Shan-Yuan Teng

PhD candidate at University of Chicago (Advised by Prof. Pedro Lopes)
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research: enabling haptic experiences *anywhere, anytime*

My research aims at advancing a new generation of **haptic devices** (e.g., those that can create the sense of touch, forces, etc.) that exhibit properties that we became used to expecting from our mobile phones & wearables, **such as extreme mobility, availability anytime, etc**. To advance haptics into this new territory and grant it 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 papers (7 as the leading author) at top Human-Computer Interaction (HCI) conferences including **ACM CHI & UIST**, with **Best Paper Awards** and **Honorable Mention Awards.**

education

2019 **PhD student (Computer Science) at University of Chicago, USA**
advisor: Pedro Lopes
committee members: Pedro Lopes, Ken Nakagaki, Sean Follmer

2018 **MS (Degree Computer Science) at National Taiwan University, Taiwan**
thesis: Shape-changing Haptic Interfaces for Virtual Reality
advisor: Bing-Yu 'Robin' Chen

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

fellowship

Eckhardt Graduate Scholarship (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 2022, CHI 2021, CHI 2020, UIST 2019

publications

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

[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. *In Proc. UIST 2023.*

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

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

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

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

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

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

[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. *In Proc. UIST 2020*.
🏆 **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) *In Proc. CHI 2020*.
🎖 **CHI Honorable Mention for Best Paper**

[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. *In Proc. UIST 2019*.
🎖 **UIST Honorable Mention for Best Paper** 🎖 **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. *In Proc. CHI 2019*.

[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. *In Proc. UIST 2018*.

[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.
In Proc. UIST 2017.

demonstrations

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

[5] Touch&Fold: a foldable haptic actuator for rendering touch in mixed reality.
Shan-Yuan Teng. *Chicago South Side Science Festival 2023*.

[4] Touch&Fold: a foldable haptic actuator for rendering touch in mixed reality.
Shan-Yuan Teng, Pedro Lopes. *IEEE World Haptics 2023*.

[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.

[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.

workshop

[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.*
🏆 **Best Workshop Paper Award**

[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.*
🏆 **UIST SIC Best Implementation Award**

invited talk

[8] Stanford University (2023) *HCI Lunch organized by Yujie Tao & Matthew Jörke.*

[7] Eindhoven University of Technology (2023) *Hosted by Rong-Hao Liang.*

[6] ACM CHI Doctoral Consortium (2023) *Led by Margaret Burnett, Kasper Hornbæk.*

[5] National Taiwan University (2022) *Hosted by Lung-Pan Cheng.*

[4] University of Notre Dame (2022) *Hosted by Toby Jia-Jun Li.*

[3] Simon Fraser University (2022) *Hosted by Xing-Dong Yang.*

[2] University of California, Los Angeles (2022) *Hosted by Yang Zhang.*

[1] Taiwanese Association of Computer Human Interaction (2021) *Hosted by Liwei Chan.*

teaching assistant

[5] “Make Your Own Wearables From Scratch”
Workshop for Chicago Public Schools hosted by the University of Chicago, 2023.

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

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

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

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

professional services

Program Committee: ACM UIST 2024, ACM SUI 2023/2024
ACM Augmented Humans 2023/2024, ACM ISWC 2022

Demo Chair: ACM Augmented Humans 2021

Paper Session Chair: ACM CHI 2022/2023

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 PC Meeting, IEEE Haptics 2022, ACM UIST 2020