

YONGPAN ZOU

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EDUCATION

- **The Hong Kong University of Science and Technology** Hong Kong
Doctor of Philosophy - Computer Science *September 2013 - February 2017*
Thesis: Evolving Human-Device Interaction in the Context of Ubiquitous Computing
Supervisor: Prof. Lionel M. Ni
- **Xi'an Jiaotong University** Shaanxi, China
Bachelor of Engineering - Chemical Machinery *September 2009 - July 2013*
Thesis: The Modeling and Management of Risk of Hazardous Chemicals
Supervisor: Prof. Yun Li

EMPLOYMENT

- **Shenzhen University, CSSE Department** Shenzhen
Associate Professor (tenured) *July 2022 - present*
- **Shenzhen University, CSSE Department** Shenzhen
Assistant Professor *September 2017 - June 2022*
- **University of Macau, CIS Department** Macau
Research Assistant *February 2017 - August 2017*

RESEARCH

- **Gesture Recognition Based on Acoustic Sensing:** Recently, wearable devices have become increasingly popular in our lives because of their neat features and stylish appearance. However, their tiny sizes bring about new challenges to human-device interaction such as texts input. Although some novel methods have been put forward, they possess different defects and are not applicable to deal with the problem.
- **User Authentication Based on Acoustic Sensing:** User authentication on smart devices is indispensable to keep data privacy and security. However, conventional authentication methods are not applicable for wearables due to constraints of size and hardware, which makes present wearable devices lack convenient, secure, and low-cost authentication schemes. As a result, our team has conducted research on this topic and have proposed several novel authentication methods based on ubiquitous acoustic sensors.
- **Human Activity Recognition with Wearables:** User authentication on smart devices is indispensable to keep data privacy and security. However, conventional authentication methods are not applicable for wearables due to constraints of size and hardware, which makes present wearable devices lack convenient, secure, and low-cost authentication schemes. As a result, our team has conducted research on this topic and have proposed several novel authentication methods based on ubiquitous acoustic sensors.

PUBLICATIONS

Conference papers

- P. Zhu, **Y. Zou***, W. Li, K. Wu. CHAR: Composite Head-body Activities Recognition with A Single Earable Device. in Proceedings of IEEE PerCom, December 2022.
- H. Lei, D. Wang, Z. Pan, **Y. Zou***, K. Wu. iScreen: A Pure Software-Based Screen Privacy Protection System for Mobile Devices. in Proceedings of the 18th IEEE UIC, pp.1-8, Atlanta, USA, October 2021.
- B. Yuan, Y. Han, J. Dai, **Y. Zou***, Y. Liu, K. Wu. I am smartglasses, and I can Assist Your Reading. in Proceedings of the 20th IEEE ICA3PP, pp.383-397, New York, USA, October 2020.
- M. Chen, J. Lin, **Y. Zou***, R. Ruby, Kaishun Wu. SilentSign: Device-free Handwritten Signature Verification through Acoustic Sensing. in Proceedings of the 18th IEEE PerCom, pp.1-9, Austin, Texas, USA, March 2020.
- **Y. Zou**, Q. Yang, R. Ruby, Y. Han, S. Wu, M. Li, K. Wu. EchoWrite: An Acoustic-based Finger Input System Without Training. in Proceedings of the 39th IEEE ICDCS, pp.778-787, Dallas, Texas, USA, July 2019.

- **Y. Zou**, Q. Yang, Y. Han, D. Wang, J. Cao, Kaishun Wu. AcouDigits: Enabling Users to Input Digits in the Air. in Proceedings of the 17th IEEE Percom, pp.1-9, Kyoto, Japan, March 2019.
- Q. Yang, **Y. Zou***, M. Zhao, J. Lin, K. Wu. ArmIn: Explore the Feasibility of Designing a Text-entry Application Using EMG Signals. in Proceedings of the 15th EAI Mobiquitous, pp.117-126, New York City, USA, November 2018.
- **Y. Zou**, M. Zhao, Z. Zhou, J. Lin, M. Li, K. Wu. BiLock: User Authentication via Dental Occlusion Biometrics. In Proceedings of the ACM IMWUT (UbiComp 2018), pp.1-20, vol.2, no.3, Singapore, Singapore, October 2018.
- Z. Zheng, W. Liu, R. Ruby, **Y. Zou***, K. Wu. ABAid: Navigation Aid for Blind People using Acoustic Signals. in Proceedings of the 14th IEEE MASS, pp.333-337, Florida, USA, October 2017.
- **Y. Zou**, Y. Wang, S. Ye, K. Wu, L. M. Ni. TagFree: Passive Object Differentiation via Physical Layer Radiometric Signatures. in Proceedings of the 15th IEEE Percom, pp.237-246, Hawaii, USA, March 2017.
- W. He, K. Wu, **Y. Zou**, Z. Ming. WiG: WiFi-Based Gesture Recognition System. in Proceedings of the 24th IEEE ICCCN, pp.1-7, Las Vegas, USA, August 2015.
- **Y. Zou**, G. Wang, K. Wu, L. M. Ni. SmartSensing: Sensing Through Walls with Your Smartphone! in Proceedings of the 11th IEEE MASS, pp.55-63, Philadelphia, USA, October 2014. (**Best Paper Award**)
- G. Wang, **Y. Zou**, Z. Zhou, K. Wu, L. M. Ni. We Can Hear You with WiFi! in Proceedings of the 20th ACM Mobicom, pp.593-604, Hawaii, USA, September 2014.

Journal papers

- **Y. Zou**, Z. Xiao, S. Hong, K. Wu. EchoWrite 2.0: A Lightweight Zero-shot Text-entry System Based on Acoustics. in IEEE Transactions on Human-Machine Systems, volume 52, issue 6, pp. 1313-1326, December 2022.
- **Y. Zou**, H. Lei, K. Wu. Beyond Legitimacy, also with Identity: Your Smart Earphones Know Who You Are Quietly. accepted to appear in IEEE Transactions on Mobile Computing, December 2021.
- D. Zhang, W. Xie, Z. Liao, W. Zhu, L. Jiang, **Y. Zou***. Beyond RSS: A PRR and SNR Aided Localization System for Transceiver-free Target in Sparse Wireless Networks. in IEEE Transactions on Mobile Computing, volume 21, issue 11, pp.3866-3879, November 2022.
- **Y. Zou**, D. Wang, S. Hong, R. Ruby, D. Zhang, K. Wu. A Low-Cost Smart Glove System for Real-time Fitness Coaching. in IEEE Internet of Things Journal, Volume 7, Issue 8, pp. 7377-7391, March 2020.
- K. Wu, Q. Yang, B. Yuan, **Y. Zou***, R. Ruby, M. Li. EchoWrite: An Acoustic-based Finger Input System Without Training. in IEEE Transactions on Mobile Computing, Volume 25, Issue 5, pp.1789-1803, February 2020.
- **Y. Zou**, W. Liu, K. Wu, L. M. Ni. Wi-Fi Radar: Recognizing Human Behavior with Commodity Wi-Fi. in IEEE Communications Magazine, Volume 55, Issue 10, pp. 105-111, October 2017.
- **Y. Zou**, J. Xiao, J. Han, K. Wu, Y. Li, L. M. Ni. GRfid: A Device-free Gesture Recognition System Using COTS RFID Device. in IEEE Transactions on Mobile Computing, Volume 16, Issue 2, pp. 381-393, February 2017. (**ESI Highly Cited Paper**)
- **Y. Zou**, G. Wang, K. Wu, L. M. Ni. SmartScanner: Know More in Walls with Your Smartphone! in IEEE Transactions on Mobile Computing, Vol. 15, Issue 11, pp. 2865-2877, November 2016.
- G. Wang, **Y. Zou**, Z. Zhou, K. Wu, L. M. Ni. We Can Hear You with Wi-Fi! in IEEE Transactions on Mobile Computing, Vol. 15, Issue 11, pp. 2907-2920, November 2016. (**ESI Highly Cited Paper, IEEE TMC Feature Article**)

Workshop/Poster/Demo/Others

- D. Wang, J. Weng, **Y. Zou***, K. Wu. EmoTracer: A Wearable Physiological and Psychological Monitoring System With Multi-modal Sensors. In Proceedings of the 2022 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp/ISWC'22 Adjunct), Cambridge, United Kingdom, September 2022.
- H. Lei, J. Liu, **Y. Zou***, K. Wu. Poster: Smart Earpieces that Know Who You Are Quietly. in Proceedings of the ACM SenSys, pp.721-722, Virtual Event, Japan, November 2020.
- B. Yuan, S. Hong, **Y. Zou***, K. Wu. Poster: Tap it and You Know What It is: A Surface Identification System Based on Acoustic Dispersion. in Proceedings of the ACM SenSys, pp.727-728, Virtual Event, Japan, November 2020.
- S. Hong, Z. Xiao, J. Liu, **Yongpan Zou***, K. Wu. MetaDigit: Towards A Practical Digits Input System with Few User Effort. in Proceedings of the 2nd ACM AIChallengeIoT, pp.1-6, Virtual Event, Japan, November 2020.

- D. Wang, H. Lei, H. Dong, Y. Wang, **Y. Zou***, K. Wu. Poster: What You Wear Know How You Feel: An Emotion Inference System with Multi-modal Wearable Devices. in Proceedings of the 26th ACM Mobicom, pp.1-3, London, United Kingdom, September 2020.
- Q. Yang, H. Fu, **Y. Zou***, K. Wu. Demo: A Novel Finger-Assisted Touch-free Text Input System Without Training. in Proceedings of the 16th ACM Mobisys, pp.533, Munich, Germany, June 2018.
- K. Wu, **Y. Zou**. Research of HCI Technologies on Novel Smart Devices (in Chinese). in Communications of the CCF, volume 15, issue 4, April 2019.

PATENTS

- **Yongpan Zou**, Haibo Lei, Kaishun Wu. Method for user recognition and emotion monitoring based on smart headset. US patent, US 2022/0188392 A1, June 2022.
- Kaishun Wu, **Yongpan Zou**, Dan Wang, Lu Wang. Limb movement gesture judgment method and device. US patent, US11134893 B2, October 2021.
- Kaishun Wu, **Yongpan Zou**, Weifeng Liu. Methods, systems, and media for recognition of user interaction based on acoustic signals. US patent, US2018/0373357 A1, December 2018.
- Kaishun Wu, Junjun Bao, Jinyong Wu, **Yongpan Zou**. Screen privacy protection method and system for mobile terminal device. US patent, US10810326 B2, October 2020.
- Kaishun Wu, Lu Wang, Hailiang Yang, **Yongpan Zou**. Mobile networking method and system for minimizing interference. US patent, US10536214 B2, January 2020.
- Kaishun Wu, Jun Xu, Lu Wang, **Yongpan Zou**. Indoor positioning method and system based on wireless receiver and camera. US patent, US10412701 B2, September 2019.

GRANTS

- **PI**, National Natural Science Foundation of China (General Program). Research on Key Technology of User Context Mining Based on Acoustic Sensing with Smart Devices, No.62172286, 2022.01-2025.12, 590K CNY.
- **PI**, National Natural Science Foundation of China (Yonth Program). Research on Touch-free Fine-grained Gesture Input Based on Acoustic Sensing, No.61802264, 2019.01-2021.12, 260K CNY.
- **PI**, Natural Science Foundation of Guangdong (General Program). Research on Affective Computing Based on Ubiquitous Smart Devices, No. 2022A1515011509, 2022.01-2024.12, 100K CNY.
- **PI**, Natural Science Foundation of Shenzhen (General Program). Research on Wearable Interaction Technology Based on Acoustic Sensing, No.JCYJ20180305124807337, 2019.03-2021.09, 500K CNY.
- **PI**, Tencent “Rhinoceros Birds” - Scientific Research Foundation for Young Teachers of Shenzhen University. User-oriented Multi-modal Context Sensing Based on Novel Mobile Devices, 2018.01-2019.12, 50K CNY.
- **PI**, Startup Fund for Shenzhen Overseas High-Caliber Personnel. Research on Interaction Technologies for Smart Devices Based on Acoustic Sensing, No.827/000338, 2018.01-2020.12, 2700K CNY.
- **PI**, Natural Science Foundation of Shenzhen University. Research on Efficient Interaction Technology for Novel Smart Devices, 2019.09-2022.08, 200K CNY.
- **PI**, Cooperation Project with Hongtu Company. Research on Key Technology of Smart Greenhouse, 2021.10-2021.12, 60K CNY.
- **PI**, Cooperation Project with Tencent Company. Research on Gesture Recognition Based on Ultrasonic Sensing, 2018.01-2018.07, 300K CNY.
- **PI**, The Reform and Exploration of Blended Teaching of the Computer Network, No.803/000029110202, 2021.01-2021.12, 10K CNY.
- **PI**, The Reform and Exploration of Blended Teaching of the Computer Network Based on the Concept of “Teaching-Learning-Research” Integration, No.860/000001020615, 2020.07-2023.06, 100K CNY.

HONORS AND AWARDS

Academic awards

- Excellent Young Researcher, awarded independently, Research on Ubiquitous and Intelligent Sensing, Shenzhen University, January 2023–December 2025.
- the First Prize of Shenzhen Natural Science Award (rank 2/5), Research on the Theory and Methods of Device-free Sensing Based on Ubiquitous RF Signals, Shenzhen Government, November 2022.
- China Patent Awards of Excellence (rank 4/4), Mobile networking method and system for minimizing interference, China National Intellectual Property Administration, April 2022.
- Guangdong Patent Awards of Excellence (rank 4/4), Mobile networking method and system for minimizing interference, Guangdong Government, August 2021.
- the First Prize for Excellent Research Papers (rank 1/6), GRfid: A Device-free Gesture Recognition System Using COTS RFID Device, Guangdong Computer Society, December 2019.
- Overseas High-Caliber Personnel (C level), awarded independently, Shenzhen Government, February 2018.
- High-level Talent in Nanshan District of Shenzhen, awarded independently, Nanshan Government, March 2019.
- IEEE MASS Best Paper Award (rank 1/4), SmartSensing: Sensing Through Walls you're your Smartphone!, IEEE MASS, October 2014.

Teaching awards

- Second Prize in the 10th Lecture Competition for Young Teachers of Shenzhen University, awarded independently, the Computer Network course, Shenzhen University, June 2021.
- Completion of the Teaching Training Program for Young Teachers (graded 'Excellent'), awarded independently, Department of Academic Affairs, Shenzhen University, December 2019.
- Outstanding Undergraduate Teacher Award for the 2018-2019 Academic Year, awarded independently, the Computer Network and Wireless Sensor Network courses, Shenzhen University, June 2020.
- Completion of the Apprenticeship + Creative Research Project, awarded independently, Intelligence and Interaction, Shenzhen University, July 2021.
- Advisor of 100 Outstanding Undergraduate Thesis (Design), awarded independently, Smart Glove System for Real-time Monitoring and Evaluation of Fitness Status, Shenzhen University, June 2018.
- Outstanding Advisor of the 5th National College Competition on Internet of Things, awarded independently, EchoType, Science and Technology Development Center of the Ministry of Education, May 2018.
- Outstanding Advisor of the 15th Challenge Cup Extracurricular Academic Science and Technology Competition for Guangdong College Students, awarded independently, FingerIO-Gesture Interaction System for Smart Devices Based on Acoustic Principle project, Guangdong Provincial Committee of the Communist Youth League, Guangdong Department of Education, Guangdong Students' Federation, Foshan Municipal People's Government, May 2019.
- Excellent Advisor of the Guangdong Collegiate Innovation and Entrepreneurship Training Program in 2018, awarded independently, the Text Input System for Small Smart Devices Based on Acoustic Principle, Shenzhen University, April 2019.
- Third Prize in the 9th Lecture Competition for Young Teachers of Shenzhen University, awarded independently, the Computer Network course, Shenzhen University, June 2019.
- Excellent Advisor of the Guangdong Computer Design Competition, awarded independently, EarID: User Authentication Technology Based on Ear Canal Cardiac Sound project, Guangdong Department of Education, August 2021.

SUPERVISION ACHIEVEMENTS

- guide students to win awards, H. Fu, Y. Yang, Q. Liao, EchoInput, the National Championship of the 8th Huawei Cup Intelligent Design Competition for Chinese College Students, Chinese Association for Artificial Intelligence, August 2018.
- guide students to win awards, S. Wu, Q. Liao, Y. Yang, FingerIO-Gesture Interaction System for Smart Devices Based on Acoustic Principle, Second Prize at the 16th Challenge Cup Extracurricular Academic Science and Technology Competition for National College Students, the Central Committee of the Communist Youth League, China Association for Science and Technology, Ministry of Education, Chinese Academy of Social Sciences, All-China Students' Federation, the People's Government of Beijing Municipality, November 2019.

- guide students to win awards, S. Wu, Q. Liao, Y. Yang, FingerIO-Gesture Interaction System for Smart Devices Based on Acoustic Principle, Top Award at the 15th Challenge Cup Extracurricular Academic Science and Technology Competition for Guangdong College Students, Guangdong Provincial Committee of the Communist Youth League, Department of Education of Guangdong Province, Guangdong Association for Science and Technology, Guangdong Students' Federation, Foshan Municipal People's Government, May 2019.
- guide students to win awards, Z. Wang, S. Wu, Q. Liao, EchoSense: Gesture Interaction System Based on Acoustic Sensing, First Prize at the 12th Chinese Collegiate Computing Competition, 2018-2022 Computer Course Teaching Steering Committee for College Students, Ministry of Education, July 2019.
- guide students to win awards, D. Wang, B. Yuan, Y. Han, J. Lin, Smart Glove System for Real-time Monitoring and Evaluation of Fitness Status, Second Prize at the 4th China Graduate Contest on Application, Design and Innovation of Mobile Devices, China Academic Degrees & Graduate Education Development Center of the Ministry of Education, Children and Youth Science Center of CAST, October 2018, .
- guide students to win awards, Q. Yang, M. Zhao, W. Chen, Y. Lai, Gesture Recognition and Text Input System Based on Acoustic Principle, Second Prize at the 4th China Graduate Contest on Application, Design and Innovation of Mobile Devices, China Academic Degrees & Graduate Education Development Center of the Ministry of Education, Children and Youth Science Center of CAST, October 2018.
- guide students to win awards, M. Zhao, Q. Yang, J. Lin, Y. Han, the Novel User Authentication Technology Based on Tooth Occlusal Voiceprint, Third Prize at the 4th China Graduate Contest on Application, Design and Innovation of Mobile Devices, China Academic Degrees & Graduate Education Development Center of the Ministry of Education, Children and Youth Science Center of CAST, October 2018.
- guide students to win awards, Q. Yang, J. Lin, Y. Han, EchoType, Second Prize at the 5th National College Internet Application Innovation Competition, Science and Technology Development Center of the Ministry of Education, May 2018.
- guide students to win awards, Y. Yang, S. Hong, H. Fu, Text Input System for Small Smart Devices Based on Acoustic Principle, graded 'Excellent' at the Guangdong Collegiate Innovation and Entrepreneurship Training Program in 2018 (national level), Shenzhen University, April 2019.
- guide students to win awards, D. Wang, the Smart Glove System for Real-time Monitoring and Evaluation of Fitness Status, 100 Outstanding Undergraduate Thesis (Design) of Shenzhen University in 2018, Shenzhen University, June 2018.
- Graduate students Q. Yang, Y. Han, J. Bao, J. Lin, and M. Zhao supervised by me have obtained approval for the individual maker project Screen Privacy Protection Method and System of Mobile Terminal Devices by the Shenzhen Science and Technology Innovation Commission (fully funded at RMB 100,000, July 2018 - July 2019).
- Undergraduates S. Wu, Y. Yang, H. Fu, and Q. Liao supervised by me secured funding from the Special Fund for Science and Technology Innovation Cultivation of Guangdong University Students in 2019 for the FingerIO-Gesture Interaction System for Smart Devices Based on Acoustic Sensing project (RMB 20,000, January 2019 - December 2020).
- Undergraduate students Z. Guo, Q. Guan, B. Zhuang, and Y. Fan supervised by me gained funding from the Special Fund for Guangdong Provincial Science and Technology Innovation Strategy in 2021 for the AirTouch-Ultrasonic-based Gesture Recognition and Light Interaction System project (RMB 60,000, January 2021 - December 2022).
- Undergraduates supervised by me have enrolled in ten innovation and entrepreneurship training programs (national, provincial, and school-level), and were awarded a grade of "good" or above.

ACADEMIC SERVICES

Membership

- Member of The Institute of Electrical and Electronics Engineers (IEEE)
- Member of The Association for Computing Machinery (ACM)
- Member of China Computer Federation (CCF)
- Member of ACM SIGMOBILE
- Executive member of Ubiquitous Computing Technical Committee of CCF
- Executive member of Human-computer Interaction Technical Committee of CCF

Chairing

- Publication chair of IEEE ICPADS 2017, IEEE ICPADS 2018, IEEE ICPADS 2019
- Program vice chair of PCC 2019
- Local Chair of EAI ICECI 2021
- Program chair of ACM CPD 2022 (in conjunction with ACM UbiComp 2022)

TPC

- IEEE UIC 2019, IEEE UIC 2020, IEEE UIC 2022, IEEE MSN 2020, IEEE HPCC 2020
- IEEE Globecom 2017, IEEE Globecom 2018, IEEE ICPADS 2017

Reviewer

- ACM IMWUT, ACM UbiComp 2016, IEEE ICPADS 2016, IEEE Globecom 2017
- IEEE TMC, IEEE COMMAG, IEEE IOTJ, ACM/IEEE ToN, ACM TOSN

GROUP MEMBERS

PG Students

- Since 2020: Danyang Wang, Hoazhi Dong, Canlin Zheng, Chengzhe Luo
- Since 2021: Peizhao Zhu, Jianhao Weng, Qifeng Song
- Since 2022: Yunshu Wang, Yuzheng Zhu, Shuo Jin

UG Students

- Zirui Zhao, Yihong Li, Yuda Zheng, Weiwei Lu, Wenjie Li, Yujun Ye, Bin Li

Alumni

- From 2019 to 2022: Haibo Lei (first job in Tencent), Shicong Hong (first job in Huawei), Zhihong Xiao (first job in Meituan)
- From 2018 to 2021: Dan Wang (first job in ICBC), Baojie Yuan (first job in ABC)
- From 2017 to 2020: Yetong Han (first job in Tencent), Jiawei Lin (first job in Harman/Kardon)
- From 2016 to 2019: Qiang Yang (PhD student in PolyU), Meng Zhao (first job in CMB)
- From 2015 to 2018: Weifeng Liu (first job in CMB), Changsheng Zhou (first job in CITIC), Junjun Bao (first job in CMB), Shufeng Ye (government employee), Xuejin Zhou (running start-up)
- UG Alumni: Zehui Zheng (M.Sc. in UV.), Jingchuan Xu (now in ByteDance), Jinyong Wu (now in ByteDance), Yuhang Li (now M.Sc. in DUT), Yuming Yang (now in ByteDance), Sicheng Wu (now in ByteDance), Ziyin Wang (now M.Sc. in Cornell), Qianru Liao (now M.Sc. in SZU), Jialu Dai (now in ByteDance), Zijian Pan (now in ByteDance), Jinyuan Liu (now M.Sc. in ZZU), Wenxing Tang (now in Tencent), Songjia Yang (now in ByteDance), Qihui Guan (now in ByteDance), Zishuo Guo (now M.Sc. in BJTU), Baokai Zhuang (now in ByteDance), Hongyu Peng (now in ByteDance), Zitao Wang (now in Huawei), Chuyu Zheng (now M.Sc. in SZU), Duoteng Xu (now M.Sc. in SZU), Yongbiao Zhu (now M.Sc. in SZU)