

ZHENG NING

Ph.D. Student, University of Notre Dame, Notre Dame, USA

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RESEARCH INTEREST

My research focuses on designing, building, and evaluating interactive systems that leverage multimodal AI models to help users engage with content across various modalities. More recently, my work has explored the representation and transformation of different modalities (e.g., visual, audio, text) and formats (e.g., charts, tables, documents). Additionally, I investigate how to align human multimodal perceptions (e.g., touch, smell, sight) with the multimodal understanding capabilities of AI agents to streamline user workflows.

Keywords: Human-computer Interaction, Human-AI Interaction, Multi-Modal Interaction, Accessibility and GenAI.

EDUCATION

Ph.D in Human-Computer Interaction

2021 - Present

University of Notre Dame, *IN, USA*

Advisor: [Toby Jia-Jun Li](#)

B.S with Distinction in Electrical Engineering

2016 - 2020

University of Electronic Science & Technology of China, *Chengdu, China*

Dual degree program with University of Glasgow, *Glasgow, UK*

INDUSTRIAL EXPERIENCE

Microsoft Research

05/2024 (3 months)

Host: [Nathalie Riche](#) and [Nicolai Marquardt](#)

Redmond, WA

Implemented a research prototype to investigate how people might use generative AI to improve future workflows, focusing on scenarios where users interact with data in diverse formats and modalities (e.g., documents, charts, images, etc.). Conducted a study to explore the efficacy, usability, and potential of the new interaction paradigm across various use cases, including both individual and collaborative scenarios on one or multiple devices.

Adobe Research

05/2023 (5 months)

Host: [Dingzeyu Li](#), [Valentina Shin](#), [Mackenzie Leake](#), and [Mira Dontcheva](#)

Seattle, WA

[User research] Conducted a formative study with 9 video and audio podcast creators, targeting their preferences on adding effects to podcast episodes, and identified key challenges they faced during the video editing process.

[System building] Led the design and development of an interactive system using GenAI to facilitate the assembly and production process of video editing.

[Productization] Designed and implemented AI agents in Adobe Premiere Pro (Pr) to realize the research idea in the first phase. Collaborated with Adobe Pr and user research teams. Led the development of a Minimum Viable Product in Pr and initiated the new feature launch process.

SELECTED PUBLICATIONS

- [Developer Behaviors in Validating and Repairing LLM-Generated Code Using IDE and Eye Tracking](#)
Ningzhi Tang*, Meng Chen*, **Zheng Ning**, Aakash Bansal, Yu Huang, Collin McMillan, and Toby Li
2024 *IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC'24)*

- **PodReels: Human-AI Co-Creation of Video Podcast Teasers**  [Video]
Sitong Wang, **Zheng Ning**, Anh Truong, Mira Dontcheva, Dingzeyu Li, and Lydia B. Chilton
Proceedings of the 2024 ACM Designing Interactive Systems Conference (DIS'24)
- **MIMOSA: Human-AI Co-Creation of Computational Spatial Audio Effects on Videos**  [Project]
Zheng Ning*, Zheng Zhang*, Jerrick Ban, Kaiwen Jiang, Ruohong Gan, Yapeng Tian, and Toby Jia-Jun Li
Proceedings of the 15th Conference on Creativity and Cognition (C&C'24)
- **SPICA: Interactive Video Content Exploration through Augmented Audio Descriptions for Blind or Low-Vision Viewers**  [Project]
Zheng Ning, Brianna L. Wimer, Kaiwen Jiang, Keyi Chen, Jerrick Ban, Yapeng Tian, Yuhang Zhao and Toby Li
In Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI'24)
- **Insights into Natural Language Database Query Errors: From Attention Misalignment to User Handling Strategies**
Zheng Ning*, Yuan Tian*, Zheng Zhang, Tianyi Zhang, Toby Jia-Jun Li
ACM Transactions on Interactive Intelligent Systems (TiiS'24)
- **PEANUT: A Human-AI Collaborative Tool for Annotating Audio-Visual Data**  [Video]
Zheng Zhang*, **Zheng Ning***, Chenliang Xu, Yapeng Tian and Toby Li
In Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology 2023 (UIST'23)
- **Interactive Text-to-SQL Generation via Editable Step-by-Step Explanations**  [Video]
Yuan Tian, Zheng Zhang, **Zheng Ning**, Toby Jia-Jun Li, Jonathan K. Kummerfeld, Tianyi Zhang
The 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP'23)
- **An Empirical Study of Model Errors & User Error Discovery and Repair Strategies in Natural Language Database Queries**
Zheng Ning*, Zheng Zhang*, Tianyi Sun, Tian Yuan, Tianyi Zhang, and Toby Jia-Jun Li
The 26th International Conference on Intelligent User Interfaces (IUI'23)

MEDIA COVERAGE

Interactive AI Tool Delivers Immersive Video Content to Blind and Low-Vision Viewers

NVIDIA Technical Blog; Generative AI / LLMs; Aug 12, 2024

GRANTS & HONORS

Graduate Student Professional Development Awards, University of Notre Dame	2023
Gary Marsden Travel Awards, SIGCHI	2023
NVIDIA Academic Hardware Grant	2022
Outstanding final year project of Glasgow College, UESTC (Top 10%)	2020
Outstanding Student Scholarship (Top 10%), UESTC	2017 - 2019

TEACHING EXPERIENCE

- **Teaching Assistant, CSE 20289: Systems Programming** 2022
Department of Computer Science and Engineering, University of Notre Dame
Instructor: Prof. Collin McMillan
- **Teaching Assistant, CSE 40868: Neural Networks** 2022
Department of Computer Science and Engineering, University of Notre Dame
Instructor: Prof. Adam Czajka

LANGUAGES

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

TECHNICAL SKILLS

Program Languages: Typescript, React, Python, Pytorch, SQL
Softwares: Figma, Premiere Pro, PhotoShop, Tableau, SPSS
UX Skills: Qualitative Research, Quantitative Research, UX Design

PROFESSIONAL SERVICE

Member of Program Committee	ACM IUI 2025
Member of Program Committee	ACM C&C 2025
Conference Reviewer	ACM CHI 2024-2025
Conference Reviewer	ACM UIST 2023-2025
Conference Reviewer	ACM CSCW 2024