

Tzu-Sheng Kuo

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📁 [tskuo.github.io](https://github.com/tskuo)

Curriculum Vitae

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

Honors and Awards

- 2024 MLCommons ML and Systems Rising Stars
- 2023 Best Paper Award, ACM CHI
- 2023 CASMI PhD Fellowship
- 2023 Taiwanese GSSA Fellowship
- 2022 MLCommons Hero Award
- 2021 Stanford Course Assistant Outstanding Award
- 2019 Best Paper Honorable Mention Award, ACM UIST
- 2019 Best Paper Honorable Mention Award, ACM CHI
- 2018 Phi Tau Phi Scholastic Honor Society Honorary Membership
- 2018 Chien Shih-Liang Memorial Scholarship
- 2017 Irving T. Ho Memorial Scholarship

Refereed Conference & Journal Publications

† indicates co-first authorship and ‡ indicates co-senior authorship

- P9 **DMLR: Data-centric Machine Learning Research – Past, Present and Future**
Luis Oala, Manil Maskey, Lilith Bat-Leah, Alicia Parrish, Nezihe Merve Gürel, **Tzu-Sheng Kuo**, Yang Liu, Rotem Dror, Danilo Brajovic, Xiaozhe Yao, Max Bartolo, William A Gaviria Rojas, Ryan Hileman, Rainier Aliment, Michael W. Mahoney, Meg Risdal, Matthew Lease, Wojciech Samek, Debojyoti Dutta, Curtis G Northcutt, Cody Coleman, Braden Hancock, Bernard Koch, Girmaw Abebe Tadesse, Bojan Karlaš, Ahmed Alaa, Adji Bousso Dieng, Natasha Noy, Vijay Janapa Reddi, James Zou, Praveen Paritosh, Mihaela van der Schaar, Kurt Bollacker, Lora Aroyo, Ce Zhang, Joaquin Vanschoren, Isabelle Guyon, Peter Mattson
Journal of Data-centric Machine Learning Research (DMLR '24)
- P8 **AI Failure Cards: Understanding and Supporting Grassroots Efforts to Mitigate AI Failures in Homeless Services**
Ningjing Tang, Jiayin Zhi, **Tzu-Sheng Kuo**, Calla Kainaroi, Jeremy J. Northup, Kenneth Holstein, Haiyi Zhu, Hoda Heidari, Hong Shen
Proceedings of the 2024 ACM Conference on Fairness, Accountability, and Transparency (FAccT '24)
- P7 **Wikibench: Community-Driven Data Curation for AI Evaluation on Wikipedia**
Tzu-Sheng Kuo, Aaron Halfaker, Zirui Cheng, Jiwoo Kim, Meng-Hsin Wu, Tongshuang Wu, Kenneth Holstein[†], Haiyi Zhu[‡]
Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI '24)

P6 **DataPerf: Benchmarks for Data-Centric AI Development**

Mark Mazumder, Colby Banbury, Xiaozhe Yao, Bojan Karlaš, William Gaviria Rojas, Sudnya Damos, Greg Damos, Lynn He, Alicia Parrish, Hannah Rose Kirk, Jessica Quaye, Charvi Rastogi, Douwe Kiela, David Jurado, David Kanter, Rafael Mosquera, Juan Ciro, Lora Aroyo, Bilge Acun, Lingjiao Chen, Mehul Smriti Raje, Max Bartolo, Sabri Eyuboglu, Amirata Ghorbani, Emmett Goodman, Oana Inel, 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
Advances in Neural Information Processing Systems (NeurIPS '23)

- 🏆 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)
Best Paper Award (Top 1%)

- 👤 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 Workshops

- O2 **DMLR Workshop: Data-centric Machine Learning Research**
Ce Zhang, Praveen Paritosh, Newsha Ardalani, Nezihe Merve Gürel, William Gaviria Rojas, Yang Liu, Rotem Dror, Manil Maskey, Lilith Bat-Leah, **Tzu-Sheng Kuo**, Luis Oala, Max Bartolo, Ludwig Schmidt, Alicia Parrish, Daniel Kondermann, Najoung Kim
Workshop at the 40th International Conference on Machine Learning (ICML '23)
- O1 **DataPerf: Benchmarking Data for Data-Centric AI**
Newsha Ardalani, Lora Aroyo, Colby Banbury, Greg Damos, **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

- W4 **Measuring Adversarial Datasets**
Yuanchen Bai, Raoyi Huang, Vijay Viswanathan, **Tzu-Sheng Kuo**, Tongshuang Wu
Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics (AACL '23 ART of Safety Workshop)
- W3 **Let It Rip! Using Velcro for Acoustic Labeling**
Tzu-Sheng Kuo and Eric Rawn
Adjunct Proceedings 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 (CVPR '18 DeepGlobe Workshop)

Non-Archival Publications

- N1 **LLMs as Workers in Human-Computational Algorithms? Replicating Crowdsourcing Pipelines with LLMs**
Tongshuang Wu, Haiyi Zhu, Maya Albayrak, Alexis Axon, Amanda Bertsch, Wenxing Deng, Ziqi Ding, Bill Guo, Sireesh Gururaja, **Tzu-Sheng Kuo**, Jenny T. Liang, Ryan Liu, Ihita Mandal, Jeremiah Milbauer, Xiaolin Ni, Namrata Padmanabhan, Subhashini Ramkumar, Alexis Sudjianto, Jordan Taylor, Ying-Jui Tseng, Patricia Vaidos, Zhijin Wu, Wei Wu, Chenyang Yang
arXiv preprint (arXiv '23)

Grants

- 2024 – 2025 **Community-Driven AI Evaluation: Empowering Communities to Drive the Evaluation of AI Systems that Impact Them**
Co-PI with Kenneth Holstein, Haiyi Zhu, Tongshuang Wu
Block Center for Technology and Society
\$40,000

Teaching Assistantship

- Spring 2024 CMU 05391: Designing Human Centered Software
Instructor: Prof. Chris Harrison
- Spring 2021 Stanford CS347: Human-Computer Interaction: Foundations and Frontiers
Instructors: Prof. Danaë Metaxa, Prof. Parastoo Abtahi
Outstanding Award
- Winter 2021 Stanford CS147: Introduction to Human-Computer Interaction
Instructor: Prof. James Landay
- Spring 2018 NTU CommE5052: Deep Learning for Computer Vision
Instructor: Prof. Yu-Chiang Frank Wang
- Fall 2017 NTU EE5184: Machine Learning
Instructor: Prof. Hung-Yi Lee
- Spring 2017 NTU EE2011: Signals and Systems
Instructor: Prof. Lin-Shan Lee

Mentoring Students

- 2023 **Zirui Cheng**, Tsinghua University
- 2023 **Jiwoo Kim**, Columbia University
- 2023 **Meng-Hsin Wu**, Carnegie Mellon University
- 2022 **Jisoo Geum**, Carnegie Mellon University

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 – 2023 **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 PhD student volunteers with 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.

Conference Organizing Committee

- 2025 ACM CHI, Student Volunteer Co-Chair (w/ Mikołaj Woźniak, Shohei Mori, Nuwan Janaka)

Associate Chair

- 2023 ACM CSCW, Poster Track
2022 ICML, DataPerf Workshop

Reviewer

- 2024 ACM FAccT
2023 – 2024 ACM CHI
2022 – 2024 ACM CSCW
2022 – 2024 ACM UIST



- 2023 ACM DIS – **Special Recognitions Award**

- 2023 TAICHI
2023 ICML AI & HCI Workshop
2023 ICML Data-Centric ML Research Workshop
2022 ACM SIGGRAPH

Student Volunteer

- 2023 ACM DIS, Pittsburgh: manage and coordinate all student volunteer work as a day captain
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
2021 ACM UIST, Virtual: build an online space using Ohay for social hours, social meetups, and ask-me-anything sessions

Invited Talks

- 2023 **Community-Driven AI Design and Evaluation**
National Institute of Standards and Technology (NIST), CMU RAI & NIST Convening
- 2023 **Understanding Frontline Workers' and Unhoused Individuals' Perspectives on AI Used in Homeless Services**
ACM CSCW, Purposeful AI Special Interest Group (SIG)

2022 **Foundations and Frontiers of Human-AI Interaction**
CMU, User Experience Association

Selected Press

CMU. Wikibench allows Wikipedians to improve AI evaluation datasets May 16, 2024

Northwestern CASMI. Research explores how a Wikipedia-like approach could improve AI evaluation. Apr 22, 2024

Northwestern CASMI. Designing AI tools for underserved populations from the ground up. Oct 31, 2023

The Guardian. AI can be a force for good or ill in society, so everyone must shape it, not just the 'tech guys.' Aug 11, 2023

CMU. CMU researchers use comics to explain AI-supported public housing system to people who need it most. May 8, 2023

Mad in America. How AI-based programs are harming homeless populations. Apr 20, 2023

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

Prior Research Experiences

- 2019 – 2021 **Stanford HCI Group**
Advisors: Prof. James Landay, Prof. Elizabeth Murnane
- 2017 – 2019 **NTU Interactive Graphics Lab**
Advisors: Prof. Bing-Yu Chen, Prof. Xing-Dong Yang
- 2017 – 2019 **NTU Vision and Learning Lab**
Advisor: Prof. Yu-Chiang Frank Wang
- 2016 – 2019 **NTU Multimedia Processing and Communications Lab**
Advisor: Prof. Homer H. Chen