

Jun GONG

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RESEARCH INTERESTS

My research spans a range of different topics in **Human-Computer Interaction (HCI)**. I design, build and evaluate **novel input and interaction** for emerging platform, media and technology to provide enhanced and compelling user experiences. Specifically, I have developed sensing techniques for wearable devices to enable user's input **without using touchscreen**. I have also investigated **seamless contextual sensing** by bringing sensing capabilities to everyday objects such as garment and accessories.

EDUCATION

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| 2020 | Dartmouth College, Hanover, NH, UNITED STATES |
| 2015 - | <ul style="list-style-type: none">○ Ph.D. in Computer Science, Department of Computer Science○ Research Area : Human-Computer Interaction○ Advisor : Xing-Dong Yang |
| 2014 | Beijing University of Posts and Telecommunications, Beijing, CHINA |
| 2010 - | <ul style="list-style-type: none">○ B.E. in Electronic Engineering, School of Electronic Engineering○ Cumulative GPA : 89/100 or 3.8/4 Ranking : 4th/280 |

HONORS AND AWARDS

- 2022 **Honorable Mention Award**, *ACM CHI 2022* (Top 5%)
- 2019 **Best Paper Award**, *ACM UIST 2019* (Top 1%)
- 2019 **Honorable Mention Award**, *ACM CHI 2019* (Top 5%)
- 2019 **Neukom Institute Student Travel Grant**
- 2018 **Honorable Mention Award**, *ACM CHI 2018* (Top 5%)
- 2013 **Second Prize in National Undergraduate Electronic Design** contest (Top 5%)
- 2011 "Tang Jun & Sun Chunlan" Enterprise Scholarship (Top 1%)

PROFESSIONAL EXPERIENCE

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| Present | Apple, Seattle, WA, UNITED STATES |
| 2020.09 | <ul style="list-style-type: none">○ Senior Research Scientist in Apple AI/ML○ Lead research in sensing, machine learning and HCI [C.22][P.10][P.11][P.12]○ Shipped features on Homepod, Apple Watch and iPhone :<ul style="list-style-type: none">- TIME IN DAYLIGHT : Early explorations and algorithm support for time in daylight on the Watch for Vision Health [<i>Apple Watch</i>]. 2023.- TEMPERATURE and HUMIDITY SENSING : Built machine learning models and self-heating correction algorithms for temperature and humidity sensing [<i>HomePod and HomePod Mini</i>]. 2023.- CRASH DETECTION : Built machine learning models and algorithms for vehicular detection, serving as an early-stage classifier for car crash detection. [<i>Apple Watch Series 8+, Apple Watch Ultra, iPhone 14+</i>]. 2022.- FITNESS MULTISPORT : Built sensor fusion models for multimodal workout experiences. Enabled automatic detection of indoor/outdoor swimming, cycling, and running in any sequence, including transitions. [<i>watchOS 9</i>]. 2022.- FITNESS CYCLING : Shipped algorithms and models for cycling workout detection and auto-pause/resume, powering Fitness and Fall Detection features. [<i>Apple Watch Series 6+</i>]. 2021.- ASSISTIVE TOUCH : Explored hand gesture customization methods. [<i>Apple Watch Series 6, SE</i>]. 2021. |

2020.09	Massachusetts Institute of Technology (MIT), Boston, MA, UNITED STATES
2020.03	
2020.03	Apple, Pittsburgh, PA, UNITED STATES
2019.12	<ul style="list-style-type: none"> Research Intern, advised by Gierad Laput Developed novel sensing interactive systems fueled by AI/ML [P.8] [P.9]
2019.11	Facebook Reality Lab, Redmond, WA, UNITED STATES
2019.06	
2018.10	Autodesk Research, Toronto, ON, CANADA
2018.06	

PUBLICATIONS

In the field of Human-Computer Interaction (HCI), **CHI** and **UIST** are amongst the top-tier publication venues (acceptance rate around 20 - 25%). I published all my papers in these two venues.

- [C.22] Xuhai Xu, **Jun Gong**, Carolina Brum, Lilian Liang, Bongsoo Suh, Kumar Gupta, Yash Agarwal, Laurence Lindsey, Runchang Kang, Behrooz Shahsavari, Tu Nguyen, Heriberto Nieto, Scott E. Hudson, Charlie Maalouf, Seyed Mousavi, Gierad Laput (2022). Enabling Hand Gesture Customization on Wrist-Worn Devices. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'22)*. **Honorable Mention Award**.
- [C.21] **Jun Gong***, Olivia Seow*, Cedric Honnet*, Jack Forman, Stefanie Mueller (*co-primary). MetaSense : Integrating Sensing Capabilities into Mechanical Metamaterial. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'21)*.
- [C.20] **Jun Gong**, Aakar Gupta, Hrvoje Benko. Acustico : Surface Tap Detection and Localization using Wrist-based Acoustic TDOA Sensing. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'20)*.
- [C.19] Pin-Sung Ku, **Jun Gong**, Te-Yen Wu, Yixin Wei, Yiwen Tang, Barrett Ens, Xing-Dong Yang. Zippro : The Design and Implementation of an Interactive Zipper. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'20)*.
- [C.18] Pin-Sung Ku, Qijia Shao, Te-Yen Wu, **Jun Gong**, Ziyang Zhu, Xia Zhou, Xing-Dong Yang (2020). ThreadSense : Locating Touch on an Extremely Thin Interactive Thread. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'20)*.
- [C.17] Te-Yen Wu, Shutong Qi, Junchi Chen, MuJie Shang, **Jun Gong**, Teddy Seyed, Xing-Dong Yang (2020). Fabriccio : Touchless Gestural Input on Interactive Fabrics. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'20)*.
- [C.16] Zheer Xu, Weihao Chen, Dongyang Zhao, Jiehui Luo, Te-Yen Wu, **Jun Gong**, Sicheng Yin, Jialun Zhai, Xing-Dong Yang (2020). BiTipText : Bimanual Eyes-Free Text Entry on a Fingertip Keyboard. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'20)*.
- [C.15] **Jun Gong**, Yu Wu, Lei Yan, Teddy Seyed, Xing-Dong Yang (2019). Tessutivo : Contextual Interactions on Interactive Fabrics with Inductive Sensing. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'19)*.
- [C.14] **Jun Gong***, Josh Urban Davis*, Yunxin Sun, Parmit Chilana, Xing-Dong Yang (*co-primary). CircuitStyle : A System for Peripherally Reinforcing Best Practices in Hardware Computing. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'19)*.
- [C.13] Te-Yen Wu, **Jun Gong**, Teddy Seyed, Xing-Dong Yang (2019). Proxino : Enabling Prototyping of Virtual Circuits With Physical Proxies. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'19)*.
- [C.12] Zheer Xu*, Pui Chung Wong*, **Jun Gong**, Te-Yen Wu, Aditya Shekhar Nittala, Xiaojun Bi, Jürgen Steinle, Hongbo Fu, Kening Zhu, Xing-Dong Yang (*co-primary). TipText : Eyes-Free Text Entry on a Fingertip Keyboard. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'19)*. **Best Paper Award**.
- [C.11] **Jun Gong**, Fraser Anderson, George Fitzmaurice, Tovi Grossman (2019). Instrumenting and Analyzing Fabrication Activities, Users, and Expertise. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'19)*.

- [C.10] Jo-Yu Lo, Da-Yuan Huang, Tzu-Sheng Kuo, Chen-Kuo Sun, Teddy Seyed, **Jun Gong**, Xing-Dong Yang, Bing-Yu Chen (2019). AutoFritz : Autocomplete for Prototyping Virtual Breadboard Circuits. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'19)*. **Honorable Mention Award**.
- [C.9] Shan-Yuan Teng, Da-Yuan Huang, Chi Wang, Teddy Seyed, **Jun Gong**, Xing-Dong Yang, Bing-Yu Chen (2019). Aarnio : Passive Kinesthetic Force Output for Foreground Interactions on an Interactive Chair. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'19)*.
- [C.8] **Jun Gong**, Xin Yang, Teddy Seyed, Josh Urban Davis, Xing-Dong Yang (2018). Indutivo : Contact-Based, Object-Driven Interactions with Inductive Sensing. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'18)*.
- [C.7] Da-Yuan Huang, Teddy Seyed, Linjun Li, **Jun Gong**, Zhihao Yao, Yuchen Jiao, Xiang Anthony Chen, Xing-Dong Yang (2018). Orecchio : Extending Body-Language through Actuated Static and Dynamic Auricular Postures. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'18)*.
- [C.6] **Jun Gong**, Zheer Xu, Qifan Guo, Teddy Seyed, Xiang 'Anthony' Chen, Xiaojun Bi and Xing-Dong Yang (2018). WrisText : One-handed Text Entry on Smartwatch using Wrist Gestures. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'18)*. **Honorable Mention Award**.
- [C.5] **Jun Gong**, Da-Yuan Huang, Teddy Seyed, Te Lin, Tao Hou, Xin Liu, Molin Yang, Boyu Yang, Yuhan Zhang and Xing-Dong Yang (2018). Jetto : Using Lateral Force Feedback for Smartwatch Interactions. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'18)*.
- [C.4] **Jun Gong**, Yang Zhang, Xia Zhou and Xing-Dong Yang (2017). Pyro : Thumb-Tip Gesture Recognition Using Pyroelectric Infrared Sensing. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'17)*.
- [C.3] Da-Yuan Huang, Ruizhen Guo, **Jun Gong**, Jingxian Wang, John Graham, De-Nian Yang and Xing-Dong Yang. (2017). Retro-Shape : Leveraging Rear-Surface Shape Displays for 2.5D Interaction on Smartwatches. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'17)*.
- [C.2] **Jun Gong**, Lan Li, Daniel Vogel and Xing-Dong Yang (2017). Cito : An Actuated Smartwatch for Extended Interactions. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'17)*.
- [C.1] **Jun Gong**, Xing-Dong Yang and Pourang Irani (2016). WristWhirl : One-handed Continuous Smartwatch Input using Wrist Gestures. In *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST'16)*.

PATENTS

- [P.12] G. Laput, B. Westing, J. Gong, L. Zhang, M. Wegrzynski, R. Ribeiro, R. Kang, S. Link. Machine Learning Correction of Temperature and Humidity Values. U.S. Patent 63/323,437 filed Mar. 24, 2022.
- [P.11] S. Shahmiri, J. Gong, G. Laput. System and Method for Capturing Cardiopulmonary Signals. U.S. Patent 63/248,355 filed Sep. 24, 2021.
- [P.10] S. Shahmiri, J. Gong, G. Laput, M. Fang, K. Chen, R. Kang. Diagnosis And Monitoring Of Bruxism Using Earbud Motion Sensors. U.S. Patent 63/168,255 filed Mar. 30, 2021.
- [P.9] J. Gong, G. Laput. User Identification Using Headphones. U.S. Patent 63/054,660 filed Jul. 21, 2020. **Patent Issued (US 11438683B2)**.
- [P.8] K. Chen, J. Curran, J. Gong, G. Laput. Machine Learning Based Object Identification. U.S. Patent 63/083,528 filed Sep. 25, 2020.
- [P.7] J. Gong, A. Gupta, H. Benko. Wearable Device And User Input System For Computing Devices And Artificial Reality Environments. U.S. Patent 16/829,933 filed Mar. 25, 2020. **Patent Issued (US11334157B1)**.
- [P.6] T. Wu, J. Gong, A. Seyed, and X. D. Yang. System and Method of Prototyping Virtual Circuits with Physical Proxies. U.S. Patent 17/072,763 filed Oct 16, 2020.
- [P.5] J. Gong, A. Seyed, and X. D. Yang. Apparatus and Method for Contextual Interactions on Interactive Fabrics with Inductive Sensing. (pending)
- [P.4] J. Gong and X. D. Yang. Inductive Sensing Apparatus and Method. U.S. Patent 16/596,346 filed Oct. 8, 2019.
- [P.3] J. Gong, F. Anderson, G. Fitzmaurice and T. Grossman. Techniques for Tailoring Fabrication Environments based on User, Task, and Expertise. U.S. Patent 16/537,463 filed Aug. 9, 2019.
- [P.2] F. Anderson, J. Gong, and G. Fitzmaurice. Situation-Sensitive Safety Glasses. U.S. Patent 16/516,105 filed Jul. 18, 2019.
- [P.1] X. D. Yang, J. Gong, Y. Zhang and X. Zhou. Infrared-Based Gesture Sensing and Detection Systems, and Apparatuses, Software, and Methods Relating To Same. U.S. Patent 16/163,201 filed Oct. 17, 2018. **Patent Issued (US10608632B2)**.

ACADEMIC SERVICE

- Chairing** CHI'22, **Program Committee Associate Chair (AC)**
CHI'22, **Workshop Organizer** - "Reimagining Systems for Learning Hands-on Creative and Maker Skills"
CHI'22, **Session Chair** - "Sensing"
UIST'21, **Program Committee Associate Chair (AC)**
UIST'21, **Session Chair** - "Enhancing Complex Interactions"
Graphics Interface'21, **International Program Committee (IPC)**
CHI'20 Late Breaking Work, **Program Committee Associate Chair (AC)**
- Reviewer** CHI, UIST, Ubicomp, DIS, ISS, MobileHCI, GI, TEI, ISWC, SIGGRAPH Asia, IJHCS, IJHCI (**100+ papers**)
Outstanding Reviewer Recognition – IMWUT 2019, ACM CHI 2020 (twice), ACM UIST 2020
- Volunteer** UIST 2016, UIST 2017

SKILLS

- Programming** C/C++, Java, C#, Python, Swift, Objective C, Matlab
- Tools** Pytorch, TensorFlow and Keras, Scikit-learn, Weka, Android SDK, IOS, Unity, Arduino, Solidworks