Han Zhang

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RESEARCH FOCUS

"Technology should be for all humans."

My research seeks to enhance human-centered research by better capturing and understanding human behaviors, building responsible behavioral models, and designing user-centered AI systems. Leveraging methods from human-computer interaction, machine learning, data science, and psychology, I strive to improve human well-being and provide meaningful support, all while prioritizing human needs and societal responsibility.

EDUCATION

University of Washington, USA   2020 - 2025 (expected)
Ph.D. candidate, Computer Science & Engineering
Advisors: Jennifer Mankoff, Anind K. Dey

University of Washington, USA   2020 - 2022
M.S., Computer Science & Engineering
Advisors: Jennifer Mankoff, Anind K. Dey

Nanyang Technological University, Singapore   2016 - 2018
Exchange graduate student, School of Physical and Mathematical Sciences
Advisor: Chaoping Xing

Northwest University, China   2013 - 2018
Ph.D., School of Mathematics
Advisor: Wenpeng Zhang
Thesis: Estimation of Exponential Sums in Number Theory and Applications to Coding Theory

Northwest University, China   2009 - 2013
B.S., Major in Information and Computer Science, School of Mathematics

RESEARCH EXPERIENCE

Apple Inc., Research Intern   Mar. - Sept. 2024
with Abdelkareem Bedri, Gierad Laput, Colin Lea
Designed, built, and evaluated a sign language generation prototype system for Deaf and Hard-of-Hearing individuals, leveraging large language models (LLMs).

University of Washington, Research Assistant   Sept. 2020 - Present
advised by Jennifer Mankoff, Anind K. Dey
Co-led a six-year longitudinal study on college student academic life and well-being. Conducted mixed-methods research on educational concerns for students with disabilities during COVID-19, developed human-centered predictive models for academic performance, and examined responsible sensing technologies for well-being.

University of Washington, Visiting Researcher   Feb. 2019 - Aug. 2020
mentored by Jennifer Mankoff, Paula Nurius
Qualitative studied the growing levels of mental health concerns among college students before COVID-19, and the impact of COVID-19 on students with disabilities and mental health concerns.

Nanyang Technological University, Research Assistant   Jan. 2016 - Jan. 2018
mentored by Chaoping Xing
Research on coding theory: developed a connection between the Berlekamp-Massey and Euclidean algorithms to create a list decoding method for Reed-Solomon codes, and extended binary linear cyclic code concepts and bounds to q-ary linear cyclic codes.

SELECTED HONORS, AWARDS & RECOGNITIONS

Distinguished Paper Award (top 1%), Processings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT 2023)   2023

CS Research Mentorship Program, Google, mentored by *Sally Goldman*   2022

Distinguished Research Graduate (top 5%)   2018

First-class Scholarship   2017, 2015, 2014

National Scholarship (top 2%)   2016

PUBLICATIONS

Peer-reviewed Conference and Journal Papers

J23.   Katie M. Spink, **Han Zhang**, Paula S. Nurius, Katherine Seldin, Yiyi Ren, Kate T. Foster. **The Effects of Proximal and Distal Forms of Stress on College Student Mental Health and Affective Well-being**. *Accepted to Journal of American College Health (JACH 2025).*

J22.   **Han Zhang**, Yiyi Ren, Paula S. Nurius, Jennifer Mankoff, Anind K. Dey. **Towards Human-Centered Early Prediction Models for Academic Performance in Real-World Contexts**. *Accepted to Computer-Supported Cooperative Work & Social Computing (CSCW 2025).*

C21.   **Han Zhang**, Rotem Shalev-Arkushin, Vasileios Baltatzis, Connor Gillis, Gierad Laput, Raja Kushalnagar, Lorna Quandt, Leah Findlater, Abdelkareem Bedri, and Colin Lea. **Towards AI-driven Sign Language Generation with Non-manual Markers**. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2025).* 📄

C20.   Xuhai Xu, Xin Liu, **Han Zhang**, Weichen Wang, Subigya Nepal, Yasaman S. Sefidgar, Woosuk Seo, Kevin S. Kuehn, Jeremy F. Huckins, Margaret E. Morris, Paula S. Nurius, Eve A. Riskin, Shwetak Patel, Tim Althoff, Andrew T. Campbell, Anind K. Dey, Jennifer Mankoff. **GLOBEM: Cross-Dataset Generalization of Longitudinal Human Behavior Modeling**. *GetMobile: Mobile Computing and Communications (GetMobile 2024).* 📄

C19.   Xia Su, **Han Zhang**, Kaiming Cheng, Jaewook Lee, Qiaochu Liu, Wyatt Olson, Jon E. Froehlich. **RASSAR: Room Accessibility and Safety Scanning in Augmented Reality**. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2024).* 📄 🐙 ▶️

J18.   Xuhai Xu, Xin Liu, **Han Zhang**, Weichen Wang, Subigya Nepal, Yasaman S. Sefidgar, Woosuk Seo, Kevin S. Kuehn, Jeremy F. Huckins, Margaret E. Morris, Paula S. Nurius, Eve A. Riskin, Shwetak Patel, Tim Althoff, Andrew T. Campbell, Anind K. Dey, Jennifer Mankoff. **GLOBEM: Cross-Dataset Generalization of Longitudinal Human Behavior Modeling**. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT 2023).* 🏆 **Distinguished Paper Award (top 1%)**. 📄 🌐 🐙

J17. Paula S. Nurius, Yasaman S. Sefidgar, Kevin S. Kuehn, Jake Jung, **Han Zhang**, Olivia Figueira, Eve A. Riskin, Anind K. Dey, Jennifer Mankoff. **Distress Among Undergraduates: Marginality, Stressors and Resilience Resources**. *Journal of American College Health (JACH 2023).* [PDF]

C16. Xuhai Xu, **Han Zhang**, Yasaman S. Sefidgar, Yiyi Ren, Xin Liu, Woosuk Seo, Jennifer Brown, Kevin S. Kuehn, Mike Merrill, Paula S. Nurius, Shwetak Patel, Tim Althoff, Margaret E. Morris, Eve A. Riskin, Jennifer Mankoff, Anind K. Dey. **GLOBEM dataset: multi-year datasets for longitudinal human behavior modeling generalization**. *Neural Information Processing Systems (NeurIPS 2022).* [PDF]

J15. **Han Zhang**, Margaret Morris, Paula Nurius, Kelly Mack, Jennifer Brown, Kevin S. Kuehn, Yasaman S. Sefidgar, Xuhai Xu, Eve A. Riskin, Anind K. Dey, Jennifer Mankoff. **Impact of Online Learning in the Context of COVID-19 on Undergraduates with Disabilities and Mental Health Concerns**. *ACM Transactions on Accessible Computing (TACCESS 2022).* [PDF] (Earlier version [PDF])

J14. Margaret E. Morris, Kevin S. Kuehn, Jennifer Brown, Paula S. Nurius, **Han Zhang**, Yasaman S. Sefidgar, Xuhai Xu, Eve A. Riskin, Anind K. Dey, Sunny Consolvo, Jennifer Mankoff. **College from home during COVID-19: A mixed-methods study of heterogeneous experiences**. *(PloS One 2021).* [PDF]

C13. **Han Zhang**. **Improvement on minimum distance of symbol-pair codes**. *Cryptography and Coding: 16th IMA International Conference (IMACC 2017).* [PDF]

J12. **Han Zhang**, Wenpeng Zhang. **The fourth power mean of two-term exponential sums and its application**. *Math Report (2017).* [PDF]

J11. Xiaoying Wang, **Han Zhang**. **A note on the Diophantine equation** $px^2 + q^{2n} = y^p$. *Bulletin mathématique de la Société des Sciences Mathématiques de Roumanie (2017).* [PDF]

J10. **Han Zhang**, Wenpeng Zhang. **Some new sums related to D.H. Lehmer problem**. *Czechoslovak Mathematical Journal (2015).* [PDF]

J9. Tingting Wang, **Han Zhang**. **Some identities involving the derivative of the first kind Chebyshev polynomials**. *Mathematical Problems in Engineering (2015).* [PDF]

J8. **Han Zhang**, Wenpeng Zhang. **On the Fourth Power Mean of the Two-Term Exponential Sums**. *The Scientific World Journal (2014).* [PDF]

J7. **Han Zhang**, Wenpeng Zhang. **On the identity involving certain Hardy sums and Kloosterman sums**. *Journal of Inequalities and Applications (2014).* [PDF]

J6. Xiaowei Pan, **Han Zhang**. **An hybrid mean value of quadratic Guass sums and a sum analogous to Kloosterman sums**. *Journal of Inequalities and Applications (2014).* [PDF]

J5. Guohui Chen, **Han Zhang**. **On the Generalization of Lehmer Problem and High-Dimension Kloosterman Sums**. *The Scientific World Journal (2014).* [PDF]

J4. **Han Zhang**, Zhengang Wu. **On the reciprocal sums of the generalized Fibonacci sequences**. *Advances in Difference Equations (2013).* [PDF]

J3. Zhengang Wu, **Han Zhang**. **On the reciprocal sums of higher-order sequences**. *Advances in Difference Equations (2013).* [PDF]

J2. Jianghua Li, **Han Zhang**. **Some identities related to Dedekind sums and the second-order linear recurrence polynomials**. *Advances in Difference Equations (2013).* [PDF]

J1. Zhengang Wu, Jianghua Li, **Han Zhang**. **On the Smarandache-Pascal derived sequences of generalized Tribonacci numbers**. *Advances in Difference Equations (2013).* [PDF]

Under Review, Pre-prints, and Others

P2. **Han Zhang**, Vedant Das Swain, Leijie Wang, Nan Gao, Yilun Sheng, Xuhai Xu, Flora D. Salim, Koustuv Saha, Anind K. Dey, Jennifer Mankoff. **Illuminating the Unseen: A Framework for Designing and Mitigating Context-induced Harms in Behavioral Sensing**. [PDF]

U1. Kevin M. King, Megan Schultz, Todd Obilor, Diego Moss, Jonas Dora, **Han Zhang**, Yiyi Ren, Connor McCabe, Christine Lee, Yuichi Shoda, Jennifer Mankoof, Caspar Van Lissa, Anind K. Dey. **The criterion validity of smarphone sensor data for predicting AUDIT scores**. *Pre-registered with OSF.* 🔗

Workshop Papers, Posters, and Demos

W3 **Han Zhang**, Leijie Wang, Yilun Sheng, Xuhai Xu, Jennifer Mankoff, Anind K. Dey. **A Framework for Designing Fair Ubiquitous Computing Systems**. *Adjunct Proceedings of the 2023 ACM International Joint Conference on Pervasive and Ubiquitous Computing & the 2023 ACM International Symposium on Wearable Computing (Workshop at Ubicomp & IMWUT 2023).* [PDF]

W2 Xia Su, Kaiming Cheng, **Han Zhang**, Jaewook Lee, Wyatt Olson, Jon E. Froehlich. **A Demonstration of RASSAR: Room Accessibility and Safety Scanning in Augmented Reality**. *ACM SIGACCESS Conference on Computers and Accessibility (Poster & Demo at ASSETS 2023).* [PDF]

W1 Xia Su, Kaiming Cheng, **Han Zhang**, Jaewook Lee, Jon E. Froehlich. **Towards Semi-automatic Detection and Localization of Indoor Accessibility Issues using Mobile Depth Scanning and Computer Vision**. *ACM SIGACCESS Conference on Computers and Accessibility. (Workshop on at ASSETS 2022).* [PDF]

Press and Invited Talks

UW News, Press, Researchers aim to improve accessibility with augmented reality. 🔗   2023
UW Medical Data Science Symposium, Speaker, Overview of the GLOBEM Dataset.   2023
UW ADAI Lunch, Speaker, Detecting and predicting trauma-driven substance use.   2022
UW News, Press, From 'distress' to 'unscathed' — mental health of UW students during Spring 2020. 🔗   2021

SERVICE

Paper Reviewing	**Conferences: CHI** (2023, 2024, 2025), **IMWUT** (2022, 2023), **UIST** (2024), **NeurIPS** (2022) **Journal: Journal on Responsible Computing** (2025), **Frontiers in Digital Health** (2023)
Co-organizer	**Workshops**: Ubicomp Workshop on Mental Health: Sensing & Intervention (2023, 2024), FairComp: 2nd International Workshop on Fairness and Robustness in Machine Learning for Ubiquitous Computing (2024)

TEACHING EXPERIENCE

Teaching Assistant – CSE442 Data Visualization (Undergraduate-level)   Win 22, Spr 25
University of Washington, by *Jeffrey Heer*, *Leilani Battle*

Teaching Assistant – CSE512 Data Visualization (Graduate-level)   Spr 23
University of Washington, by *Jeffrey Heer*

MENTORING

Graduate Students

Varun Narayanswamy, UW, Master's Student   2024

Interview design and execution to understand college students' needs for supportive tools.

Andrew Jeon, UW, Master's Student   2023

Research on fairness issues in behavioral sensing technology.

Undergraduate Students

Saidhruv Chittamuri, UW   2023

Develop explainable predictive models for student performance using deep learning.

Meitong Li, UW   2023

Develop explainable predictive models for student performance using deep learning.

Christina Zhang, UW   2022-2023

Design supportive tools for college student well-being.

Ahmed Nahas, Abdulelah Allahyani, Abdullah Aldossary, KAUST   2022

Use passive sensing data to understand people's behaviors. Build ML models to predict stress and sleeps.

Simona Liao, UW   2020-2021

Analyze self-reported EMA data to explore student well-being.

Jaime Jin, UW   2020-2021

Analyze self-reported survey data to explore student well-being.

LANGUAGES, TECHNICAL SKILLS & COURSES

Languages	English, Chinese (Mandarin) - Native or bilingual proficiency
Programming	Python, R, HTML/Javascript/CSS, Swift, LaTeX, etc.
Software & Tools	PyTorch, Tensorflow, Git, Sklearn, Vega-Lite, D3, Spark, Keras
Highlighted Courses	ML for Big Data, Deep Learning, Natural Language Processing, Advanced in HCI, Data Visualization, Design and Analysis of Algorithms, Research Designs