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## Research Interests

**Summary:** I design and build **multimodal AI systems** for **health sensemaking** and **actionable intervention**. By integrating **generative AI**, **interactive visual analytics**, and **wearable sensing**, I empower individuals and experts to transform heterogeneous health and well-being data into personalized, evidence-based support. My research lies at the intersection of **Human-Computer Interaction (HCI)**, **Data Visualization (VIS)**, and **Ubiquitous Computing (UbiComp)**.

**Keywords:** Generative AI for Healthcare, Multimodal Health Analytics & Visualization, Personalized Health Intervention

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## Employment

**Postdoctoral Research Scientist**      Department of Biomedical Informatics, **Columbia University**      2025–Present  
Advisor: [Prof. Xuhai “Orson” Xu](#)

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## Education

**Ph.D.**      **The University of Hong Kong**, Department of Electrical and Electronic Engineering      2021–2025  
Advisor: Prof. Edith C.H. NGAI  
Thesis: “*Empowering Pervasive Healthcare: Mobile Analytics Systems Leveraging Multimodal Data*”  
(**Excellent PhD Thesis**)

**M.E.**      **Xiamen University**, Department of Computer Science and Technology      2018–2021  
Advisor: Prof. Longbiao CHEN  
Thesis: “*Traffic Violation Hotspot Identification, Diagnosing, and Prediction Based on Spatial Crowdsensing Big Data*”  
(**Outstanding Graduate Thesis**)

**B.E.**      **Xiamen University**      2014–2018  
Major: Computer Science and Technology, School of Informatics  
Thesis: “*Identification and Visualization of Driving Violations Based on Large-Scale Vehicle Trajectory Data*”  
(**Outstanding Undergraduate Thesis**)  
Minor: Mathematical Finance, The Wang Yanan Institute for Studies in Economics

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## Research Visits

### Visiting Ph.D. Student

- **Columbia University**, Department of Biomedical Informatics      Mar–Aug, 2025  
Sense, Empower, and Augment (SEA) Lab, Host: Prof. Xuhai “Orson” Xu      New York, U.S.
- **City University of Hong Kong**, School of Creative Media      May–Dec, 2025  
Studio for Narrative Spaces, Host: Prof. RAY LC      Remote

### Visiting Master Student

- **Hong Kong University of Science and Technology**, Department of Computer Science and Engineering      Jun–Sept, 2020  
Human-Computer Interaction Initiative, Host: Prof. Xiaojuan Ma      Remote
- **Zhejiang University**, College of Computer Science and Technology      Jan, 2019  
Advanced Computing and System Lab, Host: Prof. Gang Pan      Zhejiang, China

### Summer School and Visiting Student

- **Peking University**      Jul, 2018  
Ubiquitous Computing and Big Data Summer School, Host: Prof. Daqing Zhang      Beijing, China
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## Publications (\* indicates equal contribution)

### Peer-Reviewed Conference & Journal Papers

#### 2026

- P34. [ACM HEALTH'26] **Zhihan Jiang\***, Running Zhao\*, Lin Lin, Yue Yu, Handi Chen, Xincheng Zhang, Xuhai Xu, Yifang Wang, Xiaojuan Ma, Edith C.H. Ngai. DietGlance: Dietary Monitoring and Personalized Analysis at a Glance with Knowledge-Empowered AI Assistant. *ACM Transactions on Computing for Healthcare*, 2026. (accepted)
- P33. [CHI'26] **Zhihan Jiang**, Qianhui Chen, Chu Zhang, Yanheng Li, Ray LC. Hear You in Silence: Designing for Active Listening in Human Interaction with Conversational Agents Using Context-Aware Pacing. *ACM Conference on Human Factors in Computing Systems*, 2026. ( **Best Paper Honorable Mention Award**)
- P32. [CHI'26] Mengyuan Wu, **Zhihan Jiang\***, Yuang Fan\*, Richard Feng, Sahiti Dharmavaram, Mathew Polowitz, Shawn Fallon, Bashima Islam, Lizbeth Benson, Irene Tung, David Creswell, Xuhai Xu. MindfulAgents: Personalizing Mindfulness Meditation via an Expert-Aligned Multi-Agent System. *ACM Conference on Human Factors in Computing Systems*, 2026. ( **Best Paper Honorable Mention Award**)
- P31. [TKDD'26] Jing Deng, Handi Chen\*, **Zhihan Jiang\***, Raymond Chi-Wing Wong, Edith C.H. Ngai. A Survey on Causality with Federated Learning: Challenges, Techniques, and Applications. *Transactions on Knowledge Discovery from Data*, 2026.

#### 2025

- P30. [UIST'25] Running Zhao\*, **Zhihan Jiang\***, Xincheng Zhang, Chirui Chang, Handi Chen, Weipeng Deng, Luyao Jin, Xiaojuan Qi, Xuan Qian, Edith C.H. Ngai. NoteIt: A System Converting Instructional Videos to Interactable Notes Through Multimodal Video Understanding. *The ACM Symposium on User Interface Software and Technology*, 2025.
- P29. [AFM'25] Ran An, **Zhihan Jiang**, Qiyu Cao, Shuang Zhang, Edith C. H. Ngai, Tianshuo Zhao. Chemically Programmable Fano Resonances via Colloidal Nanocrystal-Ligand Chemistry for Ultra-Sensitive Ion Detection. *Advanced Functional Materials*, 2025.
- P28. [TNSE'25] Zhiyi Zhong, Lin Lin, **Zhihan Jiang**, Xin Yuan, Edith C.H. Ngai, James Lam, Ka-Wai Kowk. Connectivity Determination Algorithm for Complex Directed Networks. *IEEE Transactions on Network Science and Engineering*, 2025.
- P27. [INFOCOM'25] Xincheng Zhang, Running Zhao, **Zhihan Jiang**, Handi Chen, Yulong Ding, Edith C.H. Ngai, Shuanghua Yang. Continual Learning with Strategic Selection and Forgetting for Network Intrusion Detection. *The 2025 IEEE International Conference on Computer Communications*, 2025.
- P26. [TMC'25] Running Zhao, Jiangtao Yu, Tingle Li, **Zhihan Jiang**, Chenwei Zhang, Cunshu Wu, Hang Zhao, Edith C.H. Ngai. SPACE: Speaker Adaptation for Acoustic Eavesdropping using mmWave Radio Signals. *IEEE Transactions on Mobile Computing*, 2025.
- P25. [IEEE Network'25] Handi Chen, Weipeng Deng, Shuo Yang, Jinfeng Xu, **Zhihan Jiang**, Edith C.H. Ngai, Jiangchuan Liu, Xue Liu. Towards Edge General Intelligence via Large Language Models: Opportunities and Challenges. *IEEE Network*, 2025.

#### 2024

- P24. [JAACAPOpen'24] **Zhihan Jiang\***, Adrienne Y.L. Chan\*, Dawn Lum, Kirstie HTY Wong, Janice CN Leung, Patrick Ip, David Coghill, Rosa S Wong, Edith C.H. Ngai, Ian C.K. Wong. Wearable Signals for Diagnosing Attention-Deficit/Hyperactivity Disorder in Adolescents: A Feasibility Study. *Journal of American Academy of Child & Adolescent Psychiatry Open*, 2024.
- P23. [JFranklin'24] Xincheng Zhang, **Zhihan Jiang**, Yulong Ding, Edith C.H. Ngai, Shuang-Hua Yang. Anomaly Detection using Isomorphic Analysis for False Data Injection Attacks in Industrial Control Systems. *Journal of the Franklin Institute*, 2024.
- P22. [INFOCOM'24] Xincheng Zhang, Running Zhao, **Zhihan Jiang**, Zhicong Sun, Yulong Ding, Edith C.H. Ngai and Shuanghua Yang. AOC-IDS: Autonomous Online Framework with Contrastive Learning for Intrusion Detection. *The 2024 IEEE International Conference on Computer Communications*, 2024.
- P21. [TMC'24] Handi Chen, Rui Zhou, Yun-Hin Chan, **Zhihan Jiang**, Xianhao Chen, Edith C.H. Ngai. LiteChain: A Lightweight Blockchain for Verifiable and Scalable Federated Learning in Massive Edge Networks. *IEEE Transactions on Mobile Computing*, 2024.

- P20. [ICLR'24] Yun-Hin Chan, Rui Zhou, Running Zhao, **Zhihan Jiang**, Edith C.H. Ngai. Internal Cross-layer Gradients for Extending Homogeneity to Heterogeneity in Federated Learning. *The 12th International Conference on Learning Representations*, 2024.
- P19. [UbiComp'24] Yufei Wang, Wenting Zeng, Changzhen Liu, Zhuohan Ye, Jiawei Sun, Junxiang Ji, **Zhihan Jiang**, Xianyi Yan, Yongyi Wu, Yigao Wang, Dingqi Yang, Leye Wang, Daqing Zhang, Cheng Wang, Longbiao Chen. CrowdBot: An Open-Environment Robot Management System for On-Campus Services. *Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2024.

## 2023

- P18. [IoTJ'23] **Zhihan Jiang**, Vera van Zoest, Weipeng Deng, Edith C.H. Ngai, Jiangchuan Liu. Leveraging Machine Learning for Disease Diagnoses based on Wearable Devices: A Survey. *IEEE Internet of Things Journal*, 2023.
- P17. [VIS'23] **Zhihan Jiang**, Handi Chen, Rui Zhou, Jing Deng, Xinchen Zhang, Running Zhao, Cong Xie, Yifang Wang, Edith C.H. Ngai. HealthPrism: A Visual Analytics System for Exploring Children's Physical and Mental Health Profiles with Multimodal Data. *IEEE Transactions on Visualization and Computer Graphics*, IEEE VIS 2023.
- P16. [UbiComp'23] **Zhihan Jiang**, Lin Lin, Xinchen Zhang, Jianduo Luan, Running Zhao, Longbiao Chen, James Lam, Ka Man Yip, Hung Kwan So, Wilfred HS Wong, Patrick Ip, Edith C.H. Ngai. A Data-Driven Context-Aware Health Inference System for Children during School Closures. *Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2023.
- P15. [TCNS'23] Lin Lin, **Zhihan Jiang**, Hong Lin, Edith C.H. Ngai, James Lam. On Quotients of Stochastic Networks over Finite Fields. *IEEE Transactions on Control of Network Systems*, 2023.
- P14. [UbiComp'23] Tieqi Shou, Zhuohan Ye, Yayao Hong, Zhiyuan Wang, Hang Zhu, **Zhihan Jiang**, Dingqi Yang, Binbin Zhou, Cheng Wang, Longbiao Chen. CrowdQ: Predicting the Queue State of Hospital Emergency Department Using Crowdsensing Mobility Data-Driven Models. *Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2023.

## 2022

- P13. [TITS'22] **Zhihan Jiang**, Xin He, Chenhui Lu, Binbin Zhou, Xiaoliang Fan, Cheng Wang, Xiaojuan Ma, Edith C.H. Ngai, Longbiao Chen. Understanding Drivers' Visual and Comprehension Loads in Traffic Violation Hotspots Leveraging Crowd-Based Driving Simulation. *IEEE Transactions on Intelligent Transportation Systems*, 2022.
- P12. [Healthcare'22] **Zhihan Jiang\***, Ka-Man Yip\*, Xinchen Zhang, Jing Deng, Wilfred Wong, Hung-Kwan So, Edith C. H. Ngai. Identifying the High-Risk Population for COVID-19 Transmission in Hong Kong Leveraging Explainable Machine Learning. *Healthcare*, 2022.
- P11. [CHI'22] Chuhan Shi, **Zhihan Jiang**, Xiaojuan Ma, Qiong Luo. A Personalized Visual Aid for Selections of Appearance Building Products with Long-term Effects. *Proc. of the ACM Conference on Human Factors in Computing Systems*, 2022.
- P10. [UIC'22] Jiannan Gao, Yigao Wang, **Zhihan Jiang**, Hang Zhu, Qiyue Zhong, Xiaoliang Fan, Longbiao Chen, Cheng Wang. iTA: Inferring Traffic Accident Hotspots with Vehicle Trajectories and Road Environment Data. *The 19th IEEE International Conference on Ubiquitous Intelligence and Computing*, 2022.
- P9. [TMC'22] Hang Zhu, Tieqi Shou, Ruiying Guo, **Zhihan Jiang**, Zeyu Wang, Zhiyuan Wang, Zhiyong Yu, Weijie Zhang, Cheng Wang, Longbiao Chen. RedPacketBike: A Graph-Based Demand Modeling and Crowd-Driven Station Rebalancing Framework for Bike Sharing Systems. *IEEE Transactions on Mobile Computing*, 2022.

## 2021

- P8. [TMC'21] **Zhihan Jiang**, Hang Zhu, Binbin Zhou, Chenhui Lu, Mingfei Sun, Xiaojuan Ma, Xiaoliang Fan, Cheng Wang, Longbiao Chen. CrowdPatrol: A Mobile Crowdsensing Framework for Traffic Violation Hotspot Patrolling. *IEEE Transactions on Mobile Computing*, 2021.
- P7. [JNCA'21] Longbiao Chen, **Zhihan Jiang**, Dingqi Yang, Thi-Mai-Trang Nguyen, Cheng Wang. Fog Radio Access Network Optimization for 5G Leveraging User Mobility and Traffic Data. *Journal of Network and Computer Applications*, 2021.
- P6. [UbiComp'21] Longbiao Chen, Chenhui Lu, Fangxu Yuan, **Zhihan Jiang**, Leye Wang, Daqing Zhang, Ruixiang Luo, Xiaoliang Fan, Cheng Wang. UVLens: Urban Village Boundary Identification and Population Estimation Leveraging Open Government Data. *Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2021.

- P5. [UIC'21] Xin He, Hong Hong, Yanwen Liu, Xiaojuan Ma, **Zhihan Jiang**, Longbiao Chen, Ming Cheng, Cheng Wang, Yongchuan Li. CovidPass: A Contactless Check-in System for Keeping Social Distance in Public Health Crisis. *The 18th IEEE International Conference on Ubiquitous Intelligence and Computing*, 2021.

### Previous

- P4. [ISJ'20] **Zhihan Jiang**, Longbiao Chen, Binbin Zhou, Jingchun Huang, Tianqi Xie, Xiaoliang Fan, Cheng Wang. iTV: Inferring Traffic Violation-Prone Locations with Vehicle Trajectories and Road Environment Data. *IEEE Systems Journal*, 2020.
- P3. [FCS'20] **Zhihan Jiang**, Yan Liu, Xiaoliang Fan, Cheng Wang, Jonathan Li, Longbiao Chen. Understanding Urban Structures and Crowd Dynamics Leveraging Large-Scale Vehicle Mobility Data. *Frontiers of Computer Science*, 2020.
- P2. [UIC'19] Ruiying Guo, **Zhihan Jiang**, Jingchun Huang, Jianrong Tao, Cheng Wang, Jonathan Li, Longbiao Chen. BikeNet: Accurate Bike Demand Prediction Using Graph Neural Networks for Station Rebalancing. *The 16th IEEE International Conference on Ubiquitous Intelligence and Computing*, 2019.
- P1. [EWSN'19] Longbiao Chen, **Zhihan Jiang**, Jiangtao Wang, Yasha Wang. Data-Driven Bike Sharing System Optimization: State of the Art and Future Opportunities. *The 2019 International Conference on Embedded Wireless Systems and Networks*, 2019.

### Peer-Reviewed Workshop & Poster Papers

- W2. [ICASSPW'23] **Zhihan Jiang**, Cong Xie, Edith C.H. Ngai. A Health Profiling Framework for Children Leveraging Multimodal Learning Based on Ambient Sensor Signals. *IEEE International Conference on Acoustics, Speech, and Signal Processing: Ambient AI Workshop*, 2023.
- W1. [HHME'18] Yiyang Lai, **Zhihan Jiang**, Xiaoliang Fan, Cheng Wang, Jun Li, Longbiao Chen. Post-Disaster Traffic Visualization and Analysis based on Large-Scale Vehicle Trajectory Data. *The 14th Joint Conference on Harmonious Human-Machine Environment*, 2018.

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### Patents

- T3. Longbiao Chen, **Zhihan Jiang**, Xiaoliang Fan, Cheng Wang, Hong Hong. A Method, System, and Readable Storage Medium for Patrol Route Planning Based on Traffic Violation Hotspot Prediction. China Patent CN202010693026.4.
- T2. Longbiao Chen, **Zhihan Jiang**, Cheng Wang. A Method and System for Traffic Violation Identification Based on Traffic Data and Street View Data. China Patent CN202010031165.0.
- T1. Longbiao Chen, Ruiying Guo, **Zhihan Jiang**, Zhiyuan Wang, Cheng Wang. A Method for Bike Demand Prediction and Scheduling Based on Deep Learning and Crowd Sensing. China Patent CN202010599191.3.

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### Selected Scholarships & Honors

<b>Best Paper Honorable Mention Award</b> , CHI 2026	2026
<b>OPA Academic Conference Travel Grant Award</b> , Columbia University	2026
<b>Excellent PhD Thesis</b> , The University of Hong Kong	2025
<b>HKU Foundation First Year Excellent PhD Award</b> (top 15 recipients across the university)	2024
<b>IEEE VIS Inclusivity and Diversity Scholarship</b> , IEEE VIS	2023
<b>Conference Grant for RPg Student</b> (twice), The University of Hong Kong	2023
<b>Outstanding Graduate Thesis</b> , Xiamen University	2021
<b>Outstanding Graduates</b> , Xiamen University	2021
<b>National Scholarship</b> (highest honor awarded by the Ministry of Education of China, top 1%)	2020
<b>Outstanding Undergraduate Thesis</b> , Xiamen University	2018
<b>Academic Innovation Scholarship</b> , Xiamen University	2017
<b>Academic Excellence Scholarship</b> (four times), Xiamen University	2015–2018

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## Academic Services

### Journal Reviewer

- ACM Transactions on Computing for Healthcare (HEALTH)
- IEEE Transactions on Affective Computing (TAFFC)
- IEEE Transactions on Visualization and Computer Graphics (TVCG)
- IEEE Transactions on Intelligent Transportation Systems (TITS)
- IEEE Transactions on Industrial Informatics (TII)
- IEEE Transactions on Computational Social Systems (TCSS)
- IEEE Transactions on Mobile Computing (TMC)
- Proc. of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)
- Journal of Network and Computer Applications (JNCA)
- IEEE Internet of Things Journal (IoTJ)

### Conference Reviewer

- ACM Conference on Intelligent User Interfaces (IUI) 2026
- IEEE Pacific Visualization Conference (PacificVis) 2026
- International Joint Conference on Neural Networks (IJCNN) 2025
- ACM Conference on Human Factors in Computing Systems (CHI) 2025–2026
- ACM Int. Conf. on Tangible, Embedded, and Embodied Interaction (TEI) 2025
- IEEE International Conference on Computer Communications (INFOCOM) 2023–2025
- ACM Conference on Embedded Networked Sensor Systems (SenSys) 2022–2025
- IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP) 2024–2026
- IEEE International Conference on Distributed Computing Systems (ICDCS) 2022–2023
- IEEE/ACM International Workshop on Quality of Service (IWQoS) 2023
- IEEE Int. Conf. on Ubiquitous Intelligence and Computing (UIC) 2020–2022
- Chinese Conference on CSCW and Social Computing (ChineseCSCW) 2020
- IEEE International Conference on Communications (ICC) 2020

### Student Volunteer

- China3DV, Xiamen, China 2021

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## Presentations & Invited Talks

### Conference Presenter

- IEEE VIS 2023 Melbourne, Australia, Oct 2023
- UbiComp/ISWC 2023 Cancún, Mexico, Oct 2023

### Invited Talks & Seminars

- Dept. of Computer and Computing Science, Hangzhou City University Hangzhou, China, Oct 2025
- Tam Wing Fan Innovation Wing Two, The University of Hong Kong Hong Kong SAR, Jun 2024
- Dept. of Electrical and Electronic Engineering, The University of Hong Kong Hong Kong SAR, Oct 2023
- MARS Group, Xiamen University Xiamen, China, Aug 2023

### Poster Presenter

- Ambient AI Workshop, ICASSP'23 Rhodes, Greece, Jun 2023
- The 14th Joint Conf. on Harmonious Human-Machine Environment (HHME) Tianjin, China, Sept 2018

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## Teaching Experience

### Teaching Roles and Responsibilities

- Leading tutorials, designing and grading assignments, and holding office hours.

- Certificate in Teaching and Learning in Higher Education awarded by The University of Hong Kong.

**Teaching Assistant, The University of Hong Kong**

COMP3234 / ELEC3443: Computer and Communication Networks

Fall 2021–2024

Undergraduate core course, ~70–100 students per year

**Teaching Assistant, Xiamen University**

Software Architecture and Design Patterns

Spring 2019

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## Skills

<b>AI &amp; ML</b>	Multimodal Representation Learning, Generative AI (RAG, Multi-agent Systems), Knowledge Graphs, Interactive Visual Analytics
<b>Research</b>	Mixed-methods Design (Qualitative & Quantitative), Longitudinal Field Studies, Experimental Design, Research Ethics & IRB Protocol
<b>Engineering</b>	Research System Architecture, Full-stack Prototyping (Web, Mobile, Wearables), End-to-end System Integration
<b>Leadership</b>	Project Management, Research Mentorship, Grant & Proposal Development
<b>Languages</b>	English (Fluent), Mandarin (Native)

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## Selected Media Coverage

- **Featured Interview: “Her Power in Science – Ubiquitous Computing Empowers Healthcare”** Mar 2024  
*Hong Kong Wen Wei Po (Mainstream Press) & The University of Hong Kong (Official Multi-channel Feature)*  
Selected as a featured doctoral candidate showcasing the societal value of pervasive healthcare research.
  - **Research Highlight: AI-Powered Note-taking Tool “NoteIt”** Sep 2025  
*The University of Hong Kong (Official X/Twitter Feature)*  
Featured coverage of the team’s innovative multimodal video understanding system.
  - **Research Highlight: AI System for Child Health Assessment** Dec 2023  
*The University of Hong Kong (Official X/Twitter Feature)*  
Highlighted contributions to designing health inference systems during COVID-19 school closures.
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