

Pengfei Zhou

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Research Interests

Artificial Intelligence of Networks and Things, Smart and Connected Health, Mobile and Networked Sensing Systems.

Education

Nanyang Technological University	Computer Science and Engineering	Ph.D. 2016
Tsinghua University	Department of Automation	B.E. 2009

Appointments

2022 – present	Assistant Professor	University of Pittsburgh
2021 – 2022	Research Scientist	Advanced Digital Sciences Center, UIUC
2019 – 2021	Research Fellow	Alibaba-NTU Joint Research Institute
2016 – 2019	Chief Executive Officer	Beijing fayfans Technology Co., Ltd.
2011 – 2015	Research Assistant	Nanyang Technological University

Publications

Conference Papers

- [MobiCom'26] "ViPoser: Sparse-IMU Based Human Pose Estimation with Distilled Vision Foundation Priors", in ACM MobiCom, Austin, Texas, USA, Oct 26-30, 2026.
Hanyu Zeng, Hui Ji, **Pengfei Zhou**.
- [CHASE'26] "P2Es: Physiology-Conditioned Diffusion for 12-Lead ECG Generation from PPG", in IEEE/ACM CHASE, Pittsburgh, USA, August 2026.
Hui Ji, Wei Gao, **Pengfei Zhou**.
- [IMWUT'26] "Large Language Model-Guided Semantic Alignment for Human Activity Recognition", in UbiComp/ISWC, 2026.
Hua Yan, Heng Tan, Yi Ding, **Pengfei Zhou**, Vinod Namboodiri, Yu Yang.
- [IMWUT'25] "Breaking the Resolution Barriers of mmWave Arrays via Null Steering for Sleep Monitoring in Multi-Person Scenarios", in UbiComp/ISWC, Espoo, Finland, October 14-16, 2025.
Duo Zhang, Xusheng Zhang, Zhehui Yin, **Pengfei Zhou**, Hongliu Yang, Pei Wang, Zhiyun Yao, Junzhe Wang, Fusang Zhang, Daqing Zhang.
- [SenSys'24] "Advancing PPG-Based Continuous Blood Pressure Monitoring from a Generative Perspective", in ACM SenSys, Hangzhou, China, November 4-7, 2024.
Hui Ji and **Pengfei Zhou**.
- [MobiSys'24] "Invisible Optical Adversarial Stripes on Traffic Sign against Autonomous Vehicles", in ACM MobiSys, Tokyo, Japan, June 3-7, 2024.
Dongfang Guo, Yuting Wu, Yimin Dai, **Pengfei Zhou**, Xin Lou, Rui Tan.
- [MobiCom'23] "Practically Adopting Human Activity Recognition", in ACM MobiCom, Madrid, Spain, October 2-6, 2023.
Huatao Xu, **Pengfei Zhou**, Rui Tan and Mo Li.
- [SmartGridComm'22] "Detecting Cyber Attacks in Smart Grids with Massive Unlabeled Sensing Data", in IEEE SmartGridComm, Singapore, October 25-28, 2022.
Hanyu Zeng, Zhen Wei Ng, **Pengfei Zhou**, Xin Lou, David K.Y. Yau, Marianne Winslett.

9. [MobiCom'22] "Experience: Adopting Indoor Outdoor Detection in On-demand Food Delivery Business", in ACM MobiCom, Sydney, Australia, October 17-21, 2022.
Pengfei Zhou, Yi Ding, Yang Li, Mo Li, Guobin Shen, Tian He.
10. [SenSys'21] "LIMU-BERT: Unleashing the Potential of Unlabeled Data for IMU Sensing Applications", in ACM SenSys, Coimbra, Portugal, November 15-17, 2021.
Huatao Xu, **Pengfei Zhou**, Rui Tan, Mo Li, Guobin Shen.
11. [Ubicomp'19] "Amateur: Augmented Reality based Vehicle Navigation System", in ACM Ubicomp, Vol.2, No.4, Article 155, London, UK, December 2019.
Chu Cao, Zhenjiang Li, **Pengfei Zhou**, Mo Li.
12. [ICCCN'17] "Memento: An Emotion Driven Lifelogging System with Wearables", in IEEE ICCCN, Pages 1-9, Vancouver, Canada, July-August 2017.
Shiqi Jiang, **Pengfei Zhou**, Zhenjiang Li, Mo Li.
13. [INFOCOM'17] "Large-Scale Invisible Attack on AFC Systems with NFC-Equipped Smartphones", in IEEE INFOCOM, Atlanta, USA, May 2017.
Fan Dang, **Pengfei Zhou**, Zhenhua Li, Ennan Zhai, Aziz Mohaisen, Qingfu Wen, Mo Li.
14. [MobiCom'16] "DopEnc: Acoustic-based Encounter Profiling using Smartphones", in ACM MobiCom, New York, USA, October 3-7, 2016.
Huanle Zhang, Wan Du, **Pengfei Zhou**, Mo Li, Prasant Mopahatra.
15. [IWCMC'16] "A Real Independent Centimeter-grade 3D Indoor Localization System on Smartphone", in 2016 International Wireless Communications and Mobile Computing Conference, pp. 824-829, 2016.
Fan Dang, Xuan Ding, **Pengfei Zhou**.
16. [ICDCS'15] "Urban Traffic Monitoring with the Help of Bus Riders", in IEEE ICDCS 2015. Columbus, Ohio, USA, 2015.
Pengfei Zhou, Shiqi Jiang, Mo Li.
17. [MobiCom'14] "Use It Free: Instantly Knowing Your Phone Attitude", in ACM MobiCom, Maui, Hawaii, USA, September 2014.
Pengfei Zhou, Mo Li, Guobin Shen.
18. [SenSys'12] "IODetector: A Generic Service for Indoor Outdoor Detection", in ACM SenSys, Toronto, Canada, November 2012.
Pengfei Zhou, Yuanqing Zheng, Zhenjiang Li, Mo Li, Guobin (Jacky) Shen.
19. [MobiSys'12] "How Long to Wait?: Predicting Bus Arrival Time with Mobile Phone based Participatory Sensing", in ACM MobiSys, Pages 379-392, Low Wood Bay, United Kingdom, June 2012.
Pengfei Zhou, Yuanqing Zheng, Mo Li.

Journal Articles

1. [Smart Health] "P2Es: Physiology-Conditioned Diffusion for 12-Lead ECG Generation from PPG", in Smart Health, Volume 41, 2026, 100684.
Hui Ji, Wei Gao, **Pengfei Zhou**.
2. "Resilient Path Tracking of Autonomous Driving under Few-shot Action Space Attacks", in ACM Transactions on Cyber-Physical Systems, 2025.
Yuting Wu, Xin Lou, **Pengfei Zhou**, Rui Tan, Zbigniew T. Kalbarczyk, Ravishankar K. Iyer.
3. "Invisible Adversarial Stripes on Traffic Sign: Threat and Defense for Autonomous Vehicles", in ACM Transactions on Sensor Networks, October 2025.
Dongfang Guo, Yuting Wu, **Pengfei Zhou**, Xin Lou, Rui Tan.
4. "Memento: An Emotion Driven Lifelogging System with Wearables", in *ACM Transactions on Sensor Networks*, Vol.15, Issue 1, Article 8, January 2019.
Shiqi Jiang, **Pengfei Zhou**, Zhenjiang Li, and Mo Li.
5. "Think Like A Graph: Real-Time Traffic Estimation at City-Scale", in *IEEE Transactions on Mobile Computing*, Vol. 18, Issue 10, October 2019.

- Zhidan Liu, **Pengfei Zhou**, Zhenjiang Li, and Mo Li.
6. "Pricing Data Tampering in Automated Fare Collection with NFC-equipped Smartphones", in *IEEE Transactions on Mobile Computing*, Vol. 18, Issue 5, May 2019.
Fan Dang, Ennan Zhai, Zhenhua Li, **Pengfei Zhou**, Aziz Mohaisen, Kaigui Bian, Qingfu Wen, and Mo Li.
 7. "An Acoustic-based Encounter Profiling System", in *IEEE Transactions on Mobile Computing*, Vol 17, Issue 8, Pages 1750-1763, August 2018.
Huanle Zhang, Wan Du, **Pengfei Zhou**, Mo Li, and Prasant Mohapatra.
 8. "A Participatory Urban Traffic Monitoring System: The Power of Bus Riders", in *IEEE Transactions on Intelligent Transportation Systems*, Vol.18, Issue 10, October 2017.
Zhidan Liu, Shiqi Jiang, **Pengfei Zhou**, and Mo Li.
 9. "IODetector: A Generic Service for Indoor/Outdoor Detection", in *ACM Transactions on Sensor Networks*, Vol. 11, Issue 2, Article 28, February 2015.
Mo Li, **Pengfei Zhou**, Yuanqing Zheng, Zhenjiang Li, and Guobin (Jacky) Shen.
 10. "How Long to Wait?: Predicting Bus Arrival Time with Mobile Phone based Participatory Sensing", in *IEEE Transactions on Mobile Computing*, Vol. 13, Issue 6, Pages 1228-1241, June 2014.
Pengfei Zhou, Yuanqing Zheng, and Mo Li.

Other Papers: Preprints, Workshop Papers, Demos, Posters and Technical Reports

11. [SenSys'24] "Demo Abstract: Advancing PPG-Based Continuous Blood Pressure Monitoring from a Generative Perspective", in ACM SenSys, Demo Session, Hangzhou, China, November 4-7, 2024.
Hui Ji, **Pengfei Zhou**.
12. [SenSys'24] "Demo Abstract: Invisible Adversarial Stripes against Traffic Sign Recognition in Autonomous Driving", in ACM SenSys, Demo Session, Hangzhou, China, November 4-7, 2024.
Dongfang Guo, Yuting Wu, Yimin Dai, **Pengfei Zhou**, Xin Lou, Rui Tan.
13. [Preprint] "Language-centered Human Activity Recognition", in arXiv preprint arXiv:2410.00003, October 2024.
Hua Yan, Heng Tan, Yi Ding, **Pengfei Zhou**, Vinod Namboodiri, Yu Yang.
14. [Preprint] "Unleashing the Power of Unlabeled Data: A Self-supervised Learning Framework for Cyber Attack Detection in Smart Grids", in arXiv preprint arXiv:2405.13965, May 2024.
Hanyu Zeng, **Pengfei Zhou**, Xin Lou, Zhen Wei Ng, David K.Y. Yau, Marianne Winslett.
15. [ICCCPS'23] "Effects of Learning-Based Action-Space Attacks on Autonomous Driving Agents", in ACM/IEEE ICCPS (with CPS-IoT Week 2023), Work in Progress (WIP) Session, May 9-12, 2023.
Yuting Wu, Xin Lou, **Pengfei Zhou**, Rui Tan, Zbigniew T. Kalbarczyk, Ravishankar K. Iyer.
16. [R2HCAI'23] "The Measurement of Knowledge in Knowledge Graphs", in the AAAI 2023 Workshop on Representation Learning for Responsible Human-Centric AI, Washington DC, USA, February 2023.
Jason Xiaotian Dou, Haiyi Mao, Runxue Bao, Paul Pu Liang, Xiaoqing Tan, Shiyi Zhang, Minxue Jia, **Pengfei Zhou**, Zhi-Hong Mao.
17. [MiSeNet'17] "NFC-enabled Attack on Cyber Physical Systems: A Practical Case Study", in the 6th IEEE Annual International Workshop on Mission-Oriented Wireless Sensor and Cyber-Physical System Networking, May. 1-4, 2017.
Fan Dang, **Pengfei Zhou**, Zhenhua Li, Yunhao Liu.
18. [VLCS'14] "Harnessing Visible Light: Characterization and Applications", in the 1st ACM Workshop on Visible Light Communication Systems (VLCS), Demo Session, Maui, Hawaii, USA, September 2014.
Pengfei Zhou, Zhenjiang Li, Yuanqing Zheng, and Mo Li
19. [MobiCom'14] "Demo: instant phone attitude estimation and its applications", in ACM MobiCom, Demo Session, Maui, Hawaii, USA, September 2014.
Pengfei Zhou, Weiming Chan, Shiqi Jiang, Jiajue Ou, Mo Li, Guobin Shen.

20. [SECON'14] "Demo Abstract: Wind Measurements for Water Quality Studies in Urban Reservoirs", in IEEE SECON, Demo Session, Singapore, June 30~July 3, 2014.
Wan Du, Mo Li, Zikun Xing, Bingsheng He, Lloyd Hock Chye Chua, Zhenjiang Li, Yuanqiang Zheng and **Pengfei Zhou**.
21. [SenSys'13] "Poster Abstract: Smart traffic monitoring with participatory sensing", in ACM SenSys, Poster Session, Rome, Italy, November 11-14, 2013.
Pengfei Zhou, Zhiyuan Chen, Mo Li.
22. [APSys'13] "Demo Abstract: Building Smart Transportation with Participatory Sensing", in the 4th Asia-Pacific Workshop on Systems, Demo Session, Singapore, July 2013.
Pengfei Zhou and Mo Li.
23. [SenSys'12] "Demo Abstract: IODetector – A Generic Service for Indoor Outdoor Detection", In ACM SenSys, Demo Session, Toronto, Canada, November 2012.
Pengfei Zhou, Yuanqing Zheng, Zhenjiang Li, Mo Li, and Guobin (Jacky) Shen.
24. [MobiSys'12] "Demo - How Long to Wait?: Predicting Bus Arrival Time with Mobile Phone based Participatory Sensing", in ACM MobiSys, Demo Session, Low Wood Bay, United Kingdom, June 2012.
Pengfei Zhou, Yuanqing Zheng, and Mo Li.

Teaching

- University of Pittsburgh
- APPLIED DEEP LEARNING: Fall 2026, Summer 2026
ALGORITHM DESIGN: Fall 2026, Spring 2026, Fall 2025, Spring 2025, Fall 2024, Fall 2023
NETWORKS AND INFORMATION: Spring 2026
APPLICATIONS OF NETWORKS: Spring 2023

Honors and Awards

- Best Demo Award, ACM SenSys, Hangzhou, 2024.
- Test of Time Award, ACM SenSys, Boston, 2022.
- GetMobile Research Highlight, ACM GetMobile Magazine, 2022.
- Best Paper Award Runner-up, ACM SenSys, 2021.
- Recipient of millions of RMB investment, Beijing, 2017.
- Silver Medal, first innovation and entrepreneurship competition for Tsinghua alumni, Beijing, 2016.
- Best Demo Award, IEEE SECON, Singapore, 2014.
- Outstanding Press Operation Volunteer for Beijing Olympics, Water Cube, Beijing, 2008.
- Vice President, Student Association of the Department, Tsinghua University, Beijing, 2008.

Professional Services

Journal Editorship

- Associate Editor, ACM Transactions on Internet of Things (2025-present)
- Associate Editor, ACM Transactions on Computing for Healthcare (2026-present)

Conference Organization

- Local Chair, CHASE 2026: The IEEE/ACM conference on Connected Health: Applications, Systems and Engineering Technologies
- TPC co-chair, PICASSO 2025: Eighth International Workshop on Physics Embedded AI Solutions in Mobile Computing, co-located with Ubicomp/ISWC 2025
- Registration Chair, HotMobile 2025: The International Workshop on Mobile Computing Systems and Applications

- TPC Track co-Chair, ICPADS 2024: The International Conference on Parallel and Distributed Systems (Interdisciplinary Distributed Systems and Applications track)
- PhD Forum co-Chair, IPSN 2023: The ACM/IEEE International Conference on Information Processing in Sensor Networks
- Demo and Poster co-Chair, ICDCS 2023: The IEEE International Conference on Distributed Computing Systems

TPC Member

- SECON 2026: Annual IEEE International Conference on Sensing, Communication, and Networking
- MobiSys 2025: The ACM International Conference on Mobile Systems, Applications, and Services
- SenSys 2024, 2025: The ACM Conference on Embedded Artificial Intelligence and Sensing Systems
- IoTDI 2023, 2024 (merged to ACM SenSys in 2025): The ACM/IEEE Conference on Internet of Things Design and Implementation
- TheWebConf 2023, 2026 (WWW 2023, 2026): The ACM Web Conference (Systems and Infrastructure for Web, Mobile Web, and Web of Things Track)
- ICDCS 2024: The IEEE International Conference on Distributed Computing Systems
- SmartGridComm 2024: The IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids

Talks

- "Mobile Healthcare in the Wild", Sensforge, invited talk, Pittsburgh, April 2026.
- "Beyond Resolution PPG Sensing for Continuous Blood Pressure Monitoring", Sensor Data Science and AI Seminars, University of Georgia, USA, December 2024.
- "Beyond Resolution PPG Sensing for Continuous Blood Pressure Monitoring", University of Pittsburgh, USA, October 2024.
- "Practical Mobile Sensing at Scale", University of Pittsburgh, DINS Speaker Series & Telecom Seminar, USA, March 2024.
- "Practical Mobile Sensing at Scale", Pittsburgh, USA, October 2023.
- "IODetector - From Research to Practice", ACM SenSys Test of Time Award talk, Boston, USA, November 2022.
- "Adopting Indoor Outdoor Detection for On-demand Food Delivery Business", ACM MobiCom, Sydney, Australia, October 2022.
- "Mobile Crowdsensing", Online, School of Computing and Engineering, Nanyang Technological University, Singapore, May 2022.
- "Unleashing the Potential of Unlabeled Data for IMU Sensing Applications", Global Innovation Exchange, Tsinghua University, China, November 2021.
- "Intelligent Mobile Sensing: From Research to Practice", School of Computing and Information Systems, Singapore Management University, Singapore, July 2021.
- "Mobile Sensing and Applications: Industry Opportunities", School of Computer Science and Engineering, Nanyang Technological University, Singapore, 2017.