Shan-Yuan Teng

PhD student at University of Chicago (Advised by Prof. Pedro Lopes)
tengshanyuan@uchicago.edu / tengshanyuan.info

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 & employment

2019 - present **PhD student (Computer Science) at University of Chicago**
Advisor: Prof. Pedro Lopes

2018 Research Assistant at National Taiwan University

2018 **MS (Degree Computer Science) at National Taiwan University**
Thesis: Shape-changing Haptic Interfaces for Virtual Reality
Advisor: Prof. Bing-Yu Chen

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

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

[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] 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**

[12] 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**

[11] 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**

[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.
Yuxin Chen*, Huiying Li*, **Shan-Yuan Teng***, 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

[4] Demonstration of electrical head actuation: enabling interactive systems to directly manipulate head orientation.
Yudai Tanaka, **Shan-Yuan Teng**, Jun Nishida, Pedro Lopes.
SIGGRAPH 2022 Emerging Technologies

[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

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

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

[4] Simon Fraser University (2022)
Hosted by Prof. Xing-Dong Yang.

[3] Frontiers Workshop: Challenges to Unlock the Metaverse: Haptics, Gaze, Prototyping tools & more!
SIGGRAPH 2022, Vancouver

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

[1] Taiwanese Association of Computer Human Interaction (2021)
Hosted by Prof. Liwei Chan, National Yang Ming Chiao Tung University

teaching assistant

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

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

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

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

reviewing & chairing

Program Committee: ACM ISWC 2022
Demo Chair: ACM Augmented Humans 2021
Paper Session Chair: ACM CHI 2022
Paper Reviewer: ACM CHI, UIST, TEI, IMX; IEEE VR;
International Journal of Human-Computer Studies