



University of Science and  
Technology of China, Anhui

And more ...

# Enquiry

**Department of Computer Science,  
Hong Kong Baptist University**

Executive Officer: Ms. Kristina Tsang

Hotline: (+852) 3411 2782 / 3411 7091

Email: [comp@comp.hkbu.edu.hk](mailto:comp@comp.hkbu.edu.hk)

Site: <https://www.comp.hkbu.edu.hk>

Thank you for your attention!

Q & A