

# Yuntao WANG

## Associate Professor (Research Track)

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## BIOGRAPH

Yuntao Wang is an Associate Professor in the Department of Computer Science and Technology at Tsinghua University and serves as a Technical Advisor at the Global Innovation Exchange (GIX) Institute. His research focuses on Human-Computer Interaction (HCI) and Ubiquitous Computing, with a particular emphasis on efficient behavioral and physiological sensing, as well as the design of intelligent interactive interfaces for mobile and wearable devices. Dr. Wang's work centers on: 1) developing robust and efficient behavioral and physiological sensing techniques that operate reliably on commodity mobile and wearable devices, 2) extracting meaningful spatiotemporal patterns from multimodal sensory data, leveraging the intrinsic correlations in natural human behaviors to accurately infer user interaction intentions, and 3) designing novel interaction interfaces that deliver high recognition accuracy and inference efficiency, optimized for deployment on resource-constrained edge devices.

He has published over 80 academic papers, including more than 50 in top-tier venues such as *ACM CHI*, *UIST*, *IMWUT*, *NeurIPS*, and *IEEE VR*. His work has received eight international conference awards, including an *CHI 2023 Honorable Mention Award*, *IEEE TVCG 2023 Best Paper Nomination*, *SmartComp 2017 Best Paper Runner-Up*, and *IEEE UIC 2014 Best Paper Award*. He has been granted 31 authorized invention patents, including 11 international/U.S. patents. Among his technological contributions, Dr. Wang developed a grip behavior-based anti-unintentional touch detection algorithm that effectively solves the challenge of high false touch rates on full-screen touchscreen phones. The solution has been deployed in over 200 million high-end Huawei and Honor devices, setting a leading standard in anti-mistouch performance. He developed an Photoplethysmography (PPG) biometric authentication technique, providing Ant Group with a secure and reliable "heartbeat payment" identity verification solution.

Dr. Wang's innovative achievement has been distinguished with Wu Wenjun Artificial Intelligence Outstanding Youth Award (2024), Young Elite Scientists Sponsorship Program of China Association for Science and Technology (CAST, 2022), Leading Talent of the High-Level Innovation and Entrepreneurship Program of Qinghai Province (2024), the First Prize of China Electronics Institute Science and Technology Award (2019), and China Artificial Intelligence Society Excellent Research Achievement Award (2021).

## EDUCATION

**Doctor of Philosophy** of Department of Computer Science and Technology, **Tsinghua University**, CHINA.  
09/2011 – 06/2016 **Area:** Human-Computer Interaction  
**Adviser:** *Prof. Yuanchun SHI*  
**Thesis Title:** *Eyes-Free Motion Interaction*

**Bachelor** Department of Computer Science and Technology, **Beijing University of Posts and Telecommunications**, Beijing, CHINA.  
09/2007 – 06/2011  
GPA: 90.1/100 (top 1/318)

## PROFESSIONAL EXPERIENCE

**12/2022 – 06/2026** Department of Computer Science and Technology, Tsinghua University, CHINA.  
*Associate Professor (Research Track)*

**12/2016 – Present** Global Innovation Exchange (GIX) Institute, Tsinghua University, CHINA.  
*Technical Adviser, Instructor*

**01/2019 – 12/2022** Department of Computer Science and Technology, Tsinghua University, CHINA.  
*Assistant Professor (Research Track)*

**04/2019 – 04/2022** Global Innovation Exchange (GIX) Institute, Tsinghua University, CHINA.  
*Assistant to the Dean*

**01/2018 - 03/2021** Paul G. Allen School of Computer Science and Engineering, University of Washington, USA.  
*Visiting Assistant Professor, Research Associate*  
*Advisor: Shwetak PATEL*

**06/2016 - 01/2019** Department of Computer Science and Technology, Tsinghua University, CHINA.  
*Postdoctoral Researcher*

**04/2016 – 12/2018** Trucker (Beijing) Technology Co., Ltd., Beijing, CHINA.  
*Co-founder, Chief Scientist*

## ACADEMIC TEACHING EXPERIENCE

### TSINGHUA UNIVERSITY

**Instructor**, MSc course (2023/2024/2025 spring, 3 credits): Human Computer Interaction Technology

**Instructor**, MSc course (2021/2022/2023/2024 fall, 4 credits): Essentials Towards Signal Processing and Data Management for AIoT Applications

**Instructor**, MSc course (2020/2021/2022/2023/2024 fall, 1 credit): Practical Training on Scientific Research Proposal in Applied Innovation

**Instructor**, MSc course (2021 spring, 4 credit): Practical Training on Scientific Research in Applied Innovation

**Instructor**, Undergraduate course (2021/2022/2023 summer, 6 credits): Advanced Practicum

**Co-Instructor**, MSc course (2018/2019 fall, 1 credit): Practical Training on Scientific Research Proposal in Applied Innovation

**Co-Instructor**, MSc degree course (2018/2019/2020/2022/2023/2024 spring, 4 credits): Practical Training on Scientific Research in Applied Innovation

**Co-Instructor**, Undergraduate course (2018/2019 summer, 6 credits): Advanced Practicum

**Co-Instructor**, Undergraduate course (2021/2022 fall, 2 credits): Embedded system

### UNIVERSITY OF WASHINGTON

**Instructor**, MSc course (2021 winter, 3 credits) Managing Data and Signal Processing

**Co-instructor**, MSc course (2019/2020 spring, 4 credits): Hardware and Software Lab 2

**Co-instructor**, MSc course (2020 winter, 3 credits): Managing Data and Signal Processing

**Co-instructor**, MSc course (2018/2019 winter, 3 credits): Introduction of Sensors and Circuits

## STUDENTS ADVISED OR CO-ADVISED

### Enrolled Postgraduate Students (20)

Zhenan Xu (CS Ph.D. candidate), Xiyuxing Zhang (CS Ph.D. candidate), Zeyu Wang (CS Ph.D. student), Yong Fang (CS Ph.D. student), Jiankai Tang (CS Ph.D. student), Gonglue Jiang (CS Engineering Ph.D. student), Yanuo Zhou (CS MSc student), Shan Tai (CS MSc student), Yingke Ding (GIX dual-degree MSc student), Jiayi Chen (GIX single-degree MSc student), Ziqi Gao (GIX dual-degree MSc student), Fenglv Liu (GIX dual-degree MSc student), Ke Chen (GIX dual-degree MSc student), Yushi Luo (GIX dual-degree MSc student), Yuxin Zhang (GIX dual-degree MSc student), Ranyi Liu (GIX single-degree MSc student), Chenghao Wang (GIX dual-degree MSc student), Weiyao Xu (GIX dual-degree MSc student), Linghao Meng (GIX dual-degree MSc student), Ruotong Yu (GIX dual-degree MSc student).

### Graduated Postgraduate Students (20)

Zhipeng Li (Ph.D. at ETH Zurich, Fall 2024), Jiaxin Ding (Ph.D. at University of Washington, Fall 2024), Yibo Shen (ByteDance USA, Fall 2024), Fengzhen Cui (Li Auto, Fall 2024), Joshua Rafael Sanchez (Fall 2024), Michael Cross (Fall 2022), Yanzhang Li (Tencent, Fall 2022), Isaac Boger (Fall 2022), Jiali Zhang (Alibaba, Winter 2022), Robin Yang (4YouAndMe, Winter 2022), Ken Christofferson (Ph.D. at University of Toronto, Fall 2021), Jay Chakalasiya (Microsoft USA, Fall 2021), Yuzhou Zhuang (ByteDance, Fall 2021), Louis Quicksell (Winter 2020), Zachary Badger Markey (Winter 2020), Xu Yan (Alibaba, Winter 2019), Jianyu Zhou (Microsoft USA, Fall 2020), Yu Jing Li (Alibaba engineer, Fall 2020), Ao Yu (ByteDance, Fall 2020), Shengxi Xia (Amazon USA, Fall 2019).

## JOURNAL ARTICLES

[J.28]. Mingxuan Liu\*, Jiankai Tang\*, Yongli Chen, Haoxiang Li, Jiahao Qi, Siwei Li, Kegang Wang, Jie Gan, **Yuntao Wang**#, Hong Chen#, Spiking-PhysFormer: Camera-based remote photoplethysmography with parallel spike-driven transformer, Neural Networks, Volume 185, 2025, 107128 (**SCI Journal, IF = 7.9, Co-Corresponding Author**)

[J.27]. Xiyuxing Zhang, **Yuntao Wang**#, Yuxuan Han, Chen Liang, Ishan Chatterjee, Jiankai Tang, Xin Yi, Shwetak Patel, Yuanchun Shi. The EarSAVAS Dataset: Enabling Subject-Aware Vocal Activity Sensing on Earables. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 8, 2, Article 83 (May 2024), 26 pages. (**CCF A, IF = 4.0, Corresponding Author**)

[J.26]. Zeyu Wang, Yuanchun Shi#, **Yuntao Wang**#, Yuchen Yao, Kun Yan, Yuhan Wang, Lei Ji, Xuhai Xu, Chun Yu. G-VOILA: Gaze-Facilitated Information Querying in Daily Scenarios. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 8, 2, Article 78 (May 2024), 33 pages. (**CCF A, IF = 4.0, Corresponding Author**)

[J.25]. Yuanchun Shi, Xin Yi, Chen Liang, Yue Qin, **Yuntao Wang**, Yukang Yan, Zhimin Cheng, et al. HCI Research and Innovation in China: A 10-Year Perspective. International Journal of Human-Computer Interaction 40 (8): 1799–1831. (**CCF B**)

[J.24]. Chongyang Wang, Yuan Feng, Lingxiao Zhong, Siyi Zhu, Chi Zhang, Siqi Zheng, Chen Liang, **Yuntao Wang**, Chengqi He, Chun Yu, Yuanchun Shi. UbiPhysio: Support Daily Functioning, Fitness, and Rehabilitation with Action Understanding and Feedback in Natural Language. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 8, 1, Article 20 (March 2024), 27 pages. (**CCF A, IF = 4.0**)

- [J.23]. Ziqi Gao\*, **Yuntao Wang\*#**, Jianguo Chen, Junliang Xing, Shwetak Patel, Xin Liu, Yuanchun Shi. MMTSA: Multi-Modal Temporal Segment Attention Network for Efficient Human Activity Recognition. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol., Vol. 7, No. 3, Article 96 (September 2023), 26 pages. **(CCF A, IF = 3.6, Co-First Author, Corresponding Author)**
- [J.22]. Cuneo A, Yang R, Zhou H, Wang K, Goh S, **Wang Y**, Raiti J, Krashin D, Murinova N. The Utility of a Novel, Combined Biofeedback-Virtual Reality Device as Add-on Treatment for Chronic Migraine: A Randomized Pilot Study. Clin J Pain. 2023 Jun 1;39(6):286-296. **(SCI Journal, IF = 3.42)**
- [J.21]. Anandghan Waghmare, Farshid Salemi Parizi, Jason Hoffman, **Yuntao Wang**, Matthew Thompson, Shwetak Patel. GlucoScreen: A Smartphone-based Readerless Glucose Test Strip for Prediabetes Screening. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 7, 1, Article 30 (March 2023), 20 pages. **(CCF A, IF = 3.6)**
- [J.20]. Yukang Yan, Haohua Liu, Yingtian Shi, Jingying Wang, Ruici Guo, Zisu Li, Xuhai Xu, Chun Yu, **Yuntao Wang#**, Yuanchun Shi. ConeSpeech: Exploring Directional Speech Interaction for Multi-Person Remote Communication in Virtual Reality. IEEE Transactions on Visualization and Computer Graphics, vol. 29, no. 5, pp. 2647-2657, May 2023. **(CCF A, IF = 4.7, Corresponding Author, Best Paper Nomination)**
- [J.19]. Chen Liang, Chi Hsia, Chun Yu#, Yukang Yan, **Yuntao Wang**, Yuanchun Shi. 2023. DRG-Keyboard: Enabling Subtle Gesture Typing on the Fingertip with Dual IMU Rings. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 6, 4, Article 170 (December 2022), 30 pages. **(CCF A, IF = 3.6)**
- [J.18]. Yang Li, **Yuntao Wang#**, Xin Liu, Yuanchun Shi, Shwetak Patel, Shao-Fu Shi. Enabling Real-Time On-Chip Audio Super Resolution for Bone-Conduction Microphones, Sensors 23, no. 1: 35. **(SCI journal, IF = 3.8, Corresponding Author)**
- [J.17]. **Yuntao Wang\***, Xiyuxing Zhang\*, Jay M. Chakalasiya\*, Xuhai Xu, Yu Jiang, Yang Li, Shwetak Patel, Yuanchun Shi#. HearCough: Enabling Continuous Cough Event Detection on the Edge Computing Hearables. Methods Volume 205, September 2022, Pages 53-62. **(SCI journal, IF = 3.6, Co-First Author)**
- [J.16]. Ami Cuneo, Robin Yang, Ke Wang, Frank Zhou, Sarah Goh, **Yuntao Wang**, John Raiti, Daniel Krashin, Natalia Murinova. Utility of a Novel, Combined Biofeedback-Virtual Reality Tool as Add-on Treatment for Chronic Migraine (S31.009), Neurology May 2022, 98 (18 Supplement) 1029. **(SCI journal, IF = 9.9)**
- [J.15]. Tao Jianhua, Wu Yingcai, Yu Chun, Weng Dongdong, Li Guanjuan, Han Teng, Wang Yuntao, Liu Bin. 2022. A Review of Multimodal Human-Computer Interaction. Journal of Image and Graphics, 27(6): 1956-1987.
- [J.14]. Zhipeng Li, Yu Jiang, Yihao Zhu, Ruijia Chen, Ruolin Wang, **Yuntao Wang**, Yukang Yan#, Yuanchun Shi. Modeling the Noticeability of User-Avatar Movement Inconsistency for Sense of Body Ownership Intervention. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. (2022). **(CCF A, IF = 3.6)**
- [J.13]. Xin Liu\*, **Yuntao Wang\***, Sinan Xie\*, Xiaoyu Zhang, Zixian Ma, Daniel McDuff, Shwetak Patel. 2022. MobilePhys: Personalized Mobile Camera-Based Contactless Physiological Sensing. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 6, 1, Article 24 (March 2022), 23 pages. **(CCF A, IF = 3.6, Co-First Author)**
- [J.12]. Tengxiang Zhang, Zi Qian, Hsuan Wei Fan, Jie Ren, **Yuntao Wang#**, Yuanchun Shi. 2022. Easily-add battery-free wireless sensors to everyday objects: system implementation and usability study. CCF Trans. Pervasive Comp. Interact. (2022). **(Corresponding Author)**
- [J.11]. Feng Tian, **Yuntao Wang**, Yicheng Zhu. Natural interactive techniques for the detection and assessment of neurological diseases. Commun. ACM 64, 11 (November 2021), 57–59. **(SCI journal, IF = 4.6)**
- [J.10]. Chen Liang, Chun Yu#, Yue Qin, **Yuntao Wang**, Yuanchun Shi. 2021. DualRing: Enabling Subtle and Expressive Hand Interaction with Dual IMU Rings. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 5, 3, Article 115 (Sept 2021), 27 pages. **(CCF A, IF = 3.6)**

- [J.9]. Liu Xin, Yang Li, Josh Fromm, **Yuntao Wang**, Ziheng Jiang, Alex Mariakakis, Shwetak Patel. SplitSR: An End-to-End Approach to Super-Resolution on Mobile Devices. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 5, 1 (2021):1-20. (**CCF A, IF = 3.6**)
- [J.8]. Guanhong Liu, Yizheng Gu, Yiwen Yin, Chun Yu, **Yuntao Wang**#, Haipeng Mi, Yuanchun Shi. Keep the Phone in Your Pocket: Enabling Smartphone Operation with an IMU Ring for Visually Impaired People. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 4, 2, Article 58 (June 2020), 23 pages. (**CCF A, IF = 3.6, Corresponding Author**)
- [J.7]. Xuhai Xu, Chun Yu#, **Yuntao Wang**, Yuanchun Shi. Recognizing Unintentional Touch on Interactive Tabletop. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 4, 1, Article 33 (March 2020), 24 pages. (**CCF A, IF = 3.6**)
- [J.6]. 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., Vol. 3, No. 4, Article 159. (**CCF A, IF = 3.6**)
- [J.5]. **Yuntao Wang**, Jianyu Zhou, Hanchuan Li, Tengxiang Zhang, Minxuan Gao, Zhuolin Cheng, Chun Yu, Shwetak Patel, Yuanchun Shi#. FlexTouch: Enabling Large-Scale Interaction Sensing Beyond Touchscreens Using Flexible and Conductive Materials. In Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 3, 3, Article 109, 20 pages. (**CCF A, IF = 3.6**)
- [J.4]. Tengxiang Zhang, Xin Yi, Ruolin Wang, **Yuntao Wang**, Chun Yu, Yiqin Lu, Yuanchun Shi. Tap-to-Pair: Associating Wireless Devices with Synchronous Tapping. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 2(4), Article 201. (**CCF A, IF = 3.6**)
- [J.3]. Tengxiang Zhang, Xin Yi, Chun Yu, **Yuntao Wang**, Nicholas Becker, Yuanchun Shi. TOUCHPOWER: Interaction-based Power Transfer for Power-as-needed Devices. GetMobile: Mobile Comp. and Comm. 22, 2.
- [J.2]. Tengxiang Zhang, Xin Yi, Chun Yu, **Yuntao Wang**#, Nicholas Becker, Yuanchun Shi. TouchPower: Interaction-based Power Transfer for Power-as-needed Devices. In Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 1(3), Article 121 (IMWUT'17). (Discussion Paper) (**CCF A, IF = 3.6, Corresponding Author**)
- [J.1]. **Yuntao Wang**, Chun Yu, Yongqiang Qin, Yuanchun Shi. Marker design and recognition on tiled interaction tabletop. Journal of Software, 22(2). 80-88. (**CCF A, First Author**)

## CONFERENCE PUBLICATIONS

- [C.58]. Jiexin Ding, Bowen Zhao, **Yuntao Wang**#, Xinyun Liu, Rui Hao, Ishan Chatterjee, Yuanchun Shi. Unknown Word Detection for English as a Second Language (ESL) Learners using Gaze and Pre-trained Language Models. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). (**CCF A, Corresponding Author**)
- [C.57]. Zhipeng Li, Yishu Ji, Ruijia Chen, Tianqi Liu, **Yuntao Wang**#, Yuanchun Shi, Yukang Yan. Modeling the Impact of Visual Stimuli on Redirection Noticeability with Gaze Behavior in Virtual Reality. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). (**CCF A, Corresponding Author**)
- [C.56]. Weiye Xu, Tony Li, **Yuntao Wang**#, Xing-Dong Yang, Te-Yen Wu. BIT: Battery-free, IC-less and Wireless Smart Textile Interface and Sensing System. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). (**CCF A, Corresponding Author**)
- [C.55]. Shuning Zhang, **Xin Yi**#, Shixuan Li, Chuye Hong, Gujun Chen, Jiarui Liu, Xueyang Wang, Yongquan Hu, **Yuntao Wang**#, Hewu Li. Actual Achieved Gain and Optimal Perceived Gain: Modeling Human Take-over Decisions Towards Automated Vehicles' Suggestions. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). (**CCF A, Corresponding Author**)

- [C.54]. Shaocong Wang, Che Qu, Minjing Yu, Chao Zhou, **Yuntao Wang**, Yu-Hui Wen, Yuanchun Shi, Yongjin Liu. VAction: A Lightweight and Integrated VR Training System for Authentic Film-Shooting Experience. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). (**CCF A**)
- [C.53]. Jianing Yin, Weicheng Zheng, **Yuntao Wang**#, Xin Tong, Yukang Yan. A Comparison Study Understanding the Impact of Mixed Reality Collaboration on Sense of Co-Presence. In 2025 IEEE Conference on Virtual Reality and 3D User Interfaces (VR). (**CCF A, Corresponding Author**)
- [C.52]. Wenxuan Xu, Yushi Wei, Xuning Hu, Wolfgang Stuerzlinger, **Yuntao Wang**#, Hai-Ning Liang#. Predicting Ray Pointer Landing Poses in VR Using Multimodal LSTM-Based Neural Networks. In 2025 IEEE Conference on Virtual Reality and 3D User Interfaces (VR). (**CCF A, Corresponding Author**)
- [C.51]. Kegang Wang, Yantao Wei#, Jiankai Tang, **Yuntao Wang**#, Mingwen Tong, Jie Gao, Yujian Ma, Zhongjin Zhao. Camera-Based HRV Prediction for Remote Learning Environments. In The 21st IEEE International Conference on Ubiquitous Intelligence and Computing (UIC 2024). (**CCF C, Corresponding Author**)
- [C.50]. Ke Liu, Jiankai Tang, Zhang Jiang, **Yuntao Wang**#, Xiaojing Liu, Dong Li, Yuanchun Shi. Summit Vitals: Multi-Camera and Multi-Signal Biosensing at High Altitudes. In The 21st IEEE International Conference on Ubiquitous Intelligence and Computing (UIC 2024). (**CCF C, Corresponding Author**)
- [C.49]. Ka I Chan, Bo Hei, Linghao Meng, Ruen Liu, **Yuntao Wang**#, Chang Chen, Qingpei Hao, Yuanchun Shi. Automated Grading Hemifacial Spasm Using Smartphone Cameras. In The 21st IEEE International Conference on Ubiquitous Intelligence and Computing (UIC 2024). (**CCF C, Corresponding Author**)
- [C.48]. Zeyu Wang\*, Xiyuxing Zhang\*, Ruotong Yu\*, **Yuntao Wang**#, Kenneth Christofferson, Jingru Zhang, Alex Mariakakis, Yuanchun Shi. DreamCatcher: A Wearer-aware Multi-modal Sleep Event Dataset Based on Earables in Non-restrictive Environments. *Advances in Neural Information Processing Systems* 37 (2024): 85155-85178. (**CCF A, Corresponding Author**)
- [C.47]. Kun Yan, Lei Ji, Zeyu Wang, **Yuntao Wang**, Nan Duan, Shuai Ma. Voila-A: Aligning Vision-Language Models with User's Gaze Attention. *Advances in Neural Information Processing Systems* 37 (2024): 1890-1918. (**CCF A**)
- [C.46]. Adiba Orzikulova, Han Xiao, Zhipeng Li, Yukang Yan, **Yuntao Wang**#, Yuanchun Shi, Marzyeh Ghassemi, Sung-Ju Lee, Anind K Dey, Xuhai Xu#. Time2Stop: Adaptive and Explainable Human-AI Loop for Smartphone Overuse Intervention. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24), May 11-16, 2024, Honolulu, HI, USA. ACM, New York, NY, USA 20 Pages. (**CCF A, Corresponding Author**)
- [C.45]. Xuefu Dong, Yifei Chen, Yuuki Nishiyama, Kaoru Sezaki, **Yuntao Wang**, Ken Christofferson, Alex Mariakakis. ReHEarSSE: Recognizing Hidden-in-the-Ear Silently Spelled Expressions. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24). Association for Computing Machinery, New York, NY, USA, Article 321, 1–16. (**CCF A**)
- [C.44]. Chongyang Wang, Siqi Zheng, Lingxiao Zhong, Chun Yu#, Chen Liang, **Yuntao Wang**, Yuan Gao, Tin Lun Lam, Yuanchun Shi. PepperPose: Full-Body Pose Estimation with a Companion Robot. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24). Association for Computing Machinery, New York, NY, USA, Article 586, 1–16. (**CCF A**)
- [C.43]. Fengzhen Cui, **Yuntao Wang**#, Shenshen Lei, Yuanchun Shi. CardboardHRV: Bridging Virtual Reality and Biofeedback with a Cost-Effective Heart Rate Variability System. In Extended Abstracts of the 2024 CHI Conference on Human Factors in Computing Systems (CHI EA '24). Association for Computing Machinery, New York, NY, USA, Article 70, 1–6. (**CCF A, Corresponding Author**)

- [C.42]. Xin Liu, Girish Narayanswamy, Akshay Paruchuri, Xiaoyu Zhang, Jiankai Tang, Yuzhe Zhang, Roni Sengupta, Shwetak Patel, **Yuntao Wang**, Daniel McDuff. rppg-toolbox: Deep remote ppg toolbox. In Advances in Neural Information Processing Systems 36 (2024). (**CCF A**)
- [C.41]. Xin Yi, Yan Kong, Xueze Kang, Shuning Zhang, Xueyang Wang, **Yuntao Wang**, Yu Tian, Hewu Li. Exploring Interactive Gestures with Voice Assistant on HMDs in Social Situations. In 2024 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), pp. 1051-1052.
- [C.40]. Fengzhen Cui, Wanying Mo, Shenshen Lei, Hong Leung, John Raiti, **Yuntao Wang**. Lighttron: A Wearable Sensor System that Provides Light Feedback to Improve Punching Accuracy for Boxing Novices. In Adjunct Proceedings of the 2023 ACM International Joint Conference on Pervasive and Ubiquitous Computing & the 2023 ACM International Symposium on Wearable Computing (UbiComp/ISWC '23 Adjunct). Association for Computing Machinery, New York, NY, USA, 50–53. (**CCF A**)
- [C.39]. Jiankai Tang, Kequan Chen, **Yuntao Wang**#, Yuanchun Shi, Shwetak Patel, Daniel McDuff, Xin Liu. MMPD: Multi-Domain Mobile Video Physiology Dataset. In 2023 45th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), pp. 1-5. (**Corresponding Author**)
- [C.38]. **Yuntao Wang**\*, Zirui Cheng\*, Xin Yi#, Yan Kong, Xueyang Wang, Xuhai Xu, Yukang Yan, Chun Yu, Shwetak Patel, Yuanchun Shi. Modeling the Trade-off of Privacy Preservation and Activity Recognition on Low-Resolution Images. In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23). Association for Computing Machinery, New York, NY, USA, Article 589, 1–15. (**CCF A, Co-First Author**)
- [C.37]. Xiyuxing Zhang, **Yuntao Wang**#, Jingru Zhang, Yaqing Yang, Shwetak Patel, Yuanchun Shi. EarCough: Enabling Continuous Subject Cough Event Detection on Hearables. In Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems (CHI EA '23). Association for Computing Machinery, New York, NY, USA, Article 94, 1–6. (**CCF A, Corresponding Author**)
- [C.36]. Jiexin Ding\*, Bowen Zhao\*, Yuqi Huang\*, **Yuntao Wang**#, Yuanchun Shi. GazeReader: Detecting Unknown Word Using Webcam for English as a Second Language (ESL) Learners. In Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems (CHI EA '23). Association for Computing Machinery, New York, NY, USA, Article 149, 1–7. (**CCF A, Corresponding Author**)
- [C.35]. Zisu Li\*, Chen Liang\*, **Yuntao Wang**#, Yue Qin, Chun Yu, Yukang Yan, Mingming Fan, Yuanchun Shi. Enabling Voice-Accompanying Hand-to-Face Gesture Recognition with Cross-Device Sensing. In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23). Association for Computing Machinery, New York, NY, USA, Article 313, 1–17. (**CCF A, Corresponding Author, Honorable Mention Award**)
- [C.34]. Zhipeng Li, Yikai Cui, Tianze Zhou, Yu Jiang, **Yuntao Wang**, Yukang Yan#, Michael Nebeling, Yuanchun Shi. Color-to-Depth Mappings as Depth Cues in Virtual Reality. In Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology (UIST '22). Association for Computing Machinery, New York, NY, USA, Article 80, 1–14. (**CCF A**)
- [C.33]. Michael Cross, Leping Qiu, Mingyuan Zhong, **Yuntao Wang**, Yuanchun Shi. One-Dimensional Eye-Gaze Typing Interface for People with Locked-in Syndrome. In The Adjunct Publication of the 35th Annual ACM Symposium on User Interface Software and Technology (UIST '22 Adjunct). Association for Computing Machinery, New York, NY, USA, Article 43, 1–3. (**CCF A**)
- [C.32]. **Yuntao Wang**, Jiexin Ding, Ishan Chatterjee, Farshid Salemi Parizi, Yuzhou Zhuang, Yukang Yan#, Shwetak Patel, Yuanchun Shi. FaceOri: Tracking Head Position and Orientation Using Ultrasonic Ranging on Earphones. In CHI Conference on Human Factors in Computing Systems (CHI'22), April 29-May 5, 2022, New Orleans, LA, USA. ACM, New York, NY, USA, 12 pages. (**CCF A, First Author**)

- [C.31]. Xuhai Xu, Tianyuan Zou, Xiao Han, Yanzhang Li, Ruolin Wang, Tianyi Yuan, **Yuntao Wang**, Yuanchun Shi, Jennifer Mankoff, Anind K. Dey. TypeOut: Leveraging Just-in-Time Self-Affirmation for Smartphone Overuse Reduction. In CHI Conference on Human Factors in Computing Systems (CHI '22), April 29-May 5, 2022, New Orleans, LA, USA. ACM, New York, NY, USA, 17 pages. **(CCF A)**
- [C.30]. Kenneth Christofferson, Xuyang Chen, Zeyu Wang, Alex Mariakakis, **Yuntao Wang**. Sleep Sound Classification Using ANC-Enabled Earbuds. In 2022 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops), 2022, pp. 397-402.
- [C.29]. Xin Yi, Yiqin Lu, Ziyin Cai, Zihan Wu, **Yuntao Wang#**, Yuanchun Shi. GazeDock: Gaze-Only Menu Selection in Virtual Reality using Auto-Triggering Peripheral Menu. In 2022 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), pp. 832-842. IEEE, 2022. **(CCF A, Corresponding Author)**
- [C.28]. Yuzhou Zhuang, **Yuntao Wang#**, Yukang Yan, Xuhai Xu, Yuanchun Shi. ReflecTrack: Enabling 3D Acoustic Position Tracking Using Commodity Dual-Microphone Smartphones. In The 34th Annual ACM Symposium on User Interface Software and Technology (UIST '21), October 10–14, 2021, Virtual Event, USA. ACM, New York, NY, USA, 13 pages. **(CCF A, Corresponding Author)**
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- [C.24]. **Yuntao Wang**, Ao Yu, Xin Yi#, Yuanwei Zhang, Ishan Chatterjee, Shwetak Patel, Yuanchun Shi. Facilitating Text Entry on Smartphones with QWERTY Keyboard for Users with Parkinson's Disease. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21). ACM, New York, NY, USA, 1–13. **(CCF A, First Author)**
- [C.23]. Chen Liang, Chun Yu#, Xiaoying Wei, Xuhai Xu, Yongquan Hu, **Yuntao Wang**, Yuanchun Shi. AuthTrack: Enabling Authentication-Free Interaction on Smartphones by Continuous User Tracking. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21). ACM, New York, NY, USA, 1–13. **(CCF A)**
- [C.22]. Xuhai Xu, Jiahao Li, Tianyi Yuan, Liang He, Xin Liu, Yukang Yan, **Yuntao Wang**, Yuanchun Shi, Jennifer Mankoff, Anind K Dey. HulaMove: Using Commodity IMU for Waist Interaction. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21). ACM, New York, NY, USA, 1–13. **(CCF A)**
- [C.21]. Jiali Zhang, Feng He, Chee Jen Ngeh, John Raiti, **Yuntao Wang**, Paulo Goncalves, Gulnara Sarymbekova, Linda E. Wagner, Jenna James, Paul Albee, Jay Thiagarajan. Designing a Smart Helmet for Wildland Firefighters to Avoid Dehydration by Monitoring Bio-Signals. In Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems, pp. 1-6. **(CCF A)**
- [C.20]. Yun Liu, Lu Wang, William R. Kearns, Linda E. Wagner, John Raiti, **Yuntao Wang**, Weichao Yuwen. Integrating a Voice User Interface into a Virtual Therapy Platform. In Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems, pp. 1-6. **(CCF A)**



- [C.19]. **Yuntao Wang**, Zichao Chen, Hanchuan Li, Zhengyi Cao, Huiyi Luo, Tengxiang Zhang, Ke Ou, John Raiti, Chun Yu, Shwetak Patel, Yuanchun Shi. 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). ACM, New York, NY, USA, 1–12. (**CCF A, First Author**)
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- [C.17]. Robin Yang, Haoran Zhou, Ke Wang, **Yuntao Wang**, John Raiti, Ami Cuneo, Natalia Murinova. Utility of a Novel, Combined Biofeedback-Virtual Reality Tool as Add-On Treatment for Chronic Migraine. In 2020 IEEE Global Humanitarian Technology Conference (GHTC 2020).
- [C.16]. Isaac Boger\*, Jay Chakalasiya\*, Kenneth Christofferson\*, **Yuntao Wang**, John Raiti. Induced Acoustic Resonance for Noninvasive Bone Fracture Detection Using Digital Signal Processing and Machine Learning. In 2020 IEEE Global Humanitarian Technology Conference (GHTC 2020).
- [C.15]. Chee Jen Ngeh\*, Chen Ma\*, Tommy Kuan-Wei Ho\*, **Yuntao Wang**, John Raiti. Deep Learning on Edge Device for Early Prescreening of Skin Cancers in Rural Communities. In 2020 IEEE Global Humanitarian Technology Conference (GHTC 2020).
- [C.14]. **Yuntao Wang**, Chengxi Xia, Haibo Sun, Yihan Zhang, Zheyang Liu, Yufei Wang, Naixuan Xu, Jianjia Zhu, Yuchen Zhang, Huaqiang Wu, Yuanchun Shi. A Vision-Based Overload Detection System for Land Transportation. In The 19th COTA International Conference of Transportation Professionals (CICTP 2020). (**First Author**)
- [C.13]. Xu Yan, **Yuntao Wang**#, Ran Yi, Zhiyu Sun, Yongjin Liu. StarFont: Enabling Font Completion Based on Few-Shot Examples. In The 3rd International Conference on Advances in Artificial Intelligence (ICAAI 2019). (**Corresponding Author**)
- [C.12]. Darren Yu Yang, Jay Xiong, Xincheng Li, Xu Yan, John Raiti, **Yuntao Wang**, Huaqiang Wu, Zhenyu Zhong. Building Towards "Invisible Cloak": Robust Physical Adversarial Attack on YOLO Object Detector. In 2018 9th IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON 2018), New York City, NY, USA, pp. 368-374.
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[P.3]. Yuanchun Shi, **Yuntao Wang**, Chun Yu, Lin Du, Method and Device for Determining Input Information: Chinese Patent, ZL201510070064.3. **(Granted)**

[P.2]. Lin Du, Yuanchun Shi, **Yuntao Wang**, Human Body-Based Interaction Method and Interaction Apparatus: Chinese Patent, ZL201410243743.1. **(Granted)**

[P.1]. Yuanchun Shi, **Yuntao Wang**, Zhouyu Su, Chun Yu, Yuhang Zhao, Eye-Free control method of television by using touch screen phone: Chinese Patent, ZL201210056881. **(Granted)**

## COPYRIGHTS

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## HONORS AND AWARDS

*Wu Wenjun Artificial Intelligence Science and Technology Award (WWJ Award) - Outstanding Youth Award* (2024)

*High-Level Innovation and Entrepreneurship Program of Qinghai Province, Leading Talent* (2024)

*China Computer Federation (CCF) technical committee of Human-Computer Interaction Youth Science and Technology Incentive Plan* (2024)

*First Prize of 11th Tsinghua University Young Faculty Teaching Competition* (2024)

*Beijing Outstanding Advisor for Undergraduate Graduation Thesis* (2024)

*Gold Prize of "Internet+" Competition* (2024)

*First Prize of 9th National Biomedical Engineering Innovation Design Competition* (2024)

*First Prize of Ubiquitous Intelligent Sensing Technology Innovation and Application Competition* (2024)

*9th International Mental Health Workshop Best Paper Award* (2024)

*ACM CHI Honorable Mentioned Award* (2023)

*IEEE VR Best Paper Nominee* (2023)

*Young Elite Scientists Sponsorship Program by the China Association for Science and Technology (CAST)* (2022)

*Scientific and Technological Achievement Award of the Chinese Artificial Intelligence Society* (2021)

*First Prize of Science and Technology Award of the Chinese Institute of Electronics* (2019)

*First Prize Award of Singapore Airlines AppChallenge* (2018)

*Second Place Award of X-Prize Competition* (2018)

*Silver Prize of Internet + Competition* (2017)

*Bronze Prize of Internet + Competition* (2017)

*SMARTCOMP 2017 Best Paper Runner-up* (2017)

*Second and Third Prize of GIX Competition* (2016)

*Outstanding Graduates of Department of Computer Science and Technology, Tsinghua University* (2016)

*National Second Prize of China-US Yong Maker Competition* (2015)

*Major Award of Guanghua Scholarship* (2015)

*UIC 2014 Best Paper Award* (2014)

*DENG Feng Scholarship* (2014, 2013)

*Outstanding Student Assistant of Tsinghua University* (2014)

*MobileHCI 2013 Honorable Mentioned Award* (2013)

*Paintora wins the first prize of the South China Sea competition* (2013)

*Major Award of Tsinghua University Scholarship* (2013, 2012)

*National Scholarship (1.5%), Merit Student (15%)* (2010, 2009, 2008)

*Second Prize of Electronic Design Competition* (2010)

*Second Prize of 2010 SCILAB Open-source Design Competition* (2010)

## SERVICE AND OUTREACH

**Academy Services:** Secretary-General of the *CCF technical committee of Human-Computer Interaction*, executive member of the *CCF technical committee of Human-Computer Interaction, Ubiquitous Computing*,

and *Virtual Reality and Visualization Technology*, 218Club, executive member of the *Intelligent Graphics technical committee in the China Society of Image and Graphics (CSIG)*.

**Conference Chair:** *21st Joint Conference on Harmonious Human-Machine Environment (HHME 2025)*  
Co-Executive Chair and *20th Joint Conference on Harmonious Human-Machine Environment (HHME 2024)*  
Co-Executive Chair, *CHCI 2023* Program Committee Chair, *Uibocmp 2023* Poster/Demo Co-Chair

**Journal Associate Editor :** *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT, CCF A)*

**Conference Associate Chair:** *ACM CHI 2021/2022/2024/2025, ACM UIST 2024/2025*

**Symposium Program Chair:** *CCF Access Computing Summer Program (ACSP) 2020/2021/2022/2023*

**Journal Guest Editor:** *Big Data and Cognition Computing (BDCC)*

**Technical Program Committee:** *ISWC 2023, ACM CHI Late Breaking Work 2023, MobiSys 2022 Workshop – DigiBiom, Ubicomp 2022-Computing for Well-Being*

**Reviewer:** *Trans. Affective Computing, NIPS 2024, ACM CHI 2023, ACM CHI 2022, ACM CHI 2021, ACM CHI 2020, IMWUT 2023, IMWUT2022, IMWUT 2021, IMWUT 2019, ACM UIST 2022, ACM UIST 2021, ACM UIST 2015, IEEE VR2022, IEEE VR 2021, IEEE VR 2020, SIGGRPAH 2022, IJHCI, Behaviour & Information Technology, ISMAR 2022, IDC 2020, SODA 2018, Transactions on Interactive Intelligent Systems (TiiS), IJHCS, IJHCI, Behaviour & Information Technology*

**Organizer:** *Innovation for Social Good (ISG 2021) 、 GIX Competition 2016-2018*

**Administrative Service:** Post-graduate student affair administrator of the Department of Computer Science and Technology, Tsinghua University; Assistant to the dean of the Global Innovation Exchange (GIX), Tsinghua University.

## INVITED TALKS AND PRESENTATIONS

[T.24]. March 22, 2025, Xiu Lake Conference, Invited talk: “Accessibility Technologies for User-End Devices”

[T.23]. December 22, 2024, 10th China Cardiovascular Innovation Forum (CIC 2024), Invited talk: “Physiological Sensing Technology on Ubiquitous Computing Devices”

[T.22]. December 13, 2024, China Society of Image and Graphics Young Scientists Conference, Qingtuo Forum invited talk: “Efficient Interaction Behavior and Intention Inference on Edge Devices”

[T.21]. November 8, 2024, CCF Human-Computer Interaction Committee Event at Zhejiang University of Technology, Title: “Efficient Interaction Behavior and Intention Inference on Edge Devices”

[T.20]. October 26, 2024, 2024 China Computer Conference (CNCC), Forum: “How to Achieve Deep Interdisciplinary Integration in Human-Centric Intelligence and Interaction?”, Title: “Physiological Sensing and Interaction Techniques on Ubiquitous Computing Devices”

[T.19]. October 5, 2024, Computing for Well-being (WellComp 2024), Invited talk: “Enabling Continuous Physiological Sensing on Ubiquitous Devices”

[T.18]. September 6, 2024, INCLUSION - Conference on the Bund, Invited talk: “High-Altitude Health Assistant on Mobile Phones”

[T.17]. August 20, 2024, 20th Joint Conference on Harmonious Human-Machine Environment (HHME 2024), CCF technical committee of Human-Computer Interaction Incentive Plan Forum, Invited talk: “Efficient Interaction Behavior and Intention Inference on Edge Devices”

[T.16]. May 19, 2024, Flexible Electronics Technology and Application Innovation Forum, Invited talk: “Efficient Interaction Behavior and Intention Inference on Edge Devices”

[T.15]. February 26, 2024, 1st Academic Annual Conference of CCF 218Club, Invited talk: “Efficient Interaction Behavior and Intention Inference on Edge Devices”

- [T.14]. December 12, 2023, China Metaverse Conference, Invited talk: “Efficient Interaction Behavior and Intention Inference on Edge Devices”
- [T.13]. November 5, 2023, 2023 China Smart Wearable Technology Innovation Forum, Invited talk at a sub-forum, Invited talk: “Physiological Sensing Technology on Audible Wearable Devices”
- [T.12]. June 16, 2023, CCF@U974/975: CCF Ubiquitous Computing Committee & CCF Human-Computer Interaction Committee Event at Qinghai University/Qinghai Minzu University, Invited talk: “Continuous Physiological Sensing Technology on Ubiquitous Computing Devices”
- [T.11]. May 11, 2023, Flexible Electronics Technology and Application Innovation Forum, Session Eleven: Human-Computer Interaction, Brain-Computer Interface, and Metaverse, Invited talk: “Continuous Physiological Sensing Technology on Ubiquitous Computing Devices”
- [T.10]. October 16, 2023, CCF@U Event No. 987 - CCF Human-Computer Interaction Technical Committee Event at Guangxi University, Invited talk: “Sensing and Interaction Techniques on Audible Wearable Devices”
- [T.9]. August 25, 2023, 19th Chinese Human-Computer Interaction Conference (CHCI 2023), Invited tutorial presentation: “Sensing and Interaction Technology on Audible Wearable Devices and Its Open-Source Research Platform”
- [T.8]. May 21, 2023, China Society of Micro-Nano Technology - Flexible Electronics Technology and Application Innovation Forum, Invited talk: “Continuous Physiological Sensing Technology on Ubiquitous Computing Devices”
- [T.7]. March 27, 2023, IEEE VR 2023 (CCF A), Paper Presentation: “ConeSpeech: Exploring Directional Speech Interaction for Multi-Person Remote Communication in Virtual Reality”
- [T.6]. August 6, 2022, 2nd International Conference on Artificial Intelligence (CICAI 2022), Invited talk: “Physiological Sensing Technology Based on Intelligent Devices”
- [T.5]. May 4, 2022, ACM CHI 2022 (CCF A), Paper Presentation: “FaceOri: Tracking Head Position and Orientation Using Ultrasonic Ranging on Earphones”
- [T.4]. October 19, 2021, 21st China Virtual Reality Conference (ChinaVR 2021), Technical Forum: Visualization and Human-Computer Interaction in VR/AR, Title: “VR Interaction Technology Based on Physiological Behavior Modeling”
- [T.3]. May 11, 2021, ACM CHI 2021 (CCF A), Paper Presentation: “Facilitating Text Entry on Smartphones with QWERTY Keyboard for Users with Parkinson’s”
- [T.2]. April 30, 2020, ACM CHI 2020 (CCF A), Paper Presentation: “Movevr: Enabling Multiform Force Feedback in Virtual Reality Using Household Cleaning Robot”
- [T.1]. September 12, 2019, ACM Ubicomp 2019 (CCF A), Paper Presentation: “Flextouch: Enabling Large-Scale Interaction Sensing Beyond Touchscreens Using Flexible and Conductive Materials”