

王运涛 简历

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个人简介

王运涛，清华大学计算机科学与技术系人机交互研究团队助理研究员，全球创新学院（GIX）院长助理、技术指导老师，本科就读于北京邮电大学计算机科学与技术专业。王运涛围绕人机物三元融合与自然交互，研究交互行为与意图的端智能感知计算，解决稀疏感知数据上高效准确推理交互意图、端侧数据驱动的机器学习方法效率低且泛化能力差等难题。通过建模人体行为时空特征为贝叶斯先验知识，提出端设备上交互行为以及生理行为的连续感知计算方法，高效推理多模态感知数据上的隐式交互意图，创新低功耗、高性能、训练数据要求低的端智能感知计算技术，服务大健康、信息无障碍等高影响力应用领域。王运涛作为负责人承担自然科学基金青年项目、“科技冬奥”重点专项子课题及多项国际合作项目、校企合作项目，作为核心骨干完成的十三五重点专项“人机交互自然性的计算原理”2021年结题评价优秀（15%）。荣获2022年中国科协青年人才托举工程、2019年中国电子学会科学技术奖一等奖、Xprize 国际创新大赛二等奖等国内外重要奖项。

王运涛发表学术论文49篇，包括CHI、IMWUT、Communications of the ACM等国际顶级期刊/会议，其中第一作者论文14篇、通讯作者论文9篇、CCF-A类论文25篇，并6次荣获最佳论文奖等会议奖项，国内外同龄段（不早于2008年本科毕业，约35岁以下）青年学者中，其IMUWT（即ACM Ubicomp论文期刊，CCF A）论文成果第一，已获授权发明专利23项（其中10项国际/美国专利），完成2项成果转化。技术成果中，握持点击意图识别算法有效解决全面屏高误触难题，内置华为一亿多台高端手机操作系统，防误触性能国际领先；连续生理感知的端智能健康监测技术在医疗应用中显著提升偏头疼等慢性病治疗效果；端智能导盲装置部署在首都国际机场，保障冬奥会无障碍出行。

王运涛从2018年2月1日至2021年3月15日受邀前往美国华盛顿大学计算机系担任助理研究员(Research Associate)、访问助理教授(Visiting Assistant Professor)，研究端智能健康感知与普适计算技术，合作教授为Shwetak Patel。教授“数据与信号处理”与“传感器与电路介绍”等研究生课程。

教育经历

博士 清华大学计算机科学与技术系
2011年9月- 研究领域: 人机交互、普适计算
2016年6月 导师: 史元春教授
博士论文: 无需视觉注意力的动作交互研究

学士
2007年9月- 北京邮电大学计算机学院，计算机科学与技术专业
2011年6月 GPA: 90.1/100 (top 1/318)

工作经历

2019 年 4 月至今	清华大学-华盛顿大学 全球创新学院 (Global Innovation Exchange, GIX) 院长助理, 清华大学与华盛顿大学的联合双硕士学位项目
2019 年 1 月 - 2025 年 1 月	清华大学 计算机科学与技术系 助理研究员, 从事人机交互与生理计算研究工作
2018 年 2 月 - 2021 年 3 月	美国华盛顿大学 计算机系 助理研究员(Research Associate)、访问助理教授(Visiting Assistant Professor) , 从事人机交互与普适计算研究工作
2016 年 6 月 - 2021 年 3 月	清华大学-华盛顿大学 全球创新学院 (Global Innovation Exchange, GIX) 技术指导教师, 开设课程、指导学生
2016 年 7 月 - 2019 年 1 月	清华大学 计算机科学与技术系 博士后, 日常物品上非侵入式的动作感知与交互
2016 年 4 月至今	卡车司机 (北京) 智能科技有限公司 首席科学家 (顾问), 研究面向车路协同的端智能感知与交互技术

授课经历

清华大学	2018 年至今
主讲授课, 本科全英文课程 (2022 夏季学期, 6 学分, 负责 72 学时): Advanced Practicum (GIX 海外暑期研修项目)	
唯一授课, 硕士全英文课程 (2021(2022 春季学期, 4 学分, 主讲 64 学时): Practical Training on Scientific Research in Applied Innovation (应用创新硕士论文研究训练)	
唯一授课, 硕士全英文课程 (2021 秋季学期, 3 学分, 主讲 48 学时): Essentials Towards Signal Processing and Data Management for AIoT Applications (面向 AIoT 应用的信号与数据处理技术简介)	
联合授课, 硕士全英文课程 (2021 秋季学期, 1 学分, 主讲 8 学时): Practical Training on Scientific Research Proposal in Applied Innovation (应用创新硕士论文研究开题训练)	
联合授课, 硕士全英文课程 (2021 春季学期, 4 学分, 主讲 24 学时): Practical Training on Scientific Research in Applied Innovation (应用创新硕士论文研究训练)	
联合授课, 本科全英文课程 (2021 夏季学期, 6 学分, 负责 72 学时): Advanced Practicum (GIX 海外暑期研修项目)	
联合授课, 硕士全英文课程 (2020 春季学期, 1 学分, 主讲 8 学时): Practical Training on Scientific Research Proposal in Applied Innovation (应用创新硕士论文研究开题训练)	
联合授课, 硕士全英文课程 (2020 春季学期, 4 学分, 主讲 24 学时): Practical Training on Scientific Research in Applied Innovation (应用创新硕士论文研究训练)	
联合授课, 本科全英文课程 (2020 夏季学期, 6 学分, 负责 48 学时): Advanced Practicum (GIX 海外暑期研修项目)	
联合授课, 硕士全英文课程 (2019 春季学期, 1 学分, 主讲 6 学时): Practical Training on Scientific Research Proposal in Applied Innovation (应用创新硕士论文研究开题训练)	
联合授课, 硕士全英文课程 (2019 春季学期, 4 学分, 主讲 24 学时): Practical Training on Scientific Research in Applied Innovation (应用创新硕士论文研究训练)	
联合授课, 本科全英文课程 (2018 夏季学期, 6 学分, 负责 48 学时): Advanced Practicum (GIX 海外暑期研修项目)	

华盛顿大学

02/2018 - 03/2021

唯一授课, (TECHIN 513, 2021 年冬季学期, 3 学分): Managing Data and Signal Processing (数据与信号处理), MSTI 学期评分最高课程

技术导师, (TECHIN 542, 2020 年秋季学期, 10 学分): Integrated Launch Studio 2 (综合创新项目实践 2)

联合授课, (TECHIN 515, 2020 年春季学期, 4 学分): Hardware and Software Lab 2 (软硬件课程实践 2)

技术导师, (TECHIN 515, 2020 年冬季学期, 4 学分): Hardware and Software Lab 1 (软硬件课程实践 1)

联合授课, (TECHIN 513, 2020 年冬季学期, 3 学分): Managing Data and Signal Processing (数据与信号处理)

联合授课, (TECHIN 513, 2019 年冬季学期, 3 学分): Introduction of Sensors and Circuits (传感器与电路介绍)

联合授课, (TECHIN 513, 2019 年冬季学期, 3 学分): Managing Data and Signal Processing (数据与信号处理)

技术导师, (TECHIN 542, 2019 年秋季学期, 10 学分): Integrated Launch Studio 2 (综合创新项目实践 2)

技术导师, (TECHIN 515, 2019 年春季学期, 4 学分): Hardware and Software Lab 2 (软硬件课程实践 2)

联合授课, (TECHIN 512, 2018 年冬季学期, 3 学分): Introduction of Sensors and Circuits (传感器与电路介绍)

联合授课, (TECHIN 514, 2018 年冬季学期, 4 学分): Hardware and Software Lab 1 (软硬件课程实践 1)

学生指导经历

研究生联合指导

01/2019 至今

在读研究生 (8 名)

李志鹏 (计算机系二年级博士生), 丁皆新 (GIX 双硕士学位学生, 预计 2023 年冬季毕业), 丁盈科 (GIX 双硕士学位学生, 预计 2023 年冬季毕业), 沈诣博 (GIX 双硕士学位学生, 预计 2023 年冬季毕业), 崔逢臻 (GIX 双硕士学位学生, 预计 2023 年冬季毕业), Darius Rose (GIX 双硕士学位学生, 预计 2023 年冬季毕业), Joshua Rafael Sanchez (GIX 双硕士学位学生, 预计 2023 年冬季毕业), Ross Todrzak (GIX 双硕士学位学生, 预计 2023 年春季毕业)

已毕业硕士研究生 (13 名)

Michael Cross (2022 年秋季毕业), 李彦璋 (2022 年秋季毕业, 腾讯产品经理), Isaac Boger (2022 年秋季毕业), 张佳莉 (2022 年冬季毕业, 阿里巴巴工程师), Robin Yang (2022 年冬季毕业, 亚马逊工程师), Ken Chrsitofferson (2021 年秋季毕业, 多伦多大学读博), Jay Chakalasiya (2021 年秋季毕业, 微软工程师), 庄煜洲 (2021 年秋季毕业, 字节跳动游戏工程师), Louis Quicksell (2020 年冬季毕业), Zachary Badger Markey (2020 年冬季毕业), 闫旭 (2019 年冬季毕业, Apple 中国 AI 工程师), 周建宇 (2020 年秋季毕业, Microsoft 美国工程师), 李宇静 (2020 年秋季毕业, 阿里巴巴工程师), 余翱 (2020 年秋季毕业, 字节跳动游戏工程师), 夏盛溪 (2019 秋季毕业, Amazon 工程师)。

本科生论文指导/联合指导

07/2016 至今

孙露 (现为博士生, UCSD Design Lab), 朱海潮 (现为 Nervos 区块链技术研究员), 侯宁宁 (现为香港理工大学博士生), 龚咪咪 (现为 Facebook 软件工程师), 余佳雨 (现为 VMWare 软件工程师), 周禹安 (现为 University of Chicago 硕士研究生), 罗慧一 (现为清华大学硕士研究生), 汤涛涛 (阿里巴巴工程师), 张佳莉 (阿里巴巴工程师), 曹争一 (已工作), 汪子奇 (现为全球创新学院硕士研究生), 欧可 (现为香港中文大学硕士生), 唐宁静 (清华大学本科四年级), 吴明恒 (清华大学本科四年级), 谢思南 (清华大学本科四年级), 张奚宇星 (清华大学本科四年级)。

期刊论文

- [J.16]. Yuntao Wang*, Xiyuxing Zhang*, Jay M. Chakalasiya*, Xuhai Xu, Yu Jiang, Yuang Li, Shwetak Patel, and Yuanchun Shi+. HearCough: Enabling Continuous Cough Event Detection on the Edge Computing Hearables. Methods (2022). (SCI 期刊, IF = 3.6, 共同第一作者)
- [J.15]. 陶建华, 巫英才, 喻纯, 翁冬冬, 李冠君, 韩腾, 王运涛, 刘斌. 2022. 多模态人机交互综述. 中国图象图形学报, 27(6): 1956-1987. DOI: 10.11834/jig.220151.
- [J.14]. Zhipeng, Li, Yu Jiang, Yihao Zhu, Ruijia Chen, Ruolin Wang, Yuntao Wang, Yukang Yan, and 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)
- [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, 共同第一作者)
- [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). (通讯作者)
- [J.11]. Feng Tian, Yuntao Wang, and Yicheng Zhu. 2021. Natural interactive techniques for the detection and assessment of neurological diseases. Commun. ACM 64, 11 (November 2021), 57–59. (SCI 期刊, IF = 4.6)
- [J.10]. Chen Liang, Chun Yu, Yue Qin, Yuntao Wang, and 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)
- [J.9]. Liu, Xin, Yuang 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)
- [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, 通讯作者)
- [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)
- [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)
- [J.5]. 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. In Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 3, 3, Article 109, 20 pages. (CCF A, 最佳论文提名奖)
- [J.4]. Tengxiang Zhang, Xin Yi*, Ruolin Wang, Yuntao Wang, Chun Yu, Yiqin Lu, and 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)
- [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). (会议讨论论文, Discussion Paper) (CCF A, 通讯作者)

[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)

会议论文

[C.33]. **Yuntao Wang**, Jixin Ding, Ishan Chatterjee, Farshid Salemi Parizi, Yuzhou Zhuang, Yukang Yan*, Shwetak Patel, and Yuanchun Shi. 2022. 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)

[C.32]. Xuhai Xu, Tianyuan Zou, Xiao Han, Yanzhang Li, Ruolin Wang, Tianyi Yuan, **Yuntao Wang**, Yuanchun Shi, Jennifer Mankoff, and Anind K. Dey . 2022. 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.31]. Kenneth Christofferson, Xuyang Chen, Zeyu Wang, Alex Mariakakis, **Yuntao Wang**. Sleep Sound Classification Using ANC-Enabled Earbuds. In the Third Workshop on Human-Centered Computational Sensing (HCCS 2022).

[C.30]. Xin Yi, Yiqin Lu, Ziyin Cai, Zihan Wu, **Yuntao Wang***, Yuanchun Shi. GazeDock: Enabling 3D Acoustic Position Tracking Using Commodity Dual-Microphone Smartphones. In the IEEE Conference on Virtual Reality and 3D User Interactions (IEEE VR 2022). (CCF A, 通讯作者)

[C.29]. Yuzhou Zhuang, **Yuntao Wang***, Yukang Yan, Xuhai Xu, and Yuanchun Shi. RefecTrack: 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. <https://doi.org/10.1145/3472749.3474805> (CCF B, 通讯作者)

[C.28]. Yuang Li, **Yuntao Wang***, Xin Liu, Yuanchun Shi, Shao-fu Shih. 2021. Enabling Real-time On-chip Audio Super Resolution for Bone Conduction Microphones. arXiv preprint arXiv:2112.13156.

[C.27]. Qian Zhao, Dongbin Bai, Yue Yu, Yitong Shen, Nicholas Ames, John Raiti, Julian Marshall, and **Yuntao Wang**. Making Healthy Air More Affordable: A Smart Air Purifier with Filter Availability Detection. In The 14th PErvasive Technologies Related to Assistive Environments Conference (PETRA 2021). Association for Computing Machinery, New York, NY, USA, 121–122.

[C.26]. Dongho Koo, Yeon Hee Rho, Hua Lo, Nicholas Ames, **Yuntao Wang**, and John Raiti. 2021. Methods of identifying touched areas have been wiped properly. In The 14th PErvasive Technologies Related to Assistive Environments Conference (PETRA 2021). Association for Computing Machinery, New York, NY, USA, 115–116.

[C.25]. Victor Chen, Xuhai Xu, Richard Li, Yuanchun Shi, Shwetak Patel, **Yuntao Wang***. Understanding the Design Space of Mouth Microgestures. In proceedings of the 2021 ACM Designing Interactive Systems conference (DIS 2021). ACM, New York, NY, USA, 1–20. (CCF B, 通讯作者)

[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)

[C.23]. Chen Liang, Chun Yu, Xiaoying Wei, Xuhai Xu, Yongquan Hu, **Yuntao Wang**, Yuanchun Shi. Auth+Track: Enabling Authentication Free Interaction on Smartphone 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. 2021 CHI Conference on Human Factors In Computing System Late-Breaking Work (CHI'21 LBW). (**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. 2021 CHI Conference on Human Factors In Computing System Late-Breaking Work (CHI'21 LBW). (**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**)

[C.18]. Tengxiang Zhang, Xin Zeng, Yinshuai Zhang, Ke Sun, **Yuntao Wang**, Yiqiang Chen. 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). ACM, New York, NY, USA, 1–13. (**CCF A**)

[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. 2020 IEEE Global Humanitarian Technology Conference. (GHTC 2020).

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奖励与荣誉

2022 年中国科协青年人才托举工程
2019 年中国电子学会科学技术奖一等奖

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2017 年互联网+大赛二等奖、三等奖 (*2)
2017 年 SMARTCOMP 会议最佳论文提名奖
2017 年 IMWUT 讨论论文
2016 年清华大学计算机科学与技术系优秀毕业生
2015 年中美创客大赛国际二等奖
2014 年 UIC 国际会议最佳论文奖
2013 年 MobileHCI 国际会议最佳论文提名奖
2013 年、2012 年获清华大学综合一等奖学金
2011 年 HHME 国内会议论文最佳论文提名奖
2010 年、2009 年、2008 年获国家奖学金（前 1.5%）
2010 年中国电子设计大赛二等奖
2010 年 SCILAB 开源国际大赛二等奖

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国际会议领域主席：CHI 2022, CHI 2021

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学会任职：CCF 人机交互专委执行委员, CCF 虚拟现实与可视化技术专委执行委员

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项目组织：Innovation for Social Good (ISG 2021), GIX Competition 2016-2018

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