Tzu-Sheng Kuo

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

Research Experience

2021 - Present CMU CoALA Lab & Social Al Group

Advisors: Prof. Kenneth Holstein, Prof. Haiyi Zhu

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

Advisors: Prof. Yu-Chiang Frank Wang

2016 - 2019 NTU Multimedia Processing and Communications Lab

Advisors: Prof. Homer H. Chen

Peer-Reviewed Publications

 $\dagger \ indicates \ co-first \ authorship \ and \ \ddagger \ indicates \ co-senior \ authorship \ - \ these \ authors \ contributed \ equally$

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[‡], and Haiyi Zhu[‡]

Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI '24)

P6 DataPerf: Benchmarks for Data-Centric Al Development

Mark Mazumder, Colby Banbury, Xiaozhe Yao, Bojan Karlaš, William Gaviria Rojas, Sudnya Diamos, Greg Diamos, 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 Al 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%)

Q 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

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 Al

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

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)

Y 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

N2 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 *arXiv preprint (arXiv '23)*

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)

Teaching Experience

T6 Teaching Assistant

CMU 05391: Designing Human Centered Software (Spring 2024)

Instructor: Prof. Chris Harrison

Q T5 Course Assistant

Stanford CS 347: Human-Computer Interaction: Foundations and Frontiers (Spring 2021)

Instructors: Prof. Danaë Metaxa, Prof. 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 CASMI PhD Fellow

Awarded by the Center for Advancing Safety of Machine Intelligence at Northwestern University

2023 Taiwanese Government Scholarship to Study Abroad (GSSA)

Received a two-year fellowship for PhD studies.

2023 ICML Conference Funding

Received a travel grant for conference registration and hotel stays at ICML'23

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

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 \times 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 - 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)

Associate Chair

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

Reviewer

- 2024 ACM FAccT
- 2023 2024 ACM CHI
 - 2023 ACM DIS Special Recognitions Award
- 2022 2023 ACM UIST

2022 - 2023 ACM CSCW

- 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 Ohyay for social hours, social meetups, and ask-me-anything sessions

Invited Talks

Oct 2023 Invited Speaker

Special Interest Group (SIG) at CSCW 2023: Purposeful AI, Minneapolis, MN, USA

Understanding Frontline Workers' and Unhoused Individuals' Perspectives on AI Used in Homeless Services (P5)

Jul 2023 Lightning Talk

CMU RAI & NIST Convening: Operationalizing the NIST Risk Management Framework, Pittsburgh, PA, USA Community-Driven Al Evaluation (P5)

Apr 2023 Oral Presentation

ACM CHI Conference, Hamburg, Germany

Understanding Frontline Workers' and Unhoused Individuals' Perspectives on AI Used in Homeless Services (P5)

Nov 2022 Invited Speaker & Panelist

CMU User Experience Association, Pittsburgh, PA, USA

The Foundations and Frontiers of Human-Al Interaction

Oct 2020 **Poster Presentation**

ACM UIST Symposium, Virtual

Let It Rip! Using Velcro for Acoustic Labeling (W3)

Oct 2018 Live Demo

ACM UIST Symposium, Berlin, Germany

PuPoP: Pop-up Prop on Palm for Virtual Reality (P2)

Oct 2018 **Poster Presentation**

IEEE ICIP Conference, Athens, Greece

Depth from Gaze (P1)

Jun 2018 Poster Presentation

IEEE/CVF CVPR DeepGlobe Workshop, Salt Lake City, UT, USA

Deep Aggregation Net for Land Cover Classification (W1)

Selected Press

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

The Guardian. Al 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 Al-supported public housing system to people who need it most. May 8, 2023

 $\textbf{Mad in America}. \ \ \text{How Al-based programs are harming homeless populations}. \ \ \text{Apr 20, 2023}$

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