

Teng Han (韩腾)

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Research Interests

Human Computer Interaction (HCI), in the areas of innovative input and output methodologies, computer aided creative tools, and mobile interfaces and pedagogical systems.

Wearable technology appears prominently in recent years with popularization of VR/AR glasses, smartwatch and activity trackers. However, it is still unclear what are the best suited interactions on the wearable devices. For my PhD degree, I have been exploring input and output modalities for smartwears, with the idea of deriving interaction opportunities from users' daily activities and common knowledge. The goal is to help bridging the gap between novel smartwear interactions and real-life experiences shared among users. Specifically, I conduct projects to transform daily activities into input mechanisms, complement devices' feedback channels that fit better to users' input actions, and explore interface paradigms with/out touchscreens.

In addition, the emerging wearable technologies afford new information processing, exchanging and displaying capabilities. I am interested in exploring how such capabilities can be leveraged to reformulate users' creative, analytic and learning activities, which direct my recent and future research topics. My research methods involve empirical user studies to improve understanding of human factors that are associated with proposed systems, implementation of hardware and software prototypes to provide compelling experiences, and user interface design to propose efficient interaction paradigms.

Education

Feb 2015 – 2018
(expected)

PhD Student | University of Manitoba, Canada
HCI Lab
Supervisor: Prof. Pourang Irani

Sep 2009 – July
2012

Master of Science by Research | University of Bristol, UK
Interaction and Graphics Group
Supervisor: Prof. Sriram Subramanian
Thesis Title: Kicking Gestures for Mobile Interaction

Sep 2005 – Jul 2009

Bachelor of Engineering | Xi'an Jiaotong University, China
Department of Industrial Design
Supervisor: Prof. Leshan Li
Thesis Title: Design of China Phone for the Youth

Experiences in TA and Marker

16 Summer

Instructor | University of Manitoba, Canada
COMP 1010, Introductory Computer Science

15 Fall

Marker | University of Manitoba, Canada
COMP 3020, Human Computer Interaction 1

Employments and Internship

Jan 2018 – April
2018

Research Intern | Autodesk Research, Canada
Mentors: Dr. Tovi Grossman and Dr. Fraser Anderson

May 2017 – Dec 2017	Research Intern Honda Research Institute, Japan Mentors: Dr. Keisuke Nakamura and Dr. Randy Gomez
Jan 2017 – Mar 2017	Visiting Student Dartmouth College, USA Mentor: Dr. Xing-Dong Yang
Jul 2014 – Nov 2014	Algorithm Engineer Zepp Labs, China Manager: Dr. Xiaowei Dai
Jan 2014 – Jun 2014	Intern Lenovo Research, China Mentor: Dr. Xiang Cao
May 2013 - Dec 2013	Research Assistant University of Pittsburgh, USA Supervisor: Dr. Jingtao Wang
Oct 2011 – May 2012	Research Intern Microsoft Research Asia, China Mentor: Dr. Xiang Cao

Publications

google scholar: <https://scholar.google.co.jp/citations?user=kHKwQ9gAAAAJ&hl=en&oi=ao>
dblp: <http://dblp.uni-trier.de/pers/hd/h/Han:Teng>

Conferences (note: the ACM UIST and the ACM CHI are recognized as top-tire conferences in HCI)

[C12] Teng Han, Fraser Anderson, Pourang Irani, and Tovi Grossman. HydroRing: Supporting Mixed Reality Haptics using Liquid Flow. In *Proceedings of the 31th annual ACM symposium on User interface software and technology (UIST '18)*. ACM.
(conditionally accepted)

[C11] Teng Han, Jiannan Li, Khalad Hasan, Keisuke Nakamura, Randy Gomez, Ravin Balakrishnan, and Pourang Irani. 2018. PageFlip: Leveraging Page-Flipping Gestures for Efficient Command and Value Selection on Smartwatches. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. ACM, New York, NY, USA, Paper 529, 12 pages.

[C10] Teng Han, Qian Han, Michelle Annett, Fraser Anderson, Da-Yuan Huang, and Xing-Dong Yang. Frictio: Passive Kinesthetic Force Feedback for Smart Ring Output. In *Proceedings of the 30th annual ACM symposium on User interface software and technology (UIST '17)*. ACM, New York, NY, USA, 131-142.

[C9] Teng Han, Khalad Hasan, Keisuke Nakamura, Randy Gomez, and Pourang Irani. 2017. SoundCraft: Enabling Spatial Interactions on Smartwatches using Hand Generated Acoustics. In *Proceedings of the 30th annual ACM symposium on User interface software and technology (UIST '17)*. ACM, New York, NY, USA, 579-591.

[C8] Teng Han, Xiang Xiao, Lanfei Shi, John Canny, and Jingtao Wang. 2015. Balancing Accuracy and Fun: Designing Camera Based Mobile Games for Implicit Heart Rate Monitoring. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. ACM, New York, NY, USA, 847-856.

[C7] Yupeng Zhang, Teng Han, Zhimin Ren, Nobuyuki Umetani, Xin Tong, Yang Liu, Takaaki Shiratori, and Xiang Cao. 2013. BodyAvatar: creating freeform 3D avatars using first-person body gestures. In *Proceedings of the 26th annual ACM symposium on User interface software and technology (UIST '13)*. ACM, New York, NY, USA, 387-396.

[C6] Jason Alexander, Teng Han, William Judd, Pourang Irani, and Sriram Subramanian. 2012. Putting your best foot forward: investigating real-world mappings for foot-based gestures. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '12)*. ACM, New York, NY, USA, 1229-1238.

[C5] Teng Han, Jason Alexander, Abhijit Karnik, Pourang Irani, and Sriram Subramanian. 2011. Kick: investigating the use of kick gestures for mobile interactions. In *Proceedings of the 13th International*

Conference on Human Computer Interaction with Mobile Devices and Services (**MobileHCI '11**). ACM, New York, NY, USA, 29-32.

[C4] William Delamare, Teng Han, and Pourang Irani. 2017. Designing a gaze gesture guiding system. In *Proceedings of the 19th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '17)*. ACM, New York, NY, USA, Article 26, 13 pages.

[C3] Xiang Xiao, Teng Han, and Jingtao Wang. 2013. LensGesture: augmenting mobile interactions with back-of-device finger gestures. In *Proceedings of the 15th ACM on International conference on multimodal interaction (ICMI '13)*. ACM, New York, NY, USA, 287-294.

[C2] Barrett Ens, Ahmad Byagowi, Teng Han, Juan David Hincapié-Ramos, and Pourang Irani. 2016. Combining Ring Input with Hand Tracking for Precise, Natural Interaction with Spatial Analytic Interfaces. In *Proceedings of the 2016 Symposium on Spatial User Interaction (SUI '16)*. ACM, New York, NY, USA, 99-102.
(Best short paper award)

[C1] Teng Han, David Ahlström, Xing-Dong Yang, Ahmad Byagowi, and Pourang Irani. 2016. Exploring Design Factors for Transforming Passive Vibration Signals into Smartwear Interactions. In *Proceedings of the 9th Nordic Conference on Human-Computer Interaction (NordicCHI '16)*. ACM, New York, NY, USA, Article 35, 10 pages.

Journal

[J1] Jessica R. Cauchard, Mike Fraser, Teng Han, and Sriram Subramanian. 2012. Steerable projection: exploring alignment in interactive mobile displays. *Personal Ubiquitous Comput.* 16, 1 (January 2012), 27-37.

Work-In-Progress, Posters

[WIP1] Teng Han, Lanfei Shi, Xiang Xiao, John Canny, and Jingtao Wang. 2014. Designing engaging camera based mobile games for implicit heart rate monitoring. In *CHI '14 Extended Abstracts on Human Factors in Computing Systems (CHI EA '14)*. ACM, New York, NY, USA, 1675-1680.

Patent

[US Patent App. 14/770,800, 2013] Xiang Cao, Yang Liu, Teng Han, Takaaki Shiratori, Nobuyuki Umetani, Yupeng Zhang, Xin Tong, Zhimin Ren. Object Creation Using Body Gestures.

Skillsets

Programming & Platform | C++, C#, Java, Python | Desktop and Android Applications | Arduino etc. | Vision and graphics tools e.g. OpenCV, OpenGL | Machine learning tools e.g. Weka | Signal Processing tools e.g. Matlab.

Study & Data Analysis | T-Test, Anova | Practical with user study, e.g. brainstorming, in-depth interview, questionnaire.

Design | Visualization, UI design and prototype modeling with Processing, Photoshop, CorelDraw, Rhino, Pro/E.

Awards and Honors

2016-17	PhD funding by Honda Research Institute Japan
2014	1st place in the Pitt CS Day (2014) digital media competition
2013	1st place in the Pitt CS Day (2013) digital media competition & runner up in the poster competition
2012 - 13	GSR Fellowship, Intelligent Systems Program, PITT
2008	Third-class academic excellence scholarship, XJTU

2008	Second Prize for the 3rd National College Mechanical Design Competition (provincial), Xi'an, China
2007	Third-class CASC excellence scholarship, XJTU
2006	Second-class academic excellence scholarship, XJTU
2006	Freshmen scholarship, XJTU

Activities and Services

Talks	Jun, 2018 X-Studio, Tsinghua May, 2018 School of Software Engineering, XJTU May, 2018 Department of Industrial Design, XJTU Dec, 2017 Institute of Software, Chinese Academy of Sciences Nov, 2017 Department of Computer Science, University of Tokyo Nov, 2017 Media Interaction Group, AIST
External Reviewer	IJHCS, ACM CHI '14-18, ACM UIST '17,18, ACM MobileHCI '12, 15, ACM ISS '17, IEEE THMS, IEEE VR '18, TEI '16-18, ICMI '18, NordiCHI '18, GI '18.
Co-chair	ChineseCHI'18 Poster Session
Others	Student Volunteer UIST 2017, Québec City, Canada Demo Mobile VCE Annual Research Review 2010, London, UK Assistant UPA CHINA Seminar 2009, Beijing, China Project team leader the 3rd National College Mechanical Design Competition (provincial) 2008, Xi'an, China

References

Dr. Fraser Anderson	Sr. Research Scientist at Autodesk Research, Canada fraser.anderson [at] autodesk.com
Dr. Xing-Dong Yang	Assistant Professor at Dartmouth College, USA xing-dong.yang [at] dartmouth.edu
Dr. Xiang Cao	Founder and CEO of Xiaoxiaoniu Creative, China Former Senior Manager at Lenovo Research, Beijing Former Researcher at Microsoft Research Asia xiangcao [at] acm.org
Dr. Jingtao Wang	Senior Researcher at Google AI Lab, Beijing Former Assistant Professor at University of Pittsburgh, USA jingtaow [at] acm.org
Dr. Sriram Subramanian	Professor at University of Sussex, UK Co-founder of UltraHaptics, UK Former Professor at University of Bristol, UK sriram [at] sussex.ac.uk
Dr. Pourang Irani	Professor at University of Manitoba, Canada Canada Research Chair in Ubiquitous Analytics (Tier 2) pourang.Irani [at] cs.umanitoba.ca