ZHENG NING

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

zning@nd.edu | https://zning.co

RESEARCH INTEREST

My research focus on human-AI interaction. I build interactive systems with multimodal AI models to help users engage with content across different modalities e.g. visual, audio, text. I have developed tools in video context, including multimodal data annotation, creating spatial audio effects for videos, and enabling blind or low-vision users to consume video content through transforming visual information into layered, interactive audio descriptions. More recently, my work looks at multimodal content representation and transformation, specifically how can we align the multimodal perceptions of human (like touch, smell, and sight) with the multimodal understanding capabilities of the AI agent, to streamline user workflows.

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

EDUCATION

University of Notre Dame 09/2021 - Present

Ph.D. of Computer Science Notre Dame, USA

- Advisor: *Toby Jia-Jun Li*

University of Electronic Science & Technology of China (UESTC) 09/2016 - 06/2020

Bachelor of Electrical and Electronic Engineering Chengdu, China

- Joint education program with University of Glasgow (UoG), UK
- Graduated with First-Class honor degree from UoG

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 (The work has led to a first-author submission to CHI 2025).

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 (MVP) 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)***

- PEANUT: A Human-AI Collaborative Tool for Annotating Audio-Visual Data
  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
  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

SKILLS

Program Languages:	Typescript, React, Python, Pytorch, SQL
Softwares:	Figma, Premiere Pro, PhotoShop, Tableau, SPSS
UX Skills:	Qualitative Research, Quantitative Research, Experiment Design
Languages:	English – Fluent, Chinese (Mandarin) – Native

PROFESSIONAL SERVICE

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