

Sijie Ji

Ph.D. Computer Science · Schmidt Science Fellow

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Google scholar: <https://scholar.google.com/citations?user=QodpJREAAAAJ>

ABOUT

My research develops Physical AI for human-centered cyber-physical systems, focusing on how intelligent systems can reliably infer latent human states from imperfect real-world observations and act under uncertainty and resource constraints. I pursue this agenda by building sensing-driven AI systems that integrate wireless, mobile, and wearable sensing with deep learning architectures embedding physical inductive biases, transforming unconstrained measurements into dependable, closed-loop interventions across diverse domains.

I am awarded as *Schmidt Science Fellow, 2024*. I am named *Singapore 100 Women in Tech, 2023* and *CPS rising star, 2024*.

PROFESSIONAL EXPERIENCE

Schmidt Science Fellow (Postdoctoral Researcher)

08/2024 –

- Advisor: AIMBE Fellow, RSC Fellow, IEEE Fellow, Prof. Wei Gao, **California Institute of Technology (Caltech)**, Department of Medical Engineering

Co-advisor: ACM Fellow, IEEE Fellow, Prof. Mani Srivastava, **University of California, Los Angeles (UCLA)**, Department of Electrical & Computer Engineering

Postdoctoral Researcher

09/2023 – 07/2024

- Advisor: Assistant Prof. Chenshu Wu, **University of Hong Kong**, Department of Computer Science

EDUCATION

Nanyang Technological University | Ph.D. (Computer Science and Engineering)

01/2018 - 09/2023

- Advisor: IEEE Fellow, ACM Distinguished Member, Prof. Mo Li

East China Normal University | B.Eng. (Software Engineering /subject ranked 1st in China)

09/2013 - 07/2017

- 21st Century Talent Honors College (graduate with honors)

- National Scholarship for Encouragement, First Class Scholarship, Excellent Student Cadre

- Excellent Bachelor Thesis

SELECTED COMPETITION AWARDS & HONORS

• [*Schmidt Science Fellow*](#), 2024

A prestigious postdoctoral fellowship, comes with a 110,000 USD annual stipend and is awarded to ~30 candidates selected from 400 highly accomplished nominees from ~100 of the world's leading science and engineering universities and institutes per year. The award rate (of nominees already pre-screened and selected from their PhD university) is about 7-8% based on completed applications.

• The Discretionary Award, Schmidt Science, \$5000, 2025

• AraFest'25 Travel Grant Award, \$2000, 2025

• **Cyber-Physical Systems (CPS) Rising Star**, ~16% acceptance rate, \$2000 travel grant, NSF, ACM SIGBED, 2024

• N2Women Young Researcher Fellowship, \$1000, ACM SIGMOBILE, IEEE Computer Society, 2023

• [Singapore 100 Women in Tech](#), Singapore Computer Society, 2023

• 1st Place, Women of S.T.E.E.L. research showcasing, Society of Women Engineers NTU, 2023

• SenSys Travel Grant, \$1000, ACM SIGMOBILE, 2022

• 1st Runner-up, Masked Face Recognition Challenge, ICCV 2021

• Silver Medal, Indoor Location Competition 2.0, Kaggle/Microsoft

• 2nd Runner-up, AI meets Beauty Challenge, \$500, ACM MM 2020

• 2nd Runner-up, EmotioNet Challenge, CVPR 2020

• Honorable Mention, Asian Region, ACM International Collegiate Programming Contest, 2016

SELECTED PUBLICATIONS

* denotes co-first author or corresponding author, ^ denotes supervised or co-supervised student.

- [1] **Sijie Ji**, Mo Li. *CLNet: Complex Input Lightweight Neural Network Designed for Massive MIMO CSI Feedback*, in IEEE Wireless Communications Letters (**WCL**), 2021 (JCR Q1, IF=6.18)
- [2] **Sijie Ji**, Yaxiong Xie, Mo Li. *SiFall: Practical Online Fall Detection with RF Sensing*, in Proceedings of the 20th ACM Conference on Embedded Networked Sensor Systems (**SenSys**), Nov 2022, Boston, USA. (Acceptance Rate: 52/209=24.88%)
- [3] **Sijie Ji**, Xuanye Zhang[^], Yuanqing Zheng, Mo Li. *Construct 3D Hand Skeleton with Commercial WiFi*, in Proceedings of the 21th ACM Conference on Embedded Networked Sensor Systems (**SenSys**), Nov 2023, Istanbul, Turkiye. (Acceptance Rate: 34/179 = 18.99%)
- [4] **Sijie Ji**, Mo Li. *Enhancing Deep Learning Performance of Massive MIMO CSI Feedback*, in Proceedings of the IEEE International Conference on Communications (**ICC**), May 2023, Rome, Italy.
- [5] **Sijie Ji**, Lixiang Lian, Yuanqing Zheng, Chenshu Wu. *MuSAC: Mutualistic Sensing and Communication for Mobile Crowdsensing*, in Proceedings of the 44th IEEE International Conference on Distributed Computing Systems (**ICDCS**), July 2024, Jersey City, New Jersey, USA. (Acceptance Rate: 121/552=21.92%)
- [6] **Sijie Ji**, Xinzhe Zheng[^], Chenshu Wu. *HARGPT: Are LLMs Zero-Shot Human Activity Recognizers?* In Proceedings of the 1st Foundation Models for Cyber-Physical Systems & Internet of Things (**FMSys**), **CPS - IoT week**, 2024
- [7] Xinzhe Zheng^{^*}, **Sijie Ji**^{*}, Jiawei Su^{^*}, Renqi Chen, Wei Gao, Mani Srivastava. *ProMind-LLM: Proactive Mental Health Care via Causal Reasoning with Sensor Data*, In Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (**ACL**) Findings, 2025
- [8] **Sijie Ji**, Yiwei Wang[^], Lixiang Lian. *MuSAC: Toward Communication-Free Sensory Data Acquisition*. IEEE Transaction on Mobile Computing (**TMC**), 2026
- [9] **Sijie Ji**, Sheng Lyu[^], Wenjian Li, Wei Gao. *AquaCode: Turning Transaction Platforms into Non-Invasive Liquid Quality Checker*, in Proceedings of the 24th ACM Conference on Embedded Networked Sensor Systems (**MobiSys**), June 2026, Cambridge, UK. (Acceptance Rate: 68/304 = 22.37%)
- [10] **Sijie Ji**^{*}, Kai Wang^{*}, Xiaojiang Peng, Jianfei Yang, Zhaoyang Zeng, Yu Qiao. *Multiple Transfer Learning and Multi-Label Balanced Training Strategies for Facial AU Detection in the Wild*, in Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**) Workshops, 2020, Virtual. Oral presentation.
- [11] Jingwen Hou^{*}, **Sijie Ji**^{*}, Annan Wang[^]. *Attention-driven Unsupervised Image Retrieval for Beauty Products with Visual and Textual Clues*, in Proceedings of the 28th ACM International Conference on Multimedia (ACM **MM**), 2020, Virtual. Oral presentation.
- [12] Hanjie Qian[^], Panpan Zhang, **Sijie Ji**^{*}, Shuxin Cao, Yuecong Xu. *Improving Representation Consistency with Pairwise Loss for Masked Face Recognition*, in Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV**) Workshops, 2021
- [13] Xinzhe Zheng[^], **Sijie Ji**, Yipeng Pan, Kaiwen Zhang, Chenshu Wu. *Magnetometer-Calibrated Hybrid Transformer for Robust Inertial Tracking in Robotics*, in Proceedings of the 2025 IEEE International Conference on Robotics and Automation (**ICRA**), May 19-23, 2025, Atlanta, USA
- Under Review:**
- [14] Samuel Solomon[^], Yadong Xu, Ruixiao Liu, Jadelynn Dao, José Lasalde Ramírez, Jihong Min, Dickson Yao, Sarah Solomon, Canran Wang, **Sijie Ji**, Jennifer A. Sumner, Wei Gao^{*}. *Wearable affective general intelligence*. **Under revision of Nature**.
- [15] Vanessa Matos Gonçalves, Ekaterina Maevskaia, Moon-Ju Kim, **Sijie Ji**, et al. Noé Brasier^{*} *Resilience – A clinical concept in aging*. **Under revision of Nature Health**.

[16] José A. Lasalde-Ramírez^{^*}, Chihyeong Won*, **Sijie Ji***, Soyoung Shin, Robin McDonald, Katherine Karish, Gwangmook Kim, Hong Hang, Daniel Mukasa, Brian Arianpour, Yu Song, Jieping Yang, Tzung K. Hsiai, Zhaoping Li, Taeyoon Lee, Juliane R. Sempionatto*, Wei Gao*. *Noninvasive continuous lipid profiling via cofactor-refreshing cascading enzymatic reactions and causal machine learning*. **Under review of Nature Sensor**.

[17] Moon-Ju Kim*, **Sijie Ji***, Gwangmook Kim, Hong Han, Songsong Tang, Chihyeong Won, Gabriela Guzman, Jackie Ross, Tory Eisenlohr-Moul, Pauline Maki, Wei Gao*. *Decoding Non-Invasive Molecular Signatures of Pain via Nanophotonic Mass Spectrometry*. **Under revision of Science**

PROFESSIONAL SERVICES

Invited Reviewer:

- IEEE Transactions on Mobile Computing (TMC)
- IEEE Internet of Things Journal (IoTJ)
- IEEE/ACM Transactions on Networking (TON)
- IEEE Transactions on Communications (TCOM)
- ACM IMWUT (UbiComp)
- IEEE Transactions on Sensor Networks (TOSN)
- IEEE Sensors
- PNAS
- Science Advances
- Conference reviewer: CVPR, NeurIPS, ACL, AVSS, Globecom, VTC, ACM CHI, etc.
- ACM Transactions on Internet of Things (TIoT)
- IEEE Transactions on Vehicular Technology (TVT)
- IEEE Transactions on Wireless Communications (TWC)
- IEEE Communications Letters (CL)
- IEEE Wireless Communications Letters (WCL)
- ACM Health
- IEEE JSAC
- Nature Machine Intelligence
- Applied Science

Editorship:

- Electronics(SI) - Ubiquitous Computing and Applications in Digital Healthcare Systems

Scientific Organization Committee:

- Organizer of N2Women event at SenSys 2023
- PhD Forum Co-Chair of SenSys/BuildSys 2024
- PhD Forum Co-Chair of BuildSys 2025
- **General Co-Chair of HumanSys (CPS-IoT Week), 2025**

Program Committee Member:

- Session Chair MobiSys 2025; ICDCS 2024; VTC 2023 Fall
- Artifact Evaluation (AEC) **MobiCom 2024**
- TPC **SenSys 2026**; EMSOFT (ES Week) 2026; **MobiSys 2025**; EuroSys 2025 (Shadow); ACM MM 2025/2026; EMSOFT (ES Week) 2025; FMSys 2025; CoNEXT 2025 (Shadow); ICPADS 2024; BodySys (UbiComp) 2025; MobiCom (Demo) 2025; MobiCom (Poster) 2025
- Panel Member IPSN 2024 PhD Forum (CPS-IOT Week), 2024

PATENTS & INTELLECTUAL PROPERTY

- [1] Non-invasive Real-time Fall Detection System based on Radio Frequency. Sijie Ji and Mo Li (TD2022-199, Singapore)
[2] Construct 3D Hand Skeleton with Commercial WiFi. Sijie Ji and Mo Li (TD2023-270, 10202302579Y Singapore)