Qingyong Hu

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Biography

I am a Postdoctoral Research Fellow at HKUST, advised by Prof. Qian Zhang. My goal is to enable **accessible healthcare by building deployable, data-centric AIoT systems** that convert real-world signals into ecologically-valid human behaviors. Motivated by clinical needs, I collaborate closely with clinicians and conduct systematic in-the-wild studies, paired with dedicated AI algorithms and practical systems to derive actionable health indicators. My research spans motion, physiological, and cognitive sensing, with an emphasis on robustness and efficiency under deployment constraints and domain shifts. I also develop benchmarks and datasets to enable rigorous evaluation and identify real-world bottlenecks. My research appears in ACM MobiCom, IMWUT/UbiComp, SenSys, INFOCOM, NeurIPS, and CVPR, and received the **ACM IMWUT Distinguished Paper Award (Top 1%)** in 2025.

Career

Hong Kong University of Science and Technology — **Hong Kong, China**
Post-doctoral Research Fellow in Computer Science and Engineering — *September, 2025-Now*
Advisor: Prof. Qian Zhang, IEEE Fellow, HKAE Fellow

Education

Hong Kong University of Science and Technology — **Hong Kong, China**
Ph.D. Student in Computer Science and Engineering — *September, 2020-August, 2025*
Advisor: Prof. Qian Zhang, IEEE Fellow, HKAE Fellow

University of Science and Technology of China — **Hefei, China**
B.Eng in Computer Science and Technology, School of the Gifted Young — *September, 2015-July, 2020*

Awards and Honors

- ACM IMWUT Distinguished Paper Award, 2025
- HKUST Research Travel Grant Award, 2025
- IEEE INFOCOM Student Travel Grant, 2023
- HKUST Research Travel Grant Award, 2023
- HKUST Postgraduate Studentship, 2020-2025
- TAL Education Group Scholarship, 2019
- President of Economic Students Union of USTC, 2019
- iTeach National Digital Education Application Design Competition 2nd Prize, 2018

Publications

Selected Publications (*: indicates co-first authors; _: students mentored by me.)

1. The EasyCog Dataset: Easier Cognitive Assessment With Passive Video Watching
   Qingyong Hu*, Yuxuan Zhou*, Jinjian Wang, Yanbin Gong, Yizhen Zhang, Jingnan Sun, Jian Yao, Qijia Shao, Lili Qiu, Qian Zhang, Guihua Li
   To appear in **ACM IMWUT (UbiComp) 2026**. Top Conference in Ubiquitous Computing.
2. mmTremor: Practical Tremor Monitoring for Parkinson's Disease and Essential Tremor in Daily Life

Qingyong Hu*, Yuxuan Zhou*, Jinjian Wang, Zirui Huang, Guihua Li, Qianhui Xu, Qian Zhang
ACM MobiCom 2025. Acceptance Rate = 13.1%, CCF-A

3. Contactless Arterial Blood Pressure Waveform Monitoring with mmWave Radar
Qingyong Hu, Qian Zhang, Hao Lu, Shun Wu, Yuxuan Zhou, Qianyi Huang, Huangxun Chen, Yingcong Chen, Ni Zhao
ACM IMWUT (UbiComp) 2024. **Distinguished Paper Award (Top 1%)**, CCF-A.
4. CSI-StripeFormer: Exploiting Stripe Features for CSI Compression in Massive MIMO System
Qingyong Hu, Hua Kang, Huangxun Chen, Qianyi Huang, Qian Zhang, and Min Cheng
IEEE INFOCOM 2023. Acceptance Rate = 19.2%, CCF-A.
5. PhysDrive: A Multimodal Remote Physiological Measurement Dataset for In-vehicle Driver Monitoring
Jiyao Wang*, Xiao Yang*, **Qingyong Hu***, Jiankai Tang, Can Liu, Dengbo He, Yuntao Wang, Yingcong Chen, Kaishun Wu
NeurIPS 2025 Datasets and Benchmarks Track. Acceptance Rate = 24.9%, CCF-A.

Under Preparation and In Submission

1. Towards a Unified mmWave Foundation Model for Comprehensive Human-centric Understanding
Ongoing.
2. Effortless Cognitive Assessment with Passive Video Watching
Ongoing.
3. RPM-Distill: Physiology-guided Adaptive Cross-modal Distillation for Robust Remote Physiological Measurement
Jiyao Wang, **Qingyong Hu**, Duoxun Tang, Xiao Yang, Kaishun Wu, Jiangbo Yu
In submission.
4. mmBrady: Contactless Upper-Limb Bradykinesia Monitoring for Parkinson's Disease via Semantic-Aware mmWave Sensing in Daily Life
Jinjian Wang* **Qingyong Hu***, Yizhen Zhang, Yuxuan Zhou, Guihua Li, and Qian Zhang
In submission.
5. SlowDet: Robust Detection Framework for Low-Altitude, Slow-Moving UAVs in Integrated Sensing and Communication
Yuxuan Zhou, **Qingyong Hu**, Hua Kang, Qian Zhang
In submission.
6. PIGDAssess: Wearable Dual-Task Sensing for Self-Administered PIGD Assessment in Parkinson's Disease
Yizhen Zhang, Jinjian Wang, Wentao Xie, **Qingyong Hu**, Haiyan Hu, Guihua Li, Qian Zhang
Under major revision.

Conference Papers:

1. PracticalBP: Continuous Cuffless Blood Pressure Monitoring with Only One Record for Calibration
Chenggao Li, Junyao Peng, **Qingyong Hu**, Lin Chen, Yandao Huang, Shun Wu, Weibin Cheng, Qian Zhang
ACM IMWUT (UbiComp) 2025. Acceptance Rate = 25.0%, CCF-A.
2. Period-LLM: Extending the Periodic Capability of Multimodal Large Language Model
Yuting Zhang, Hao Lu, **Qingyong Hu**, Yin Wang, Kaishen Yuan, Xin Liu, Kaishun Wu
CVF/IEEE CVPR 2025. Acceptance Rate = 22.1%, CCF-A.
3. SF-Adapter: Computational-Efficient Source-Free Domain Adaptation for Human Activity Recognition
Hua Kang, **Qingyong Hu**, Qian Zhang
ACM IMWUT (UbiComp) 2024. Acceptance Rate = 25.0%, CCF-A.
4. Cross-Shaped Separated Spatial-Temporal UNet Transformer for Accurate Channel Prediction
Hua Kang, **Qingyong Hu**, Huangxun Chen, Qianyi Huang, Qian Zhang, Min Cheng

IEEE INFOCOM 2024. Acceptance Rate = 19.6%, CCF-A.

5. PDAssess: A Privacy-preserving Free-speech based Parkinson's Disease Daily Assessment System
   Baichen Yang, **Qingyong Hu**, Wentao Xie, Xinchen Wang, Wei Luo, Qian Zhang
   ACM SenSys 2023. Acceptance Rate = 19.0%, CCF-B, top venue in mobile computing.
6. RIScan: RIS-aided Multi-user Indoor Localization Using COTS Wi-Fi
   Chenggao Li, Qianyi Huang, Yuxuan Zhou, Yandao Huang, **Qingyong Hu**, Huangxun Chen, Qian Zhang
   ACM SenSys 2023. Acceptance Rate = 19.0%, CCF-B, top venue in mobile computing.
7. EarSpiro: Earphone-based Spirometry for Lung Function Assessment
   Wentao Xie, **Qingyong Hu**, Jin Zhang, and Qian Zhang
   ACM IMWUT (UbiComp) 2023. Acceptance Rate = 25.0%, CCF-A.
8. Backdoor Defense via Deconfounded Representation Learning
   Zaixi Zhang, Qi Liu, Zhicai Wang, Zepu Lu, and **Qingyong Hu**
   IEEE/CVF CVPR 2023. Acceptance Rate = 25.8%, CCF-A.
9. Hierarchical Graph Transformer with Adaptive Node Sampling
   Zaixi Zhang, Qi Liu, **Qingyong Hu**, and Chee-Kong Lee
   NeurIPS Spotlight 2022. Acceptance Rate = 5.0%, CCF-A.

Journal Papers:

1. Multifactorial Analysis of Cognitive Impairment in Parkinson's Disease: A Data-Driven Approach Using Eye-Tracking Technology, Blood Biomarkers, and Clinical Scales
   Xianglian Liao, Jian Yao, Tang Hong, Yin Tang, Hong Yin, **Qingyong Hu**, Xing Yilan, Peng Li, GuiHua Li
   Under review.
2. Ubicon-BP: Towards Ubiquitous, Contactless Blood Pressure Detection Using Smartphone
   Yuan Wu, Shoudu Bai, **Qingyong Hu**, Bo Wang, Min Li, Xinrong Hu, Yanjiao Chen
   IEEE Transactions on Mobile Computing 2025. CCF-A.
3. AI-driven System for Non-contact Continuous Nocturnal Blood Pressure Monitoring using Fiber Optic Ballistocardiography
   Yandao Huang, Lin Chen, Chenggao Li, Junyao Peng, **Qingyong Hu**, Yu Sun, Hao Ren, Weimin Lyu, Wen Jin, Junzhang Tian, Changyuan Yu, Weibin Cheng, Kaishun Wu, Qian Zhang
   Communications Engineering 2024. Acceptance Rate=28.1%, Nature portfolio journals.
4. CMPR: Contrastive Multi-Branch and Posterior Regularization Learning Scheme for Long-Tailed Scarce Health Data Prediction
   Haiyan Hu, **Qingyong Hu**, Huangxun Chen, Wei Li, Qian Zhang
   In submission to **IEEE Journal of Biomedical and Health Informatics**. Impact factor=7.7.
5. FedGT: Federated Node Classification with Scalable Graph Transformer
   Zaixi Zhang, **Qingyong Hu**, Yang Yu, Weibo Gao, Qi Liu
   Arxiv'24.

Workshop Paper:

1. GPT as Psychologist? Preliminary Evaluations for GPT-4V on Visual Affective Computing
   Hao Lu, Xuesong Niu, Jiyao Wang, Yin Wang, **Qingyong Hu**, Jiaqi Tang, Yuting Zhang, Kaishen Yuan, Bin Huang, Zitong Yu, Dengbo He, Shuiguang Deng, Hao Chen, Yingcong Chen, Shiguang Shan
   IEEE/CVF CVPR Workshop 2024.

Patents

- Qingyong Hu, Yuxuan Zhou, Jinjian Wang, Guihua Li, Qianhui Xu, and Qian Zhang, "A Software System for Practical Tremor Monitoring for Parkinson's Disease and Essential Tremor in Daily Life", IP.PA.12427.CN.

- Qingyong Hu, Qian Zhang, and Yuxuan Zhou, "Contactless Arterial Blood Pressure Waveform Monitoring with mmWave Radar", IP.PA.12403.US.
- Qingyong Hu, Hua Kang, Qian Zhang, and Min Cheng, "Data Decoding Method, System, and Related Device", IP.PA.01920.CN.

Experience

- **Mentoring Experience**
  - Fall 2024-Now Yizhen Zhang, Mentored PhD Student, HKUST
    One paper under major revision of ACM IMWUT (UbiComp)
  - Spring 2024-Now Jinjian Wang, Mentored PhD Student, HKUST
    One paper in submission to ACM IMWUT (UbiComp)
- **Industry Collaboration**
  - AI Wireless System Optimization, *Huawei Noah's Ark lab* 2021.10-2022.12
    - Exploited the unique channel features and designed a specific transformer for FDD MIMO channel compression. Reduced NMSE by at most 17 dB compared with the state-of-the-art solutions under a high compression ratio of 64.
    - Evaluated different widely-used models on the real-world data, and designed an architecture based on the stripe-shaped transformer featured with shortcuts for TDD MIMO channel prediction. Outperformed the best baseline by 5.28 dB on average.
- **Internship**
  - Software Development Engineer Intern, *Tencent* 2019.9-2019.11
    - Developed and adapted a feature toggle SDK to help combine new features efficiently
  - Investment Analyst Intern, *Alpha Startups* (*Venture Capital*) 2018.7-2018.10
    - Conducted deal-oriented studies, by analyzing the feasibility and potentials of the targets
    - Developed tools to automatically speed up the deal-sourcing works
- **Conference Commitee**
  - 2026 ACM MLSys Artifact Evaluation
  - 2026 ACM MobiSys Artifact Evaluation
  - 2025 ACM MobiCom Artifact Evaluation
- **Reviewer**
  - 2026 IEEE ICASSP, IJCNN; CVF/IEEE CVPR; JMIR Cardio; PR; ACM IMWUT (UbiComp)
  - 2025 IEEE TMC, TRel, ICASSP, IJCNN; CVF/IEEE CVPR, ICCV; ACM CHI, IMWUT (UbiComp), TIST
  - 2024 IEEE TMC, ICASSP; ACM IMWUT (UbiComp)
  - 2023 ACM ToSN
- **Teaching Assistant**
  - COMP 4531 IoT and Smart Sensing, 2023 Fall
  - COMP 2611 Computer Organization, 2022 Fall
  - COMP 4901S IoT and Mobile Sensing, 2021 Fall
  - COMP 2611 Computer Organization, 2021 Spring

Skills

- Programming: Python; Matlab; C++
- Platform & Tools: Pytorch; CUDA
- Hardware: mmWave sensor (TI radar series); IMU; WiFi card (Intel 5300);
- Algorithms: Machine learning; Deep learning architecture (CNN, RNN, Transformer, etc.); Model Training (Loss function design, data augmentation, self-supervised learning);