KE SUN

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BIOGRAPHY

I am a 3rd year Ph.D. student in Computer Science and Engineering at the University of California, San Diego, advised by Prof. Xinyu Zhang. My research interests are broadly including mobile computing, IoT security & privacy, human-computer interaction and speech processing. Currently, my research focuses on hardware/ software co-design for multimodal and crossmodal era for wearable devices and IoT.

EDUCATION

University of California, San Diego   *Sep 2019 - Present*
Ph.D. in Computer Engineering
Advisor: Prof. Xinyu Zhang

Nanjing University   *Sep 2016 - Jun 2019*
M.S. in Computer Science and Engineering
Advisor: Prof. Wei Wang

Nanjing University of Aeronautics and Astronautics   *Sep 2012 - Jun 2016*
B.S. in Computer Science and Engineering
Undergraduate President Award, Undergraduate Achievement Award

SELECTED PUBLICATION

1. UltraSE: Single-Channel Speech Enhancement Using Ultrasound
   Ke Sun, Xinyu Zhang
   ACM MobiCom 2021, Oct 2021.

2. 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.

3. "Alexa, Stop Spying on Me": Speech Privacy Protection Against Voice Assistants
   Ke Sun, Chen Chen, Xinyu Zhang
   ACM SenSys 2020, Nov 2020.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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 2018 (Ubicomp 2018), Oct 2018.

9. Depth Aware Finger Tapping on Virtual Displays
   Ke Sun, Wei Wang, Alex X. Liu, Haipeng Dai
   ACM MobiSys 2018, Jun 2018.

10. 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.

11. Device-free Gesture Tracking Using Acoustic Signals
    Wei Wang, Alex X. Liu, **Ke Sun**
    ACM MobiCom 2016, Oct 2016. (MIT Technology Review)

Full List

EXPERIENCE

Internship

- Applied Scientist Intern, Amazon Lab126   *Jun 2021 - Sep 2021*

Reviewer

- 2022 IEEE ICASSP, ACM IMWUT (UbiComp)
- 2021 ACM TOSN, IEEE TMC, ACM MobileHCI
- 2020 IEEE TMC, ACM IMWUT (UbiComp)

SELETED HONORS

• ACM MobiCom Student Travel Grant	2021
• ACM SenSys Best Poster Runner-up	2020
• 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
• Undergraduate China National Scholarship	2014

SELETED AWARDS

- 2017 China National College Competition on Internet of Things **Finals First Prize**
  Project: Ultrasound based Sensing Applications for Mobile Devices   Oct 2017
- 2015 ACM-ICPC Asia Regional Contest(Chang Chun Site) **Gold Medal**   Oct 2015

PROJECT

1. **Multi-modal Sensing and Applications**
   - Speech Enhancement using audible and inaudible channels (MobiCom'21)
   - Facial Gesture Reconstruction with Sparse Near-Eye Biopotential Transducers (IPSN'21)
   - mmWave Radar Aided Egomotion Estimation via Deep Sensor Fusion (SenSys'20)
   - Depth-aware Finger Tapping on Virtual Display via Camera/Ultrasound Fusion (MobiSys 18)
2. **HCI Systems using Ultrasound Signals**

- One-shot Learning for In-air Gesture (INFOCOM'20)
- Sensing Touch Gestures (MobiCom'18)
- In-air Gesture Tracking (MobiCom'16, SECON'18, TMC'19) **MIT Technology Review**

3. **IoT Security & Privacy**
   - Speech Privacy Protection against Voice Assistant (SenSys'20)
   - LTE based Keystroke Monitoring (INFOCOM'20)
   - Heartbeat-based Authentication (UbiComp'18)