# 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, 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 GenAI-based system to enhance workflows where users interact with data in multiple formats and modalities. The system supports both individual and collaborative tasks across single or multiple devices.

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

Productized an LLM-based system for speeding up the rough-cut process for video creators in Adobe Premiere Pro (Pr). Collaborated closely with the product, engineering, and user research team from Pr.

**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* **(CC'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

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|---|---|
| **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

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|---|---|
| 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

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