PAN HAO 潘昊

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Self Introduction

My name is Pan Hao, and I am a **Senior Researcher** at Microsoft Research Asia. Prior to this, I obtained my Ph.D. in Computer Science and Technology in March 2022 from Shanghai Jiao Tong University and completed my undergraduate studies at the Yingcai Honors College, University of Electronic Science and Technology of China, in June 2016. My research interests include mobile computing, wireless communication, intelligent sensing, human-computer interaction, and computer vision. To date, I have published a total of **14** high-quality academic papers as *the first author (including corresponding author)*, including **7 ACM MobiCom**; and I have been granted **5 Chinese invention patents** and **1 U.S. invention patent**.

Education Background

Shanghai Jiao Tong University
School of Electronic Information and Electrical Engineering 2016.9-2022.3
Department of Computer Science and Engineering
Mentors: Professor Guangtao Xue and Associate Professor Yi-Chao Chen

University of Electronic Science and Technology of China
Yingcai Honors College 2012.9-2016.7
Major: Information and Communication Engineering & Computer Science.

Working Experience

Huawei Future Network Lab, Hong Kong (Research Assistant) 2015.8-2016.4
Manager: Gong Zhang | Mentor: John C.S. Lui (ACM/IEEE Fellow, CUHK Professor)
Microsoft Research Asia, Shanghai (Senior Researcher) 2022.3-Now
Manager: Lili Qiu (ACM/IEEE/NAI Fellow, UT Austin Professor, MSRA Assistant Managing Director)

Academic Service

- **MobiCom 2025** Technical Committee Member
- **IEEE ICDCS 2024** Technical Committee Member (Internet of Things Track)
- **IEEE MSN 2023** Technical Committee Member (Security, Privacy, Trust, and Blockchain Track)
- **IEEE ToN/IEEE TMC/IEEE JASC/ACM TOPS/ACM UbiComp** Reviewer
- ACM SigComm/ACM SenSys/ACM MobiSys/ACM CoNEXT/USENIX NSDI External Reviewer

Talk and Demo Experience

- MIMSVAI Workshop (@UbiComp) 2023 **Keynote Talk**: Metasurface-aided mmWave communication and sensing in AR/VR
- Microsoft Research **Demo** for Bill Gates (2023): Metasurface-based liquid concentration estimation
- Microsoft Research **Demo** for Peter Lee (2024): Resonator-based non-invasive glucose sensing

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Teaching Experience

Teaching Assistant | SJTU, Computer Networks (XO33517, Undergraduate), Fall 2019
Teaching Assistant | SJTU, Mobile Intelligent Sensing and Computing (CS28014, Graduate), Fall 2018

Awards

2022 ACM China Doctoral Dissertation Award (Nominee)
2022 Shanghai Computer Society Outstanding Doctoral Thesis Award
2021 World Artificial Intelligence Conference (WAIC) Young Scientist Best Paper Award Nominee (Top 10)
2017&2016 3rd & 2nd Next Generation Internet Technology Innovation Competition, National First Prize
2014 20th National College Student Electronic Design Competition, Sichuan Provincial Second Prize

Paper List (Partial)

*is the corresponding author; † are the co-first authors.

[24] Yu Lu, **Hao Pan***, Dian Ding , Yongjian Fu, Liyun Zhang, Feitong Tan, Ran Wang, Yi-Chao Chen, Guangtao Xue, Ju Ren. "*M3Cam: Extreme Super-resolution via Multi-Modal Optical Flow for Mobile Cameras*" . Accepted in **ACM Sensys 2024**.

[23] Yu Lu, Dian Ding, **Hao Pan**, Yijie Li, Juntao Zhou, Yongjian Fu, Yongzhao Zhang, Yi-Chao Chen, Guangtao Xue. *"HandPad: Enabling On-the-Go Writing on Your Hand via Human Capacitance"* . Published in **ACM UIST 2024**.

[22] Yongjian Fu, Yongzhao Zhang, **Hao Pan**, Yu Lu, Xinyi Li, Lili Chen, Ju Ren, Xiong Li, Xiaosong Zhang, Yaoxue Zhang. "*Pushing the Limits of Acoustic Spatial Perception via Incident Angle Encoding*" . Published in **ACM UbiComp/ISWC 2024**.

[21] Yiwen Song, **Hao Pan***, Longyuan Ge, Lili Qiu, Swarun Kumar. *"MicroSurf: Guiding Energy Distribution inside Microwave Oven with Metasurfaces"* . Accepted in **ACM MobiCom 2024**.

[20] Yezhou Wang, **Hao Pan***, Lili Qiu, Linghui Zhong, Jiting Liu, Ruichun Ma, Yi-Chao Chen, Guangtao Xue, Ju Ren. *"GPMS: Enabling Indoor GNSS Positioning using Passive Metasurfaces"* . Accepted in **ACM MobiCom 2024**.

[19] Ruichun Ma, Shicheng Zheng, **Hao Pan***, Lili Qiu, Xingyu Chen, Liangyu Liu, Yihong Liu, Wenjun Hu, Ju Ren. "*Automated Optimization of mmWave Coverage using Low-cost Metasurfaces*" . Accepted in **ACM MobiCom 2024**.

[18] Lili Chen, Bozhong Yu, Yongjian Fu, Ju Ren, **Hao Pan**, Jeremy Gummeson, Yaoxue Zhang. "*Pushing Wireless Charging from Station to Travel*" . Accepted in **ACM MobiCom 2024**.

[17] **Hao Pan**, Lili Qiu. "*Passive Metasurface-Based LEO Ground Station Design*" . Accepted in **TSINGHUA SCIENCE AND TECHNOLOGY 2024**.

[16] **Hao Pan**, Lili Qiu, Bei Ouyang, Shicheng Zheng, Yongzhao Zhang, Yi-Chao Chen, Guangtao Xue. "*PMSat: Optimizing Passive Metasurface for Low Earth Orbit Satellite Communication*" . Published in **ACM MobiCom 2023**.

[15] Yongzhao Zhang, **Hao Pan**, Yi-Chao Chen, Lili Qiu, Yu Lu, Guangtao Xue, Jiadi Yu, Feng Lyu, Haonan

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Wang. "*Addressing Practical Challenges in Acoustic Sensing to Enable Fast Motion Tracking*". Published in **ACM/IEEE IPSN 2023.**

[14] Yu Lu, **Hao Pan***(corresponding author), Feitong Tan, Yi-Chao Chen, Guangtao Xue. "*Effectively Learning Moiré QR Code Decryption from Simulated Data*". Published in **IEEE INFOCOM 2023**.

[13] **Hao Pan**, Feitong Tan, Yi-Chao Chen, Gaoang Huang, Qingyang Li, Wenhao Li, Guangtao Xue. "*DoCam: Depth Sensing with an Optical Image Stabilization Supported RGB Camera*". Published in **ACM MobiCom 2022**.

[12] **Hao Pan**, Feitong Tan, Wenhao Li, Yi-Chao Chen, Guangtao Xue. "*OISSR: Optical Image Stabilization Based Super Resolution on Smartphone Cameras*". Published in **ACM Multimedia 2022**.

[11] **Hao Pan**, Feitong Tan, Wenhao Li, Yi-Chao Chen, Lanqing Yang, Guangtao Xue, Xiaoyu Ji. "*MagDefender: Detecting Eavesdropping on Mobile Devices using the Built-in Magnetometer*". Published in **IEEE SECON 2022**.

[10] Guangtao Xue , Yijie Li , **Hao Pan** , Lanqing Yang , Yi-Chao Chen , Xiaoyu Ji , Jiadi Yu. "*ScreenID: Enhancing QRCode Security by Utilizing Screen Dimming Feature*". Published in **ACM/IEEE ToN 2022**.

[9] Guangtao Xue, **Hao Pan***, Yi-Chao Chen*, Xiaoyu Ji, Jiadi Yu. "*MagneComm+: Near-Field Electromagnetic Induction Communication with Magnetometer*". Published in **IEEE TMC 2021**.

[8] Xiaoyu Ji, Yushi Cheng, Wenyuan Xu, Yuehan Chi, **Hao Pan**, Zhuangdi Zhu, Chuang-Wen You, Yi-Chao Chen, Lili Qiu. *"No Seeing is Also Believing: Electromagnetic-emission-based Application Guessing Attacks via Smartphones"*. Published in **IEEE TMC 2021**.

[7] **Hao Pan**, Lanqing Yang, Honglu Li, Yi-Chao Chen, Guangtao Xue. *"MagThief: Stealing Private App Usage Data on Mobile Devices via Built-in Magnetometer"*. Published in **IEEE SECON 2021**.

[6] **Hao Pan**†, Yi-Chao Chen†, Qi Ye, Guangtao Xue. *"MagicInput: Training-free Multi-lingual Finger Input System using Data Augmentation based on MNISTs"*. Published in **ACM/IEEE IPSN 2021**.

[5] Yijie Li, Yi-Chao Chen, Xiaoyu Ji, **Hao Pan**, Lanqing Yang, Guangtao Xue, Jiadi Yu. "*SCREENID: Enhancing QRCode Security by Fingerprinting Screens*". Published in **IEEE INFOCOM 2021**.

[4] Lanqing Yang, Yi-Chao Chen, **Hao Pan**, Dian Ding, Guangtao Xue, Linghe Kong, Jiadi Yu, Minglu Li. "*MagPrint: Deep Learning Based User Fingerprinting Using Electromagnetic Signals*". Published in **IEEE INFOCOM 2020**.

[3] **Hao Pan**†, Yi-Chao Chen†, Lanqing Yang, Chuangwen You, Guangtao Xue, Xiaoyu Ji. "*mQRCode: Secure QR Code Using Nonlinearity of Spatial Frequency in Light*". Published in **ACM MobiCom 2019**.

[2] Yushi Cheng, Xiaoyu Ji, Wenyuan Xu, **Hao Pan**, Zhuangdi Zhu, Chuang-Wen You, Yi-Chao Chen, Lili Qiu. "*MagAttack: Guessing Application Launching and Operation via Smartphone*". Published in **ACM AsiaCCS 2019**.

[1] **Hao Pan**, Yi-Chao Chen, Guangtao Xue, Xiaoyu Ji. "*Magnecomm: Magnetometer-based near-field communication*". Published in **ACM MobiCom 2017**.