Tzu-Sheng Kuo

Curriculum Vitae

✉ *tzushenk@cs.cmu.edu*
tskuo.github.io

Education

2021 – Present **Carnegie Mellon University**
School of Computer Science
Ph.D. in Human-Computer Interaction
Advisors: Prof. Kenneth Holstein, Prof. Haiyi Zhu

2019 – 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, Summa Cum Laude (Top 1%)
GPA: 4.25/4.30

Research Experience

2021 – Present **CMU CoALA Lab & Social AI Group**
Advisors: Prof. Kenneth Holstein, Prof. Haiyi Zhu
I create *interactive systems* and *design methods* that empower community members to design, build, and evaluate responsible AI in sociotechnical systems. My research addresses real-world problems by working closely with both offline and online communities, including local residents in Pittsburgh and online groups on Wikipedia.

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

2017 – 2019 **NTU Interactive Graphics Lab**
Advisors: Prof. Bing-Yu Chen, Prof. Xing-Dong Yang
Created two haptic devices for VR and an autocomplete feature for hardware prototyping on breadboard circuits.

2017 – 2019 **NTU Vision and Learning Lab**
Advisors: Prof. Yu-Chiang Frank Wang
Modified DeepLabv3+ and proposed a loss function for semantic segmentation on satellite imagery.

2016 – 2019 **NTU Multimedia Processing and Communications Lab**
Advisors: Prof. Homer H. Chen
Approximated the temporal variation of gaze fixation to estimate the depth map of indoor spaces based on eye vergence.

Peer-Reviewed Publications

† indicates co-first authorship and ‡ indicates co-senior authorship – these authors contributed equally

P5 **Understanding Frontline Workers' and Unhoused Individuals' Perspectives on AI Used in Homeless Services**
Tzu-Sheng Kuo†, Hong Shen†, Jisoo Geum, Nev Jones, Jason I. Hong, Haiyi Zhu‡, and Kenneth Holstein‡
Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23)

P4 **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, and Bing-Yu Chen
Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology (UIST '19)
Best Paper Honorable Mention (Top 5%)

P3 **AutoFritz: Autocomplete for Prototyping Virtual Breadboard Circuits**
Jo-Yu Lo, Da-Yuan Huang, **Tzu-Sheng Kuo**, Chen-Kuo Sun, Jun Gong, Teddy Seyed, Xing-Dong Yang, and Bing-Yu Chen
Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)
Best Paper Honorable Mention (Top 5%)

P2 **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, and Bing-Yu Chen
Proceedings of the 31st Annual ACM Symposium on User Interface Software and Technology (UIST '18)

P1 **Depth from Gaze**
Tzu-Sheng Kuo, Kuang-Tsu Shih, Sheng-Lung Chung, and Homer H. Chen
The 25th IEEE International Conference on Image Processing (ICIP '18)

Organized Tutorials and Workshops

O1 **DataPerf: Benchmarking Data for Data-Centric AI**
Newsha Ardalani, Lora Aroyo, Colby Banbury, Greg Diamos, **Tzu-Sheng Kuo**, Peter Mattson, Mark Mazumdar, Praveen Paritosh, William Gaviria Rojas, James Zou, Vijay Janapa Reddi, Carole-Jean Wu, Cody Coleman
Workshop at the 39th International Conference on Machine Learning (ICML '22)

Workshop and Poster Publications

W3 **Let It Rip! Using Velcro for Acoustic Labeling**
Tzu-Sheng Kuo and Eric Rawn
Adjunct Publication of the 33rd Annual ACM Symposium on User Interface Software and Technology (UIST '20 Adjunct)

W2 **Assessing Political Bias using Crowdsourced Pairwise Comparisons**
Tzu-Sheng Kuo, McArdle Hankin, Miranda Li, Andrew Ying, and Cathy Wang
Proceeding of the 8th AAAI Conference on Human Computation and Crowdsourcing (HCOMP '20)
Best Poster Award

W1 **Deep Aggregation Net for Land Cover Classification**
Tzu-Sheng Kuo†, Keng-Sen Tseng†, Jia-Wei Yan†, Yen-Cheng Liu, and Yu-Chiang Frank Wang
IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR '18 Workshop)

Non-Archival Publications

N1 **DataPerf: Benchmarks for Data-Centric AI Development**
Mark Mazumder, Colby Banbury, Xiaozhe Yao, Bojan Karlaš, William Gaviria Rojas, Sudnya Diamos, Greg Diamos, Lynn He, Douwe Kiela, David Jurado, David Kanter, Rafael Mosquera, Juan Ciro, Lora Aroyo, Bilge Acun, Sabri Eyuboglu, Amirata Ghorbani, Emmett Goodman, Tariq Kane, Christine R. Kirkpatrick, **Tzu-Sheng Kuo**, Jonas Mueller, Tristan Thrush, Joaquin Vanschoren, Margaret Warren, Adina Williams, Serena Yeung, Newsha Ardalani, Praveen Paritosh, Ce Zhang, James Zou, Carole-Jean Wu, Cody Coleman, Andrew Ng, Peter Mattson, Vijay Janapa Reddi
arXiv preprint (arXiv '22)

Teaching Experience

T5 **Course Assistant**
Stanford CS 347: Human-Computer Interaction: Foundations and Frontiers (Spring 2021)
Instructor: Prof. Danaë Metaxa, Dr. Parastoo Abtahi
Outstanding Award (Top 5%)

T4 **Course Assistant**
Stanford CS 147: Introduction to Human-Computer Interaction (Winter 2021)
Instructor: Prof. James Landay

T3 **Teaching Assistant**
NTU CommE 5052: Deep Learning for Computer Vision (Spring 2018)
Instructor: Prof. Yu-Chiang Frank Wang

T2 **Teaching Assistant**
NTU EE 5184: Machine Learning (Fall 2017)
Instructor: Prof. Hung-Yi Lee

T1 **Teaching Assistant**
NTU EE 2011: Signals and Systems (Spring 2017)
Instructor: Prof. Lin-Shan Lee

Grants, Honors, and Awards

2023 **CMU Graduate Student Conference Funding (Spring 2023)**
Received a travel grant for conference registration and hotel stays at CHI'23

2022 **2Q22 MLCommons Hero Awards**
Recognized for co-organizing the DataPerf workshop at ICML'22

2022 **ICML Conference Funding**
Received a travel grant for conference registration and hotel stays at ICML'22

2022 **CMU Graduate Student Conference Funding (Spring 2022)**
Received a travel grant for conference registration and hotel stays at CHI'22

2020 **Stanford Graduate Student Research Assistantship**
Paid for being a research assistant during the summer

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

2014 – 2018 **Dean's List** × **5**
Achieved top 5% GPA in five semesters

2018 **Appier Scholarship** × **2**
Received two travel grants for conference registration and hotel stays at ICIP'18 and UIST'18

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

2017 **Taiwan Ministry of Science and Technology Grant Award**
Received a grant for doing research on estimating depth from gaze

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

Academic Service

University Service

2022 – 2023 **Admission Committee**
CMU Research Experience for Undergraduate Program (REU)
The REU program in HCII provides opportunities for undergraduate students to spend ten weeks doing research on HCI. I was a member of the admission committee for two consecutive years and helped review 40+ application materials.

2022 **Student Co-Lead** (w/ Daye Nam)
CMU Graduate Application Support Program (GASP)
GASP is a student-led initiative in the School of Computer Science to offer early feedback to applicants from underrepresented groups. Daye and I matched 40 PhD volunteers with 125 applicants based on their interests and identities.

2021 **Student Host**
CMU HCII Preview Weekend
The preview weekend aims to assist underrepresented students as they apply to HCII's master's and PhD programs. I hosted online sessions where we invited applicants to ask questions and faculty to give lab talks.

2020 – 2021 **Student Co-Lead** (w/ Danaë Metaxa)
Stanford HCI Qualifying Exam, Equity & Justice Update
In light of the Black Lives Matter movement and anti-Asian racism, Danaë and I co-led an initiative at Stanford HCI Group to add readings centered on diversity, equity, and inclusion to the PhD qualifying exam.

2020 – 2021 **Community Associate**
Stanford Escondido Village Graduate Residences (EVGR)
I worked 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 centered on cultural diversity.

2016 – 2017 **Co-Director** (w/ Fan-Keng Sun and Jim Liu)
NTUEE Academic Department of the Student Association
We led a team of 30 students to organize various departmental and university events, including research competitions, university fairs, NTUEE+ alumni mixers, etc. We also founded a makerspace and organized a makeathon described below.

2016 – 2017 **Co-Founder** (w/ Fan-Keng Sun and Jim Liu)
NTUEE Makerspace
We founded a makerspace in the EE department to provide students with prototyping tools for their side projects. For example, during covid-19, our students deployed a system across the campus to detect people's forehead temperatures when entering buildings.

2017 **Co-Chair** (w/ Fan-Keng Sun and Jim Liu)
MakeNTU Makeathon
We led 60 students and organized the first nationwide makeathon in Taiwan, where we invited 200 participants out of 800+ applicants. We collaborated with the Taipei City Government and 22 companies and received 70K USD in sponsorship.

Student Volunteer

2022 ACM CSCW, Virutal: moderate Discord server, provide quick responses in GatherTown

2022 ACM CHI, New Orleans: monitor paper and panel sessions, support town hall meetings, manage registrations

2022 ACM UIST, Virtual: build an online space using Ohyay for social hours, social meetups, and ask-me-anything sessions

Reviewer

2023 The ACM Conference on Designing Interactive Systems (DIS)

2022 The ACM Conference on Human Factors in Computing Systems (CHI)

2022 The ACM Symposium on User Interface Software and Technology (UIST)

2022 The ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW)

2022 The International Conference on Machine Learning (ICML)

2022 The ACM Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH)

Invited Talks

Nov 2022 **Invited Speaker & Panelist**
User Experience Association, CMU, Pittsburgh, PA
The foundations and frontiers of human-AI interaction

Selected Press

Forbes. There is more to trust than explainability. Nov 30, 2022.