Zheng Zhang

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RESEARCH AREAS

1. Design and develop human-AI collaborative systems for augmenting user's thinking and social interaction.

2. Develop an efficient human-in-the-loop machine learning pipeline for complex data annotation tasks.

3. Develop AI-enhanced multimodal interaction techniques for wearable devices.

Keyword: Human-Computer Interaction, Human-AI Interaction, Human-centered AI, Human-in-the-loop Machine Learning, Natural Language Processing, Social Computing

EDUCATION

Ph.D.	**Computer Science and Engineering** University of Notre Dame, Notre Dame, IN Advisor: Toby Jia-Jun Li	2021-present
M.S.	**Computer Science** University of Rochester, Rochester, NY Advisor: Zhen Bai	2019-2021
M.S.	**Computer Science and Engineering** University of Minnesota, Minneapolis, MN Advisor: Haiyi Zhu	2017-2019
B.S.	**Software Engineering** Shaanxi Normal University, Xi'an, China	2013-2017

PUBLICATIONS

* denotes equal contribution

Under-reviewed Manuscripts and Pre-prints

R.3 **Zheng Zhang**, Mengjie Yu, Tianyi Wang, Kashyap Todi, Yue Liu, Ajoy Savio Fernandes, Haijun Xia, Tovi Grossman, Tanya Jonker. "Gazeify Then Voicify: Physical Object Referencing Through Gaze and Voice Interaction with Displayless Smart Glasses." Submitted to CHI 2025

R.2 **Zheng Zhang**, Weirui Peng, Xinyue Chen, Luke Cao, Toby Jia-Jun Li. "LADICA: A Large Shared Display Interface for Generative AI Cognitive Assistance in Co-Located Team Collaboration." Submitted to CHI 2025

R.1 Simret Araya Gebreegziabher, Kuangshi Ai, **Zheng Zhang**, Elena L Glassman, Toby Jia-Jun Li. "Leveraging Variation Theory in Counterfactual Data Augmentation for Optimized Active Learning." Submitted to ACL ARR

Peer-reviewed Conference and Journal Publications

C.13   Zheng Ning*, **Zheng Zhang***, Jerrick Ban, Kaiwen Jiang, Ruohong Gan, Yapeng Tian, Toby Jia-Jun Li. "MIMOSA: Human-AI Co-Creation of Computational Spatial Audio Effects on Videos." *In Proceedings of the 16th Conference on Creativity and Cognition* (C&C 2024)

C.12   Zheng Ning, Yuan Tian, **Zheng Zhang**, Tianyi Zhang, Toby Jia-Jun Li. "Insights into Natural Language Database uery Errors: From Attention Misalignment to User Handling Strategies." *ACM Transactions on Interactive Intelligent Systems* (TiiS)

C.11   Jie Gao, Yuchen Guo, Gionnieve Lim, Tianqin Zhan, **Zheng Zhang**, Toby Jia-Jun Li, and Simon Tangi Perrault. "CollabCoder: A Lower-barrier, Rigorous Workflow for Inductive Collaborative Qualitative Analysis with Large Language Models." *In Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems* (CHI 2024)

C.10   Yuan Tian, **Zheng Zhang**, Zheng Ning, Toby Jia-Jun Li, Jonathan K. Kummerfeld, and Tianyi Zhang. "Interactive Text-to-SQL Generation via Editable Step-by-Step Explanations." *The 2023 Conference on Empirical Methods in Natural Language Processing* (EMNLP 2023)

C.9   **Zheng Zhang**, Jie Gao, Ranjodh Singh Dhaliwal, and Toby Jia-Jun Li. "VISAR: A Human-AI Argumentative Writing Assistant with Visual Programming and Rapid Draft Prototyping." *In Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology* (UIST 2023)

C.8   **Zhang, Zheng**, Zheng Ning, Chenliang Xu, Yapeng Tian, and Toby Jia-Jun Li. "PEANUT: A Human-AI Collaborative Tool for Annotating Audio-Visual Data." *In Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology* (UIST 2023)

C.7   Simret Araya Gebreegziabher*, **Zheng Zhang***, Xiaohang Tang, Yihao Meng, Elena L. Glassman, and Toby Jia-Jun Li. "PATAT: Human-AI Collaborative Qualitative Coding with Explainable Interactive Rule Synthesis." *In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (CHI 2023)

C.6   Zheng Ning*, **Zheng Zhang***, Tianyi Sun, Yuan Tian, Tianyi Zhang, and Toby Jia-Jun Li. "An Empirical Study of Model Errors and User Error Discovery and Repair Strategies in Natural Language Database Queries." *In Proceedings of the 28th International Conference on Intelligent User Interfaces* (IUI 2023)

C.5   Ying Xu, Dakuo Wang, Mo Yu, Daniel Ritchie, Bingsheng Yao, Tongshuang Wu, **Zheng Zhang**, Toby Jia-Jun Li, Nora Bradford, Branda Sun, Tran Hoang, Yisi Sang, Yufang Hou, Xiaojuan Ma, Diyi Yang, Nanyun Peng, Zhou Yu, and Mark Warschauer. "Fantastic Questions and Where to Find Them: FairytaleQA–An Authentic Dataset for Narrative Comprehension." *In Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics* (ACL 2022)

C.4   Bingsheng Yao, Dakuo Wang, Tongshuang Wu, **Zheng Zhang**, Toby Jia-Jun Li, Mo Yu, and Ying Xu. "It is AI's Turn to Ask Humans a Question: Question-Answer Pair Generation for Children's Story Books." *In Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics* (ACL 2022)

C.3   **Zheng Zhang**, Ying Xu, Yanhao Wang, Bingsheng Yao, Daniel Ritchie, Tongshuang Wu, Mo Yu, Dakuo Wang, and Toby Jia-Jun Li. "Storybuddy: A Human-AI Collaborative Chatbot for Parent-Child Interactive Storytelling with Flexible Parental Involvement." *In Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems* (CHI 2022)

C.2   Weiwen Leung*, **Zheng Zhang***, Daviti Jibuti, Jinhao Zhao, Maximilian Klein, Casey Pierce, Lionel Robert, and Haiyi Zhu. "Race, Gender and Beauty: The Effect of Information Provision on Online

Hiring Biases." *In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (CHI 2020)

C.1   Hao-Fei Cheng, Ruotong Wang, **Zheng Zhang**, Fiona O'connell, Terrance Gray, F. Maxwell Harper, and Haiyi Zhu. "Explaining Decision-making Algorithms through UI: Strategies to Help Non-expert Stakeholders." *In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (CHI 2019)

Posters, Extended Abstracts, Workshop Papers and Technical Reports

A.4   **Zheng Zhang**, Alex Williams, Xiaopeng Li, Jonathan Buck, Matthew Lease, Erran Li. "Understanding Human-Steering Strategies for Improving Code Generation in Large Language Models." *Supporting User Engagement in Testing, Auditing, and Contesting AI workshop in CSCW 2023* (User AI Auditing@CSCW 2023)

A.3   Eyal Shnarch, Alon Halfon, Ariel Gera, Marina Danilevsky, Yannis Katsis, Leshem Choshen, Martin Santillan Cooper, Dina Epelboim, **Zheng Zhang**, and Dakuo Wang. "Label Sleuth: From Unlabeled Text to a Classifier in a Few Hours." *In Proceedings of the The 2022 Conference on Empirical Methods in Natural Language Processing: System Demonstrations* (EMNLP Demo 2022)

A.2   Zheng Ning, **Zheng Zhang**, Jerrick Ban, Kaiwen Jiang, Ruohong Gan, Yapeng Tian, Toby Jia-Jun Li. "MIMOSA: Human-in-the-Loop Generation of Spatial Audio from Videos with Monaural Audio." *AV4D workshop: Visual Learning of Sounds in Spaces in ICCV 2022* (AV4D@ICCV 2022)

A.1   **Zheng Zhang**, Ying Xu, Yanhao Wang, Bingsheng Yao, Daniel Ritchie, Tongshuang Wu, Mo Yu, Dakuo Wang, and Toby Jia-Jun Li. "Building an Interactive Storytelling Conversational Agent through Parent-AI Collaboration." *CUI@CSCW Workshop: Inclusive and Collaborative Child-facing Voice Technologies* (CUI@CSCW 2021)

PROFESSIONAL EXPERIENCE

2024   **Meta Reality Labs**, Research Scientist Intern
with *Anna Yu, Tanya Jonker*
Project: Explore a novel interaction technique called *multimodal physical object referencing*, which enables users of display-free smart glasses to select real-world objects through gaze and refine their selection with flexible voice command.

2023   **Amazon Web Services (AWS) AI**, Applied Scientist Intern
with *Alex Williams*, *Erran Li*
Project: Work with AWS human-in-the-loop team to investigate methods of generating high-quality conversational data that navigate LLMs to fix code generation failures through self-reflection.

2022   **Apple Inc.**, AI/ML Research Intern
with *Alistair Conkie*, *Ladan Golipour*
Project: Develop zero-shot learning model for foreign accent conversion, which transforms speech with a non-native English accent into speech with a native English accent.

2021-now   **University of Notre Dame**, Graduate Research Assistant
with *Toby Jia-Jun Li*

2019-2021   **University of Rochester**, Graduate Research Assistant
with *Zhen Bai*

2017-2019 **University of Minnesota**, Graduate Research Assistant
with *Haiyi Zhu*

TEACHING EXPERIENCE

Teaching Assistant, CSE 40748/60748: Human-AI Collaborative Systems   Spring 2024
Department of Computer Science and Engineering, University of Notre Dame

Teaching Assistant, CSE 40113: Design/Analysis of Algorithms   Fall 2022
Department of Computer Science and Engineering, University of Notre Dame

Teaching Assistant, CSE 20311: Fundamentals of Computing   Spring 2022
Department of Computer Science and Engineering, University of Notre Dame

Teaching Assistant, CSC 173: Computation & Formal Systems   Spring 2021
Department of Computer Science and Engineering, University of Rochester

Teaching Assistant, CSC 212: Human Computer Interaction   Fall 2020
Department of Computer Science and Engineering, University of Rochester

Teaching Assistant, CSC 172: Data Structures & Algorithms   Spring 2020
Department of Computer Science and Engineering, University of Rochester

STUDENT MENTORSHIP

Graduate Students

Michael Clemens (Ph.D. in CS at Utah)   2024

Weirui Peng (M.S. in CS at Columbia University)   2024

Jie Gao (Ph.D. in CS at SUTD, now Postdoc at MIT)   2023

Richie Holland (M.S. in CS at Rochester, now Ph.D. at Rutgers)   2020-2021

Undergraduate Students

Yinuo Yang (B.S. in CSE at University of Michigan)   2024

Kuangshi Ai (B.S. in AI at Fudan University, now Ph.D. at Notre Dame)   2023

Luke Cao (B.S. in CSE at Notre Dame)   2023

Xiaohang Tang (B.S. in CS at Unversity of Liverpool, now Ph.D. at Virginia Tech)   2022

Jerrick Ban (B.S. in CSE at Notre Dame)   2022

Yihao Meng (B.S. in CS at Xi'an Jiaotong University, now Ph.D. at HKUST)   2022

Ruohong Gan (B.S. in CS at Sichuan University, now M.S. in CSE at CMU)   2022

Victor Cox (B.S. in CSE at Notre Dame, now at Capital One)   2021-2022

Tianyi Sun (B.S. in CSE at Minnesota, now M.S. in Applied Mathematics at UChicago)   2021-2022

Hecong Wang (B.S. in CS and Physics at Rochester, now Ph.D. at Rochester)   2020-2021

INVITED TALKS, PANELS AND SEMINARS

2024   **Designing AI-supported Tools for Facilitating Involving Human Cognition**
Center for the Brain, AI, and Child (BAIC) at CU Boulder

2024   **Multi-modal Physical Object Referencing with Displayless Smart Glasses**
Meta Reality Labs HCI Research Seminar

2023   **Understanding Expert Steering Strategies for Improving Code Generation in LLMs**
CSCW User AI Auditing Workshop

2023   **Argumentative Writing Assistant with Visual Programming and Rapid Draft Prototyping**
AWS AI HCI Research Seminar

2023   **Argumentative Writing Assistant with Visual Programming and Rapid Draft Prototyping**
Notre Dame NLP Seminar

2023   **Incorporating Human and AI Proficiency in the Design of AI-Enhanced Systems**
UCLA HCI Lab

2021   **Building an Interactive Storytelling Conversational Agent through Parent-AI Collaboration**
CUI@CSCW Workshop

INVITED GUEST LECTURES

Building Web Interface for Human-AI Collaboration   Spring 2024
CSE 40748/60748 Human-AI Collaborative Systems
Host: Toby Jia-Jun Li
University of Notre Dame, Department of Computer Science and Engineering

ACADEMIC SERVICE

Associate Chair (AC) of Program Committee

ACM IUI 2025

ACM CHI Late-Breaking Work 2024

CHIWORK 2024

ACM CHI Late-Breaking Work 2023

Conference/Journal Reviewer

ACM CHI (2022-2025), **ACM UIST** (2023-2024), **ACM DIS** (2024), **ACM CSCW** (2024), **ACM IDC** (2024), **CHIWORK** (2024), **ACM IUI** (2025), **ACL ARR** (2023-2024), **IJHCI**

Received "special recognitions" for outstanding reviews for UIST 2023, CHI 2024, UIST 2024 (twice)

Student Volunteer

CHI 2022

AAAI 2020

DEPARTMENTAL AND COMMUNITY SERVICE

Student Coordinator, Notre Dame HCI Seminar (2024)

Student Coordinator, Notre Dame NLP Seminar (2022-2023)

Committee Member, UR CS Graduate Student Board (2020-2021)

Committee Member, UR CS Ph.D. Admission Committee (2020)

LANGUAGES

English - Native and bilingual proficiency, **Chinese (Mandarin)** - Native and bilingual proficiency

TECHNICAL SKILLS

Programming Languages/Platforms: C/C++, Java, Python, HTML, Javascript, Android, IOS, Unity and others

UX Skills: Qualitative Research, Quantitative Research, Experiment Design, Data Analysis, UX Design

Library: PyTorch, React, Node.js, Flask, Scikit-learn, Numpy, SciPy, Neo4j and others

LLM: LLAMA, OpenAI API, Claude API