

Minzhu Zhao

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Research Statement

I am interested in designing and building AI tools that support human discovery and self-reflection in an era where scientific and societal problems are increasingly mediated by large-scale multimodal data. Across my research, I have applied machine learning, natural language processing, and image analysis to physiological sensing data, social media traces, and embedded devices to support exploration across interdisciplinary domains. My long-term research interest is to understand, build, and evaluate AI systems that act as collaborative partners, which are able to augment human capabilities in interpretable and explainable ways.

Education

University of Minnesota – Twin Cities

Aug 2024 – Present

Ph.D. student in Computer Science

Research Interests: Human-Computer Interaction, Health & Well-Being, ML for healthcare, Online harmful content

University College London (UCL)

Sep 2022 – Sep 2023

Master of Science in Knowledge, Information and Data Science

Hong Kong Baptist University (HKBU)

Sep 2018 – Jul 2022

Bachelor of Communication (Data and Media Communication Concentration) - First Class Honor

Minor: Statistics & Computer Science

Research Experience

University of Minnesota – GroupLens Research Lab

Aug 2024 – Present

Graduate Researcher | Advisor: Prof. Lana Yarosh

- Led interdisciplinary analysis of addiction-related fMRI datasets, integrating pre-processing, connectivity modeling, feature extraction, unsupervised clustering, and causal machine learning to identify brain network biomarkers and individual treatment response heterogeneity, collaborating with medical researchers on study design and interpretation
- Led the development of embodied overdose-detection prototypes integrating mmWave radar sensing, thermal imaging, and physiological signal modeling on Raspberry Pi platforms, supporting real-time detection of respiratory depression for overdose interventions and exploring embodied interaction design for harm-reduction contexts
- Initiated and led a community-engaged study on the social acceptability of overdose-detection technologies, designing IRB protocols, conducting street surveys, and building partnerships with harm-reduction organizations and community stakeholders; manuscript under preparation
- Collaborated on projects including news debiasing through topic-locality calibration and LLM-driven personalized preview generation, and examining teenagers' perspectives on AI in friendships, working at the intersection of HCI and applied ML

City University of Hong Kong - Digital Engagement and Empowerment Research Lab (DEER)

Jul 2023 – Aug 2024

Graduate Researcher | Advisors: Prof. Zhicong Lu & Prof. Yaxing Yao

- Collaborated on a mixed-methods study examining presentation frames of Intangible Cultural Heritage videos on Chinese TikTok through qualitative video analysis using the Critical Heritage Studies framework, contributing to taxonomy development and sentiment modeling for viewer engagement analysis [C.1]
- Conducted and analyzed 15 semi-structured interviews with stay-at-home mothers on social media use and identity transitions, co-authoring a journal paper [J.2]

University College London - Mapping Popularised Misogyny and Incel Culture on TikTok

Jan 2023 – Jan 2024

Graduate Researcher | Advisor: Prof. Kaitlyn Regehr | Funded by the British Arts and Humanities Research Council (AHRC)

- Co-designed and led the implementation of an archetype-based modeling methodology for online fieldwork and algorithm auditing to examine how TikTok's recommender system mediates user exposure to misogynistic and Incel content, employing multimodal video analysis [R.1, J.3]
- Collected and analyzed TikTok data using selected hashtags for a mixed-methods study, integrating multimodal qualitative coding with NLP techniques to investigate the prevalence, framing and sentiment of sexism on the platform

Hong Kong Baptist University - Cantonese Misinformation Detection Project

Dec 2020 – Jun 2022

Undergraduate Researcher | Advisors: Prof. Céline Yunya Song & Prof. Liang Lan

- Co-designed and developed a hybrid AI-assisted annotation system that automatically identified worth-to-check news and guided fact-checkers through structured reasoning steps, improving labeling efficiency and consistency; validated the system in a real-world case study; Led the development of a 2,558-instance human-annotated misinformation dataset [EA.3]
- Benchmarked eight misinformation-detection models, from traditional ML classifiers to deep neural networks, comparing TF-IDF, topic, and content features to identify effective cross-lingual detection strategies [EA.1, EA.2]

Hong Kong Baptist University - HCI-RecSys Group

Dec 2021 – Jun 2022

Undergraduate Researcher | Advisor: Prof. Yucheng Jin | Funded by HKBU Service learning mini-grant

- Led a mixed-methods study examining the impact of a service-learning HCI course where students co-designed mobile apps with older adults in the community
- Applied quantitative survey analysis and qualitative thematic coding of 23 reflection journals and interviews to assess students' learning outcomes and empathy development [J.1]

Publications

Journal Articles

- [J.3] Kaitlyn Regehr, Caitlin Shaughnessy, [Minzhu Zhao](#), Idil Cambazoglu, Alfie Turner, Nicola Shaughnessy. "Normalising Toxicity: The role of recommender algorithms for young people's mental health and social wellbeing" (Frontiers in Psychology, 2025)
- [J.2] Xinyi Zhang, [Minzhu Zhao](#), Yaxing Yao, Zhicong Lu. "How Social Media Plays A Role in Stay-At-Home-Moms' Transition: A Case Study in China" (In Proceedings of the ACM on Human-Computer Interaction, CSCW' 25)
- [J.1] [Minzhu Zhao](#), Yucheng Jin. "Service-Learning with Intergenerational and Cross-Cultural Social Interactions: A Study of University Students in Hong Kong." (Journal of Experiential Education, 2024).

Conference Papers

- [C.1] Huanchen Wang, [Minzhu Zhao](#), Wanyang Hu, Yuxin Ma, Zhicong Lu. "Critical heritage studies as a lens to understand short video sharing of intangible cultural heritage on douyin" (ACM CHI Conference on Human Factors in Computing Systems, CHI' 24)

Poster and Extended Abstract

- [EA.4] Zhanming Chen, Minghe Lu, [Minzhu Zhao](#), Gaoxiang Luo, Benjamin Withey, Seraphina Yong, Ji Youn Shin. "Empowering Farming Communities Through Information Tracking: A Design Approach to Crop Planning and Management" (CHI EA' 25)
- [EA.3] Z. H. Lin, Z. Wang, [Minzhu Zhao](#), Yunya Song, Liang Lan, "An AI-based System to Assist Human Fact-Checkers for Labeling Cantonese Fake News on Social Media" (*IEEE International Conference on Big Data, IEEE Big Data' 22*)
- [EA.2] G. Li, Z. Wang, [Minzhu Zhao](#), Yunya Song, Liang Lan, "Sentiment Analysis of Political Posts on Hong Kong Local Forums Using Fine-Tuned mBERT" (*IEEE International Conference on Big Data, IEEE Big Data' 22*)
- [EA.1] Ziwei Wang, [Minzhu Zhao](#), Yu Chen, Yunya Song, Liang Lan, "A Study of Cantonese Covid-19 Fake News Detection on Social Media" (*IEEE International Conference on Big Data, IEEE Big Data' 21*)

Book Chapter and Other Publications

- [B.1] Ziwei Wang, [Minzhu Zhao](#), Yu Chen, Yunya Song and Liang Lan. "COVID-19 Fake News Detection on Cantonese Social Media: A Comparative Study of Machine Learning-based Methods" (In: *Checking the Fact-Checkers: A Global Perspective*, Routledge Press)
- [O.1] Kaitlyn Regehr, Caitlin Shaughnessy, [Minzhu Zhao](#), Nicola Shaughnessy. "Safer Scrolling: How algorithms popularise and gamify online hate and misogyny for young people" (report funded by Arts and Humanities Research Council (AHRC) , 2024)

Professional Experience

Trainee Data Journalist

May 2020 – Dec 2020

Financial Times Chinese, Beijing, China | Supervisor: Mrs. Silva Shih

- Delivered translations, data collection, analysis, and visualization for 29 weekly issues of *FTChinese.com*'s data journalism column; authored an independent news story on the challenges faced by university students during the COVID-19 pandemic

Project Assistant

Jul 2019 – May 2020

HyperLab, Hong Kong

- Collaborated with engineering and operations teams to develop a client-facing admin guide documenting system operations, data management, and workflows for an enterprise web platform, improving client onboarding
- Collected and analyzed data from multiple sources using SQL, Tableau, and other visualization tools, generating weekly analytical summaries that informed internal reporting and data-driven insights

Teaching and Mentorship

Teaching

University of Minnesota, Graduate Teaching Assistant

Fall 2025

Instructor: Prof. Lana Yarosh

Graduate TA for "CSCI 4115: User Experience Design, Prototyping, and Evaluation". Facilitated weekly prototype development sessions for each project group, managed project group dynamics, and developed grading rubrics for milestones. Approx. 120 students enrolled.

Hong Kong Baptist University, Teaching Assistant

Spring 2020, Spring 2021

Instructor: Pili Hu

TA for "ECON7910: Data Visualization with Story-telling". Contributed to the graduate course design by developing lecture notes, worksheets, and quiz questions. Prepared lab exercises and supported 98 students in troubleshooting technical issues related to Tableau usage, data visualization and analysis.

Mentoring

- Samson Kennry (REU student at UMN, Summer 2025)
- Grace Everts (REU student at UMN, Summer 2025)
- Ahmad Yasser (Undergraduate Student at UMN, 2024 - 2025)

Skills

Programming Language: Python, R, Java, JavaScript, Linux

Framework & Version Control: PyTorch, TensorFlow, Scikit-learn, Git, Latex, Flask / Django

Data Analysis: NLP, Survey Design & Analysis, Pandas, NumPy, Matplotlib, SQL

Qualitative Analysis: User Interviews, Thematic & Content Analysis

Sensing & Devices: Raspberry Pi, Arduino, mmWave Radar, Signal Processing, 3D Printing

Design & Visualization Tools: Figma, Adobe Illustrator, Autodesk Fusion, Tableau (Certified)

Awards and Honors

UMN 3M Science & Technology Graduate Fellowship (2024 - 2028)

China Daily Campus News Award: Best in Data Journalism (2022)

HKBU Communication Scholarship Scheme (2021 - 2022)

HKBU Minor Programme Award (2021 - 2022)

HKBU Vincent Woo Scholarship Scheme (2020 - 2021)

HKBU Journalism Department Scholarship (2019 – 2021)

HKBU Dean's List (2019 – 2022)

Other Experience

Reviewer - CHI'26, CSCW'25, British Journal of Educational Technology

Attendee – Summer School on Advanced Data Science & Machine Learning (ACDL) 2024

Attendee - CHI Summer School on Usable Privacy and Security 2023