

# 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 at top Human-Computer Interaction (HCI) conferences including **ACM CHI & UIST**, with **Best Paper Awards** and **Honorable Mention Awards**.

## education

- 2023 **PhD candidate (Computer Science) at University of Chicago, USA**  
committee members: Pedro Lopes, Ken Nakagaki, Sean Follmer
- 2019 **PhD student (Computer Science) at University of Chicago, USA**  
Advisor: Pedro Lopes
- 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

- [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

- [3] Experience Haptics Seamlessly Across Virtual and Real Worlds.  
**Shan-Yuan Teng**, Pedro Lopes. *IEEE VR 2024: 1st Workshop on Seamless Reality: AR Technologies for Seamless Perception and Cognition between Cyber and Physical Spaces*
- [2] Enabling Haptic Experiences Anywhere, Anytime.  
**Shan-Yuan Teng**. *SIGGRAPH 2022 Frontiers Workshop: Challenges to Unlock the Metaverse: Haptics, Gaze, Prototyping tools & more!*
- [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 talks

- [9] Stanford University (2023)  
*HCI Lunch organized by Yujie Tao & Matthew Jörke*
- [8] Eindhoven University of Technology (2023)  
*Hosted by Rong-Hao Liang*
- [7] ACM CHI Doctoral Consortium (2023)  
*Led by Margaret Burnett, Kasper Hornbæk*
- [6] National Taiwan University (2022)  
*Hosted by Lung-Pan Cheng*
- [5] University of Notre Dame (2022)  
*Hosted by Toby Jia-Jun Li*
- [4] Simon Fraser University (2022)  
*Hosted by Xing-Dong Yang*
- [3] SIGGRAPH Frontiers Workshop (2022)  
*Co-present with Michael Nebeling, Mark Billinghurst, Pedro Lopes, Yudai Tanaka*
- [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 service

**Program Committee:** 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, 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