

KE SUN

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Assistant Professor ◊ EECS Department ◊ University of Michigan, Ann Arbor

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RESEARCH INTEREST

Mobile and Ubiquitous Computing Systems, Human-Computer Interaction, Mobile and IoT Cybersecurity, and Mobile and IoT Health and Environmental Sensing.

Specifically, I am interested in designing end-to-end intelligent, cost-effective, deployable, trustworthy and human-centric systems for Mobile, Wearable and IoT systems. Specifically, I focus on i). Enable novel applications; ii). Advance computational sensing techniques; iii). Address system bottlenecks; and iv). Harness innovative sensing modalities for MWIoT ecosystems.

EMPLOYMENT

University of Michigan, Ann Arbor Assistant Professor	<i>Jan 2025 - Now</i>
Amazon Lab126, Audio Technology Applied Scientist Intern	<i>Jun 2023 - Sep 2023</i>
Amazon Lab126, Audio Technology Applied Scientist Intern	<i>Jun 2022 - Sep 2022</i>
Amazon Lab126, Audio Technology Applied Scientist Intern	<i>Jun 2021 - Sep 2021</i>

EDUCATION

University of California, San Diego Ph.D. in Computer Science Engineering Advisor: Prof. Xinyu Zhang Google Ph.D. Fellowship	<i>Sep 2019 - Nov 2024</i>
Nanjing University M.S. in Computer Science and Engineering Advisor: Prof. Wei Wang Graduate China National Scholarship	<i>Sep 2016 - Jun 2019</i>
Nanjing University of Aeronautics and Astronautics B.S. in Computer Science and Engineering Undergraduate President Award, Undergraduate Achievement Award	<i>Sep 2012 - Jun 2016</i>

SELETED HONORS AND AWARDS

• Google Ph.D. Fellowship	2023
• AI/Tech + Aging Pilot Award, National Institute on Aging (NIA)	2023
• ACM IMWUT (UbiComp) Distinguished Paper Award	2023
• ACM MobiCom Student Travel Grant	2021
• ACM SenSys Best Poster Runner-up	2020
• Qualcomm Fellowship Finalist	2019
• ACM MobiSys Student Travel Grant	2018

• Graduate China National Scholarship (Top 3 out of 200)	2018
• Undergraduate Achievement Award (Top 20 out of 3000)	2016
• Outstanding Undergraduate Award (Top 10 out of 3000)	2016
• Undergraduate President Award (Top 10 out of 3000)	2015

SELECTED PUBLICATION

Conference Papers:

1. EveGuard: Defeating Vibration-based Side-Channel Eavesdropping with Audio Adversarial Perturbations
Jung-woo Chang*, **Ke Sun***, David Xia, Xinyu Zhang, Farinaz Koushanfar
IEEE S&P (Oakland) 2025, May 2025.
2. Security Attacks on LLM-based Code Completion Tools
Cheng Wen, **Ke Sun**, Xinyu Zhang, Wei Wang
AAAI 2025 (Oral), Feb 2025.
3. Magmaw: Modality-Agnostic Adversarial Attacks on Machine Learning-Based Wireless Communication Systems
Jung-Woo Chang, **Ke Sun**, Nasimeh Heydaribeni, Seira Hidano, Xinyu Zhang, Farinaz Koushanfar
NDSS 2025, Feb 2024.
4. RFCanvas: Modeling RF Channel by Fusing Visual Priors and Few-shot RF Measurements
Xingyu Chen, Zihao Feng, **Ke Sun**, Kun Qian, Xinyu Zhang
ACM SenSys 2024, Nov 2024.
5. Multimodal Daily-life Logging in Free-living Environments Using Non-Visual Egocentric Sensors on a Smartphone
Ke Sun, Chunyu Xia, Xinyu Zhang, Hao Chen, Charlie Zhang
ACM IMWUT (UbiComp) 2024, March 2024.
6. StealthyIMU: Extracting Permission-protected Private Information from Smartphone Voice Assistant using Zero-Permission Sensors
Ke Sun, Chunyu Xia, Songlin Xu, Xinyu Zhang
NDSS 2023, Feb 2023.
7. VECTOR: Velocity Based Temperature-field Monitoring with Distributed Acoustic Devices
Haoran Wan, Lei Wang, Ting Zhao, **Ke Sun**, Shuyu Shi, Haipeng Dai, Guihai Chen, Haodong Liu, Wei Wang
ACM IMWUT (UbiComp) 2022, Sep 2022.
8. LoEar: Push the Range Limit of Acoustic Sensing for Vital Sign Monitoring
Lei Wang, Wei Li, **Ke Sun**, Fusang Zhang, Tao Gu, Chenren Xu, Daqing Zhang
ACM IMWUT (UbiComp) 2022, Sep 2022.
9. UltraSE: Single-Channel Speech Enhancement Using Ultrasound
Ke Sun, Xinyu Zhang
ACM MobiCom 2021, Oct 2021.
10. ExGSense: Toward Facial Gesture Sensing and Reconstruction with a Sparse Near-Eye Sensor Array
Chen Chen, **Ke Sun**, Xinyu Zhang
ACM/IEEE IPSN 2021, May 2021.
11. “Alexa, Stop Spying on Me”: Speech Privacy Protection Against Voice Assistants
Ke Sun, Chen Chen, Xinyu Zhang
ACM SenSys 2020, Nov 2020.

12. milliEgo: Single-chip mmWave Radar Aided Egomotion Estimation via Deep Sensor Fusion
Chris Xiaoxuan Lu, Muhamad Risqi U. Saputra, Peijun Zhao, Yasin Almalioglu, Pedro P. B. de Gusmao, Changhao Chen, **Ke Sun**, Niki Trigoni, Andrew Markham
ACM SenSys 2020, Nov 2020.
13. Dynamic Speed Warping: Similarity-Based One-shot Learning for Device-free Gesture Signals
Xun Wang, **Ke Sun**, Ting Zhao, Wei Wang, Qing Gu
IEEE INFOCOM 2020, Apr 2020.
14. SpiderMon: Towards Using Cell Towers as Illuminating Sources for Keystroke Monitoring
Kang Ling, Yuntang Liu, **Ke Sun**, Wei Wang, Lei Xie, Qing Gu
IEEE INFOCOM 2020, Apr 2020.
15. VSkin: Sensing Touch Gestures on Surfaces of Mobile Devices Using Acoustic Signals
Ke Sun, Ting Zhao, Wei Wang, Lei Xie
ACM MobiCom 2018, Oct 2018.
16. Unlock With Your Heart: Heartbeat-based Authentication on Commercial Mobile Phones
Lei Wang, Kang Huang, **Ke Sun**, Wei Wang, Chen Tian, Lei Xie, Qing Gu
ACM IMWUT (UbiComp) 2018, Oct 2018.
17. Charging Task Scheduling for Directional Wireless Charger Networks
Haipeng Dai, **Ke Sun**, Alex X. Liu, Lijun Zhang, Jiaqi Zheng and Guihai Chen
ACM ICPP, Aug 2018.
18. Depth Aware Finger Tapping on Virtual Displays
Ke Sun, Wei Wang, Alex X. Liu, Haipeng Dai
ACM MobiSys 2018, Jun 2018.
19. WiTrace: Centimeter-Level Passive Gesture Tracking Using WiFi Signals
Lei Wang, **Ke Sun**, Haipeng Dai, Alex X. Liu, Xiaoyu Wang
IEEE SECON 2018, Jun 2018.
20. Device-free Gesture Tracking Using Acoustic Signals
Wei Wang, Alex X. Liu, **Ke Sun**
ACM MobiCom 2016, Oct 2016. (MIT Technology Review)

Journal Papers:

1. Towards Smartphone-based 3D Hand Pose Reconstruction Using Acoustic Signals
Shiyang Wang, Xingchen Wang, Wenjun Jiang, Chenglin Miao, Qiming Cao, Haoyu Wang, **Ke Sun**, Hongfei Xue, Lu Su
ACM Transactions on Sensor Networks, 2024.
2. SCALAR: Self-Calibrated Acoustic Ranging for Distributed Mobile Devices
Lei Wang, Haoran Wan, Ting Zhao, **Ke Sun**, Shuyu Shi, Haipeng Dai, Guihai Chen, Haodong Liu, Wei Wang
IEEE Transactions on Mobile Computing, 2023.
3. DSW: One-shot Learning Scheme for Device-free Acoustic Gesture Signals
Xun Wang, **Ke Sun**, Ting Zhao, Wei Wang, Qing Gu
IEEE Transactions on Mobile Computing, 2022.
4. Charging Task Scheduling for Directional Wireless Charger Networks
Haipeng Dai, **Ke Sun**, Alex X. Liu, Lijun Zhang, etc.
IEEE Transactions on Mobile Computing, 2020.
5. WiTrace: Centimeter-Level Passive Gesture Tracking Using OFDM Signals
Lei Wang, **Ke Sun**, Haipeng Dai, Wei Wang, Kang Huang, etc.

IEEE Transactions on Mobile Computing, 2019.

Filed U.S. Patents:

1. UltraSound based Localization and Mapping
Ke Sun, Sai Ravi Teja Pulugurtha, Vamshi Krishna Chillara, Krishna Kamath Koteshwara, Berkant Tacer (Amazon 126 Lab)
2. Monitoring Ambient Temperature and Humidity using Ultrasound Sensing on Smart Speaker
Ke Sun, Krishna Kamath Koteshwara, Berkant Tacer, Karthik Kumar, Carlos Nakagawa, Sai Ravi Teja Pulugurtha (Amazon 126 Lab)
3. Single-channel Speech Enhancement using Ultrasound
Xinyu Zhang, **Ke Sun**

PROFESSIONAL SERVICES

Technical Program Committee

- 2025 ACM MobiSys, ACM SenSys

Editor

- 2025 ACM IMUWT (UbiComp)

Organizer

- 2023 ML4IoT Workshop@ICLR'23

Shadow Program Committee

- 2022 ACM SenSys

Reviewer

- 2024 ACM IMWUT (UbiComp)
- 2023 IEEE ICASSP, ACM TMC, ACM TOSN
- 2022 IEEE ICASSP, ACM IMWUT (UbiComp), ACM SenSys, IEEE TMC, IEEE TWC
- 2021 ACM TOSN, IEEE TMC, ACM MobileHCI
- 2020 IEEE TMC, ACM IMWUT (UbiComp)