Shan-Yuan Teng

PhD candidate at Computer Science, University of Chicago (advised by Prof. Pedro Lopes)
email: tengshanyuan@uchicago.edu / website: tengshanyuan.info

Research: Enabling haptic experiences *anywhere, anytime*

My research aims to advance a new generation of **haptic devices** (e.g., those that can create the sense of touch, forces, etc.) that exhibit properties that we become used to expect from our mobile phones & wearables, **such as extreme mobility, availability anytime, etc**. To advance haptics into this new territory and grant these novel properties, I engineer custom-made interactive devices that, for instance: allow to feel touch in mixed reality without encumbering our fingerpads, or even haptic devices with virtually infinite battery life. I have published this work as **16 papers (7 as the leading author)** at **top Human-Computer Interaction (HCI) conferences** including **ACM CHI & UIST**, with **2 Best Paper Awards** and **5 Honorable Mention Awards.**

Education

present **PhD candidate (Computer Science) at University of Chicago, USA**
advisor: Prof. Pedro Lopes (University of Chicago)

2018 **MS (Degree Computer Science) at National Taiwan University, Taiwan**
advisor: Prof. Bing-Yu 'Robin' Chen (National Taiwan University)

2016 **BS (Degree Electrical Engineering) at National Taiwan University, Taiwan**

Fellowships

Eckhardt Graduate Scholarship (USD 40k total, 2019-2024), University of Chicago
William Rainey Harper Dissertation Fellowship (2023-2024), University of Chicago

Academic awards

Best Paper Awards: UIST 2021, UIST 2020

Best Demo Awards: UIST 2021 (x2)

Honorable Mention Awards: UIST 2024, UIST 2022, CHI 2021, CHI 2020, UIST 2019

Publications (ACM CHI, UIST* & Science Advances)

* ACM CHI and UIST are the premier venues for technical Human-Computer Interaction (HCI) publications, fully peer-reviewed and at an acceptance rate of 20-25%. These are regarded as top-tier in the field, even when considering HCI journals, and Computer Science is a conference-focused discipline.

[17] Haptic permeability: adding holes to tactile devices improves dexterity.
Shan-Yuan Teng, Aryan Gupta, Pedro Lopes.
CHI 2024 Paper.

[16] Can a smartwatch move your fingers? Compact and practical electrical muscle stimulation in a smartwatch.
Akifumi Takahashi, Yudai Tanaka, Archit Tamhane, Alan Shen, **Shan-Yuan Teng**, Pedro Lopes.
UIST 2024 Paper. 🏅 **UIST Honorable Mention Award**

[15] ThermalRouter: enabling users to design thermally-sound devices.
Alex Mazursky, Borui Li, **Shan-Yuan Teng**, Daria Shifrina, Joyce E. Passananti, Svitlana Midianko, Pedro Lopes.
UIST 2023 Paper.

[14] Prolonging VR haptic experiences by harvesting kinetic energy from the user.
Shan-Yuan Teng, K. D. Wu, Jacqueline Chen, Pedro Lopes.
UIST 2022 Paper. 🏅 **UIST Honorable Mention Award**

[13] Touch&Fold: a foldable haptic actuator for rendering touch in mixed reality.
Shan-Yuan Teng, Pengyu Li, Romain Nith, Joshua Fonseca, Pedro Lopes.
CHI 2021 Paper. 🏅 **CHI Honorable Mention Award**

[12] Altering perceived softness of real rigid objects by restricting fingerpad deformation.
Yujie Tao, **Shan-Yuan Teng**, Pedro Lopes.
UIST 2021 Paper. 🏆 **UIST Best Paper Award** 🏆 **UIST Best Demo Award (jury's award)**

[11] DextrEMS: increasing dexterity in electrical muscle stimulation by combining it with brakes.
Romain Nith, **Shan-Yuan Teng**, Pengyu Li, Yujie Tao, Pedro Lopes.
UIST 2021 Paper. 🏆 **UIST Best Demo Award (people's choice)**

[10] MagnetIO: passive yet interactive soft haptic patches anywhere.
Alex Mazursky, **Shan-Yuan Teng**, Romain Nith, Pedro Lopes.
CHI 2021 Paper.

[9] Stereo-smell via electrical trigeminal stimulation.
Jas Brooks, **Shan-Yuan Teng**, Jingxuan Wen, Romain Nith, Jun Nishida, Pedro Lopes.
CHI 2021 Paper.

[8] Elevate: a walkable pin-array.
Seungwoo Je, Hyunseung Lim, Kongpyung Moon, **Shan-Yuan Teng**, Jas Brooks, Pedro Lopes, Andrea Bianchi.
CHI 2021 Paper.

[7] A stretchable and strain-unperturbed pressure sensor for motion-interference-free tactile monitoring on skins.
Qi Su, Q. Zou, Yang Li, Yuzhen Chen, **Shan-Yuan Teng**, Jane Tunde Kelleher, Romain Nith, Ping Cheng, Nan Li, Wei Liu, Shilei Dai, Youdi Liu, Alex Mazursky, Jie Xu, Lihua Jin, Pedro Lopes, Sihong Wang.
Science Advances, 2021.

[6] HandMorph: a passive exoskeleton that miniaturizes grasp.
Jun Nishida, Soichiro Matsuda, Hiroshi Matsui, **Shan-Yuan Teng**, Ziwei Liu, Kenji Suzuki, Pedro Lopes.
UIST 2020 Paper. 🏆 **UIST Best Paper Award**

[5] Wearable microphone jamming.
Shan-Yuan Teng*, Yuxin Chen*, Huiying Li*, Steven Nagels, Zhijing Li, Pedro Lopes, Ben Y. Zhao, Haitao Zheng. (*equal contribution)
CHI 2020 Paper. 🎖 **CHI Honorable Mention Award**

[4] TilePoP: tile-type pop-up prop for virtual reality.
Shan-Yuan Teng, Cheng-Lung Lin, Chi-huan Chiang, Tzu-Sheng Kuo, Liwei Chan, Da-Yuan Huang, Bing-Yu Chen.
UIST 2019 Paper. 🎖 **UIST Honorable Mention Award** 🎖 **UIST Honorable Mention for Best Talk**

[3] Aarnio: passive kinesthetic force output for foreground interactions on an interactive chair.
Shan-Yuan Teng, Da-Yuan Huang, Chi Wang, Teddy Seyed, Jun Gong, Xing-Dong Yang, Bing-Yu Chen.
CHI 2019 Paper.

[2] PuPoP: pop-up prop on palm for virtual reality.
Shan-Yuan Teng, Tzu-Sheng Kuo, Chi Wang, Chi-huan Chiang, Da-Yuan Huang, Liwei Chan, Bing-Yu Chen.
UIST 2018 Paper.

[1] Outside-In: visualizing out-of-sight regions-of-interest in a 360 video using spatial picture-in-picture previews.
Yung-Ta Lin, Yi-Chi Liao, **Shan-Yuan Teng**, Yi-Ju Chung, Liwei Chan, Bing-Yu Chen.
UIST 2017 Paper.

Patent

[1] Wearable microphone jammer
US Patent (US20230131816A1)

Professional services

Program Committee: ACM UIST 2024, SUI 2024/2023, ISS 2024 Editorial Board, ISWC 2022, Augmented Humans 2024/2023,
Demo Chair: ACM Augmented Humans 2021
Video Preview Chair: ACM UIST 2024
Paper Session Chair: ACM UIST 2024, CHI 2023/2022
Paper Reviewer: ACM CHI, UIST, IMWUT, TEI, DIS, IMX, SIGGRAPH (Technical Paper)
IEEE VR, IEEE Haptics, IEEE ISMAR, IEEE World Haptics
International Journal of Human-Computer Studies
Student Volunteer: ACM UIST 2022/2020, IEEE Haptics 2022

Demonstrations (ACM SIGGRAPH, IEEE Haptics Symposium & World Haptics)

[4] Demonstrating haptic permeability: adding holes to tactile devices improves dexterity.
Shan-Yuan Teng, Aryan Gupta, Pedro Lopes.
IEEE Haptics Symposium 2024.

[3] Demonstrating touch&fold: a foldable haptic actuator for rendering touch in mixed reality.
Shan-Yuan Teng, Pengyu Li, Romain Nith, Joshua Fonseca, Pedro Lopes.
SIGGRAPH 2021 Emerging Technologies, IEEE World Haptics 2023.

[2] Demonstrating magnetIO: passive yet interactive soft haptic patches anywhere.
Alex Mazursky, **Shan-Yuan Teng**, Romain Nith, Pedro Lopes.
SIGGRAPH 2021 Emerging Technologies.

[1] Stylus assistant: designing dynamic constraints for facilitating stylus inputs on portable displays.
Long-Fei Lin, **Shan-Yuan Teng**, Rong-Hao Liang, Bing-Yu Chen.
SIGGRAPH ASIA 2016 Emerging Technologies.

Workshops

[4] Enabling haptic experiences anywhere, anytime.
Shan-Yuan Teng, Pedro Lopes.
IEEE Haptics Symposium 2024: Cross-cutting Challenges

[3] Experience haptics seamlessly across virtual and real worlds.
Shan-Yuan Teng, Pedro Lopes.
IEEE VR 2024: 1st Workshop on Seamless Reality.

[2] Enabling haptic experiences anywhere, anytime.
Shan-Yuan Teng.
SIGGRAPH 2022 Frontiers Workshop.

[1] Building miniature and standalone haptic wearables for integrating into the real world.
Romain Nith, **Shan-Yuan Teng**, Pedro Lopes.
CHI 2022: Sustainable Haptic Design.

Magazine article

[1] XR needs “mixed feelings”: engineering haptic devices that work in both virtual and physical realities.
Shan-Yuan Teng, Pedro Lopes.
ACM XRDS 2022: Crossroads Magazine Article.

Student research projects

[2] Way out: a multi-layer panorama mobile game using around-body interactions.
Shan-Yuan Teng, Mu-Hsuan Chen, Yung-Ta Lin.
CHI 2017 Student Game Competition.

[1] Playing air guitar using electrical muscle stimulation.
Shan-Yuan Teng, Yung-Ta Lin, Yi-Chi Liao.
UIST 2016 Student Innovation Contest.

Invited talks

[7] University of California, Los Angeles (2024) *hosted by Prof. Yang Zhang.*

[6] Cornell Tech (2024) *hosted by Prof. Thijs Roumen.*

[5] University of Toronto (2024) *hosted by Bryan Wang.*

[4] Stanford University (2023) *hosted by Yujie Tao & Matthew Jörke.*

[3] Eindhoven University of Technology (2023) *hosted by Prof. Rong-Hao Liang.*

[2] National Taiwan University (2022) *hosted by Prof. Lung-Pan Cheng.*

[1] Simon Fraser University (2022) *hosted by Prof. Xing-Dong Yang.*

Teaching experience

[8] Mentor “After School Matters: STEM Laboratory Research Internship”
High school internship program hosted by the University of Chicago, 2024.

[7] Teaching assistant “Make Your Own Wearables from Scratch”
Workshop for Chicago Public Schools hosted by the University of Chicago, 2023.

[6] Guest lecture in Human-Computer Interaction and Neuroscience (CMSC 33231-1)
Winter 2022 graduate course at the University of Chicago.

[5] Guest lecture in “Human-Centered Computing Research” (CSE 60427)
Fall 2022 graduate course at University of Notre Dame.

[4] Teaching assistant “Inventing, Engineering and Understanding Interactive Devices” (CMSC 23220)
Spring 2022 course at the University of Chicago.

[3] Teaching assistant “Engineering Interactive Electronics onto Printed Circuit Boards” (CMSC 23230/CMSC 33230)
Spring 2021 course at the University of Chicago.

[2] Teaching assistant “Emerging Interface Technologies” (CMSC 33240/CMSC 23240)
Winter 2020 course at the University of Chicago.

[1] Teaching assistant “Introduction to Human-Computer Interaction” (CMSC 20300)
Fall 2019 course at the University of Chicago.