

# KE SUN

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## BIOGRAPHY

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I am a 2nd 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 and human-computer interaction.

## EDUCATION

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**University of California, San Diego**

*Sep 2019 - Present*

Ph.D. in Computer Engineering

Supervisor: Prof. Xinyu Zhang

**Nanjing University**

*Sep 2016 - Jun 2019*

M.S. in Computer Science and Engineering

Supervisor: 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

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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)

Notes: Full List

## SELETED HONORS

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- |   |      |
|---|------|
| • 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

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| • 2017 China National College Competition on Internet of Things <b>Finals First Prize</b><br>Project: Ultrasound based Sensing Applications for Mobile Devices | Oct 2017 |
| • 2015 ACM-ICPC Asia Regional Contest(Chang Chun Site) <b>Gold Medal</b>   | Oct 2015 |
| • 2014 ACM-ICPC China Shanghai Metropolitan Programming Contest <b>Silver Medal</b>  | May 2014 |
| • 2013 ACM-ICPC China TongHua Invitational Programming Contest <b>Silver Medal</b>   | May 2013 |

## PROJECT

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1. **Multi-modal Sensing and Applications**
  - Towards Self-supervised Ambient Intelligence using Wireless Signals (On-going)
  - 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)

## EXPERIENCE

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Reviewer

- 2020 IEEE TMC
- 2020 ACM IMWUT (UbiComp)
- 2017 ICCCS