

I am an Associate Research Scientist at the Institute of Computing Technology, Chinese Academy of Sciences. My research interests include: 1) Novel sensing and interaction techniques; 2) Tag-aided wireless spatial computing; 3) Semantic-based interaction abstraction theory and application.

EDUCATION

| | |
|------------------|---|
| 2016-2019 | PhD, Human Computer Interaction, Computer Science Tsinghua University, China Advisor: Prof. Yuanchun Shi |
| 2011-2013 | MSc, Electromagnetics, Electrical Engineering The University of Texas at Austin, USA Advisor: Prof. Andrea Alu |
| 2007-2011 | BSc, Chien-Shiung Wu Honors College/Electrical Engineering Southeast University, China Research supervisor: Prof. Tiejun Cui |

PUBLICATIONS

- 2023** [C.4] Xin Zeng, Yiqiang Chen, Benfeng Xu, and **Tengxiang Zhang**. 2022. ModalDrop: Modality-aware Regularization for Temporal-Spectral Fusion in Human Activity Recognition. ICASSP'23 (*accepted*).
- 2022** [J.8] **Tengxiang Zhang**, Zitong Lan, Chenren Xu, Yanrong Li, and Yiqiang Chen. 2022. BLEselect: Gestural IoT Device Selection via Bluetooth Angle of Arrival Estimation from Smart Glasses. 2022. IMWUT. 6, 4.
- [O.6] **Tengxiang Zhang**, Xin Zeng, Yinshuai Zhang, Xin Jiang, Xuhai Xu, Anind K Dey, and Yiqiang Chen. 2022. BoldMove: Enabling IoT Device Control on Ubiquitous Touch Interfaces by Semantic Mapping and Sequential Selection. In Extended Abstracts of the CHI 2022, 7.
- [J.7] **Tengxiang Zhang**, Zi Qian, HsuanWei Fan, Jie Ren, Yuntao Wang, Yuanchun Shi. Easily-add Battery-free Wireless Sensors to Everyday Objects: A System Implementation and Usability Study. *CCF Transactions on Pervasive Computing and Interaction*.
- 2021** [O.5] Xin Zeng, Xinyi Yang, **Tengxiang Zhang**, Yukang Yan, Yiqiang Chen. ScreenJump: An AR-facilitated User-centric Interaction System for Fine-grained Resource Manipulation Across Displays. *CHI 2021 Workshop on User Experience for Multi-Device Ecosystems: Challenges and Opportunities*.
- [J.6] Yingwei Zhang, Yiqiang Chen, Hanchao Yu, Zeping Lv, Xiaodong Yang, Chunyu Hu, **Tengxiang Zhang**. What Can “Drag & Drop” Tell? Detecting Mild Cognitive Impairment by Hand Motor Function Assessment under Dual-Task Paradigm. *International Journal of Human-Computer Studies* 145:102547.
- 2020** [C.3] **Tengxiang Zhang**, Xin Zeng, Yinshuai Zhang, Ke Sun, Yuntao Wang, and Yiqiang Chen. 2020. ThermalRing: Gesture and Tag Inputs Enabled by a Thermal Imaging Smart Ring. In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20), 1–13.
- [C.2] Yuntao Wang, Zichao (Tyson) Chen, Hanchuan Li, Zhengyi Cao, Huiyi Luo, **Tengxiang Zhang**, Ke Ou, John Raiti, Chun Yu, Shwetak Patel, and Yuanchun Shi. 2020. MoveVR: Enabling Multiform Force Feedback in Virtual Reality

- using Household Cleaning Robot. *In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*, 1–12.
- [O.4] **Tengxiang Zhang** and Steve Hodges. New Opportunities for Sustainable Interaction using Backscatter Sensors. *Workshop on self-powered sustainable interfaces and interactions (SelfSustainableCHI 2020)*
- 2019 [J.5] **Tengxiang Zhang**, Xin Yi, Ruolin Wang, Jiayuan Gao, Yuntao Wang, Chun Yu, Simin Li, Yuanchun Shi. Facilitating Temporal Synchronous Target Selection through User Behavior Modeling. *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.*, 2,4:159.
- [J.4] Yuntao Wang, Jianyu Zhou, Hanchuan Li, **Tengxiang Zhang**, Minxuan Gao, Zhuolin Cheng, Chun Yu, Shwetak Patel, and Yuanchun Shi. FlexTouch: Enabling Large-Scale Interaction Sensing Beyond Touchscreens Using Flexible and Conductive Materials. *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.*, 3,3:109.
- [O.3] Jianfei Shen, **Tengxiang Zhang**, and Yiqiang Chen. Tap2Pair: Associating Wireless Devices with Tapping. *Adjunct Proceedings of UbiComp/ISWC '19*, Pages 346-349.
- 2018 [J.3] **Tengxiang Zhang**, Xin Yi, Ruolin Wang, Yuntao Wang, Chun Yu, Yiqin Lu, and Yuanchun Shi. 2018. Tap-to-Pair: Associating Wireless Devices with Synchronous Tapping. *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.* 2, 4: 201.
- [O.2] **Tengxiang Zhang**. 2018. Toward Pervasive Interaction: Empowering and Enriching Interactions on Resource-constrained Devices. *Adjunct Proceedings of UbiComp/ISWC '18*, Pages 504-509.
- [O.1] **Tengxiang Zhang**, Xin Yi, Chun Yu, Yuntao Wang, Nicholas Becker, and Yuanchun Shi. 2018. TOUCHPOWER: Interaction-based Power Transfer for Power-as-needed Devices. *GetMobile: Mobile Comp. and Comm.* 22, 2: 27–31. *(Invited Highlights)*
- 2017 [J.2] **Tengxiang Zhang**, Xin Yi, Chun Yu, Yuntao Wang, Nicholas Becker, and Yuanchun Shi. 2017. TouchPower: Interaction-based Power Transfer for Power-as-needed Devices. *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.* 1, 3: 121:1–121:20. *(Discussion Paper)*
- [C.1] **Tengxiang Zhang**, Nicholas Becker, Yuntao Wang, Yuan Zhou, and Yuanchun Shi. 2017. BitID: Easily Add Battery-Free Wireless Sensors to Everyday Objects. *In 2017 IEEE International Conference on Smart Computing (SMARTCOMP)*, 1–8. *(Best Paper Runner-up)*
- 2013 [J.1] Huifeng Ma, Bengeng Cai, **Tengxiang Zhang**, Yan Yang, Weixiang Jiang, and Tiejun Cui. 2013. Three-Dimensional Gradient-Index Materials and Their Applications in Microwave Lens Antennas. *IEEE Transactions on Antennas and Propagation* 61, 5: 2561–2569.

PATENTS

- 2022** [P.11] **Tengxiang Zhang**, Yanrong Li ,Yiqiang Chen. Smart Glasses-based Facial Action Unit Detection Method and Apparatus (*pending*)
- [P.10] **Tengxiang Zhang**, Zitong Lan, Yanrong Li, Yiqiang Chen. A Device Selection System and Method: CN 202211410562.4 (*pending*)
- [P.9] **Tengxiang Zhang**, Xin Zeng, Yiqiang Chen. An AR Device Felicitated Multi-Device Interaction System and Method: CN 202211490160.X (*pending*)
- 2021** [P.8] **Tengxiang Zhang**, Xin Zeng, Yiqiang Chen. A Semantic-based Device Association Method: CN 202110359565.9 (*pending*)
- 2020** [P.7] **Tengxiang Zhang**, Xin Zeng, Yiqiang Chen. A Smart Ring Based Gesture Recognition Method and System: CN 202010411317.X
- [P.6] **Tengxiang Zhang**, Jiayuan Gao, Yiqiang Chen. Apparatus and Method for Cognitive Load Analysis Based on Near-infrared Imaging of Subcutaneous Veins: CN 202010459503.0
- [P.5] **Tengxiang Zhang**, Jiayuan Gao, Yiqiang Chen. A Movement Symmetry Based Smart Prosthesis Control Method and System: CN 202010425034.0
- 2018** [P.4] Yuanchun Shi, Yinshuai Zhang, **Tengxiang Zhang**. One type of Smart Ring: CN 201821371671.9
- [P.3] Yuanchun Shi, Yinshuai Zhang, **Tengxiang Zhang**. Smart Ring: CN 201821371641.8
- [P.2] Yuanchun Shi, **Tengxiang Zhang**, Xin Yi, Yuntao Wang and Chun Yu. Pairing method and wireless device for pairing using wireless signals. International Patent No. PCT/CN2018/094468.
- [P.1] Yuanchun Shi, **Tengxiang Zhang**, Xin Yi, Yuntao Wang, Chun Yu. An association method and apparatus to pair devices based on wireless signals: CN 201810723952.4

GRANTS

- 2022** [I.5] **Principal Investigator:** Research on Pervasive Touch Interface and Interaction Design for IoT Device Control (300K CNY). NSFC Fund for Young Scholars.
- 2021** [I.4] **Principal Investigator:** Ultra-low-power Bluetooth-compatible Ubiquitous Touch Interface (20K CNY). Open project, Beijing Key Laboratory of Mobile Computing and Pervasive Device.
- 2020** [I.3] **Principal Executing Investigator:** A Movement Symmetry Based Smart Prosthesis Control Method (650K CNY). ICT, CAS Innovation Fund.
- [I.2] **Co-Principal Investigator:** Resources Cross-modality Association and Matching Techniques (2.28 Million CNY), sub-project of Key Technologies for Modern Service Resource Management, National Key Research and Development Plan.
- [I.1] **Co-investigator:** Hearing Aid Automatic Fitting Models (270K CNY), Key Technologies of Proactive Health and Aging Population, National Key Research and Development Plan.

HONORS AND AWARDS

| | |
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| 2019 | Graduate with Honor (CS), Tsinghua University, China |
| 2018 | Finalist, Global Innovation Competition'18 |
| 2017 | Best Paper Runner-up, SMARTCOMP'17 |
| 2017 | Discussion Paper, UbiComp'17 |

PROFESSIONAL EXPERIENCE

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|------------------|---|
| 2021- | Associate Research Scientist, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China |
| 2019-2021 | Assistant Research Scientist, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China <ul style="list-style-type: none">• Conduct research on pervasive sensing and interactive systems and pervasive interaction techniques• Published papers on top-tier journals and conferences like CHI and IMWUT• Granted research funds ~3 million CNY with 2 National Key Research and Development Plan funds |
| 2015-2016 | RF Engineer/Product Manager, Tomoon Technology, Beijing, China <ul style="list-style-type: none">• Smartwatch and Bluetooth tracker antenna design• Bluetooth tracker product definition, project management, field deployment |
| 2013-2015 | Product and Test Engineer, Silicon Labs, Austin, Texas, USA <ul style="list-style-type: none">• IoT MCU chips (e.g. Sub-GHz、 ZigBee) RF calibration and test• Test program (C/Perl) development, hardware design and layout• Developed on-chip test program that saved over 30% test time for EM357 |

SERVICES

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| Committee Member | SIGCHI Sustainability Committee CCF HCI Technical Program Committee CCF UbiComp Technical Program Committee |
| Chair | HHME (largest conference for HCI and ubicomp in China) 2022 Tutorial UbiComp 2023 Workshop Track |
| Review | CHI'20'21'22, IMWUT'21'22, UIST'20, MobileHCI'20, ISS'20, IUI'20, TEI'20, EICS'19, TEI'21 WIP Program Committee |
| Volunteer | ACM UBICOMP/ISWC 2018, Singapore; The 4th UN World Urban Forum 2008, Nanjing, China |
| Academic Speaker | Microsoft Research (Redmond) GIX ACSP (Access Computing Summer Program) 2020 |
| Mentor | GIX ACSP '21'22, GIX 2019 Winter Camp |

STUDENT SUPERVISION AND MENTORSHIP

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|--------------------|--|
| Xin Zeng | UCAS Ph.D (CS). Co-supervising with Prof. Yiqiang Chen |
| Jiayuan Gao | UCAS Ph.D (CS). Co-supervising with Prof. Yiqiang Chen |
| Yanrong Li | UCAS Master (CS). Co-supervising with Prof. Yiqiang Chen |
| Xiaoyu Wang | Peking University Undergraduate (CS) |

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| Zhengtai Gou | Tsinghua Undergraduate (Automation) |
| *Zitong Lan | SEU Undergraduate (CS) |
| *Xinran Chen | UESTC Undergraduate (CS) |
| *Yaobin Su | University of Copenhagen Master (CS) |
| *Xinyi Yang | BJTU Undergraduate (CS); Now Master at CUHK |
| *Jiayin Wang | Tsinghua Undergraduate (CS); Now Master at Tsinghua (CS) |
| *Simin Li | Beihang Undergraduate (CS); Now Master at Georgia Tech (CS) |
| *Zi Qian | Tsinghua Undergraduate (CS); Now Master at U of Toronto (CS) |
| *Hsuan-Wei Fan | Tsinghua Undergraduate (CS); Now Master at Cornell Tech (CS) |
| *Hanwei Wang | Tsinghua Undergraduate (Physics); Now Ph.D at UIUC (EE) |
| * Alumni | |

SKILLS

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| Programming languages: | Python, C, C++, C#, Java, Matlab |
| Prototyping: | Arduino, Processing, Altium, 3D printing |
| Software: | Matlab, CST, Keras, Scikit-learn |
| Hardware: | Signal generator, Vector network analyzer, Spectrum analyzer |

REFEREES

Yuanchun Shi, Professor, Tsinghua University, Ph.D supervisor.
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Steve Hodges, Senior Principal Researcher, Microsoft Research Cambridge, Collaborator
Email: steve.hodges@microsoft.com

Chenren Xu, Associate Professor, Peking University, Collaborator
Email: chenren@pku.edu.cn