ZHENG NING

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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, Applied Machine Learning, Multi-Modal Interaction, End-User Development, 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 May – Aug 2024
Host: Nathalie Riche and Nicolai Marquardt *Redmond, WA*

Led the design and implementation of a research prototype to investigate how generative AI can enhance existing workflows. Focus on scenarios where users interact with data across various formats and modalities simultaneously, across both individual and collaborative settings, on single or multiple devices.

Adobe Research Aug – Oct 2023
Host: Dingzeyu Li, and Mira Dontcheva *Seattle, WA*

Developed an LLM-based AI agent in Adobe Premiere Pro (Pr) to accelerate the video rough-cut process for creators. Collaborated closely with the Pr product team and user research team.

Adobe Research May – Aug 2023
Host: Dingzeyu Li, Valentina Shin, Mackenzie Leake, and Mira Dontcheva *Seattle, WA*

Designed and developed a human-AI collaborative system using GenAI to streamline content editing and visual enhancement for video podcasts creators. Additionally contributed to the development of a related system for creating video podcast teasers.

SELECTED PUBLICATIONS

[C.7] 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)***

[C.6] 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)***

[C.5] 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)***

[C.4] 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)***

[T.1] 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)***

[C.3] 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)***

[C.2] 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)***

[C.1] 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)***

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

MEDIA COVERAGE

Interactive AI Tool Delivers Immersive Video Content to Blind and Low-Vision Viewers
NVIDIA Technical Blog; Generative AI / LLMs; Aug 12, 2024

SLECTED 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

TEACHING EXPERIENCE

Teaching Assistant, CSE 40748: Human-AI Collaborative Systems 2025
Department of Computer Science and Engineering, University of Notre Dame
Instructor: Prof. Toby Jia-Jun Li

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