Tzu-Sheng Kuo

(650) 391-5684
tskuo@stanford.edu
tskuo.github.io

I create interactive systems that envision or reshape the design of future technology to support human well-being. My research interest in human-computer interaction is at the intersection of digital fabrication, sensing and interaction techniques, and application to digital healthcare, behavior change, and accessibility.

Education

2019 – Jun 2021 **Stanford University**.
Master of Science in Electrical Engineering, GPA: 4.00/4.00

2014 – 2019 **National Taiwan University (NTU)**.
Bachelor of Science in Electrical Engineering, GPA: 4.25/4.30, **Summa Cum Laude (Top 1%)**

Research Experience

Human-Computer Interaction

2019 – Present **Stanford HCI Group**, *Stanford, CA.*
Advisors: Prof. James Landay, Prof. Elizabeth Murnane
- Proposed a design framework for interactive systems that adopt natural elements to support user well-being
- Resulted in one publication in submission to CHI 2021

2017 – 2019 **Interactive Graphics Lab**, *NTU, Taiwan.*
Advisors: Prof. Bing-Yu Chen, Prof. Xing-Dong Yang
- Designed two pneumatic interfaces that emulate physical objects to provide haptic feedback in VR
- Designed a software tool with an autocomplete feature to assist makers in building breadboard circuits
- Resulted in three publications at UIST 2018, UIST 2019, and CHI 2019

Computer Vision & Machine Learning

2017 – 2019 **Vision and Learning Lab**, *NTU, Taiwan.*
Advisor: Prof. Yu-Chiang Frank Wang
- Modified DeepLabv3+ and proposed a loss function for semantic segmentation on satellite imagery
- Resulted in one publication at DeepGlobe Workshop in CVPR 2018

Signal Processing

2016 – 2019 **Multimedia Processing and Communications Lab**, *NTU, Taiwan.*
Advisor: Prof. Homer H. Chen
- Approximated the temporal variation of gaze fixation to estimate the depth map of indoor spaces based on eye vergence
- Resulted in one publication at ICIP 2018

Peer-Reviewed Publications

CHI 2021 (under review) **Tzu-Sheng Kuo**. Kelsey Wang, Sarah L. Billington, James A. Landay, and Elizabeth L. Murnane. 2021. Biophilic Technology: Exploring the Application of Biophilic Principles to the Design of Digital Interfaces. In Submission to *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (CHI '21). ACM, New York, NY, USA. [under review]

UIST 2019 Shan-Yuan Teng, Cheng-Lung Lin, Chi-huan Chiang, **Tzu-Sheng Kuo**, Liwei Chan, Da-Yuan Huang, and Bing-Yu Chen. 2019. TilePoP: Tile-type Pop-up Prop for Virtual Reality. In *Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology* (UIST '19). ACM, New York, NY, USA, 639–649.
Best Paper Honorable Mention [PDF]

CHI 2019 Jo-Yu Lo, Da-Yuan Huang, **Tzu-Sheng Kuo**, Chen-Kuo Sun, Jun Gong, Teddy Seyed, Xing-Dong Yang, and Bing-Yu Chen. 2019. AutoFritz: Autocomplete for Prototyping Virtual Breadboard Circuits. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (CHI '19). ACM, New York, NY, USA, Paper 403, 1–13.
Best Paper Honorable Mention [PDF]

UIST 2018 Shan-Yuan Teng, **Tzu-Sheng Kuo**, Chi Wang, Chi-huan Chiang, Da-Yuan Huang, Liwei Chan, and Bing-Yu Chen. 2018. PuPoP: Pop-up Prop on Palm for Virtual Reality. In *Proceedings of the 31st Annual ACM Symposium on User Interface Software and Technology* (UIST '18). ACM, New York, NY, USA, 5–17. [PDF]

CVPRW 2018 **Tzu-Sheng Kuo***, Keng-Sen Tseng*, Jia-Wei Yan*, Yen-Cheng Liu, and Yu-Chiang Frank Wang. 2018. Deep Aggregation Net for Land Cover Classification. In *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops* (CVPRW '18). Salt Lake City, UT, pp. 252–256. *The authors contributed equally. [PDF]

ICIP 2018 **Tzu-Sheng Kuo**, Kuang-Tsu Shih, Sheng-Lung Chung, and Homer H. Chen. 2018. Depth from Gaze. In *25th IEEE International Conference on Image Processing* (ICIP '18). Athens, pp. 2910–2914. [PDF]

Posters and Demos

UIST 2020 **Tzu-Sheng Kuo** and Eric Rawn. 2020. Let It Rip! Using Velcro for Acoustic Labeling. In *The Adjunct Publication of the 33rd Annual ACM Symposium on User Interface Software and Technology* (UIST '20). [PDF]
(a project mentored by Prof. Michael Bernstein at Stanford)

HCOMP 2020 **Tzu-Sheng Kuo**, McArdle Hankin, Miranda Li, Andrew Ying, and Cathy Wang. 2020. Assessing Political Bias using Crowdsourced Pairwise Comparisons. In *Proceeding of the 8th AAAI Conference on Human Computation and Crowdsourcing* (HCOMP '20). [PDF]
Best Poster Award
(a project mentored by Prof. Maneesh Agrawala at Stanford)

Teaching Experience

2018 Teaching Assistant, Computer Vision: from Recognition to Geometry – *Instructor: Prof. Yu-Chiang Frank Wang*

2018 Teaching Assistant, Deep Learning for Computer Vision – *Instructor: Prof. Yu-Chiang Frank Wang*

2017 Teaching Assistant, Machine Learning – *Instructor: Prof. Hung-Yi Lee*

2017 Teaching Assistant, Signals and Systems – *Instructor: Prof. Lin-Shan Lee*

2016 Teaching Assistant, Electronics I – *Instructor: Prof. Liang-Hung Lu*

Honors and Awards

2020 **Stanford Graduate Student Research Assistantship**

2018 **Phi Tau Phi Scholastic Honor Society Honorary Membership** – Graduated top 1% in NTU EECS Department

2014 – 2018 **Dean's List (5 times)** – Top 5% GPA in each semester

2018 **Chien Shih-Liang Memorial Scholarship** – Given to two students in NTU EECS Department each year

2017 **Taiwan Ministry of Science and Technology Research Grant**

2017 **Irving T. Ho Memorial Scholarship** – Given to one senior student in NTU EE Department each year

University Service

2020 – Present **HCI Qualifying Exam DEI Proposal Group**
In light of the Black Lives Matter movement and anti-East Asian racism due to COVID-19, I co-lead an initiative at Stanford HCI Group to add readings that center on diversity, equity, and inclusion to the Ph.D. qualifying exam.

2020 – Present **Graduate Residence Community Associate**
I work with the Stanford Graduate Life Office and other community associates on promoting wellness and a sense of community in graduate residences with 1200+ students by coordinating social events that center on cultural diversity.

Leadership Experience

2016 – 2018 **Founder, Makerspace of NTUEE**
My team and I founded a makerspace to assist students with their side projects. During COVID-19, our students developed a system that was deployed across the campus to automatically detect and track people's forehead temperatures.

2017 **Chair, MakeNTU Makeathon**
My team and I launched the first nationwide makeathon in Taiwan with 200 participants and 70K USD in sponsorship. I led 60 students and cooperated with the Taipei City Government and 22 companies such as Google and Microsoft.

2016 – 2017 **Director, Academic Department of NTUEE Student Association**
I led a team of 30 students to organize various university events, including research competitions, university fairs, and NTUEE+ alumni mixers for 800+ students in the EE department.

Work Experience

2019 **Mandatory Military Service**, *Taiwan.*

2017 **Software Engineering Intern**, *Cadence Design Systems, Inc., San Jose, CA.*
- My code for Gate-Level and RTL circuit design automation and equivalence checking was checked-in for production.

Technical Skills

Technical Skills Python, C++/C#, Matlab, Tensorflow, PyTorch, React, Javascript, CSS, HTML, Unity, OpenCV, Verilog, etc.

Languages English (fluent), Mandarin (native), Taiwanese (native)