

# ZEXIN (JASON) XU

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## INTERESTS

LLM Safety & Trustworthiness, Question-and-Answering(Q&A) System, Embodied Agent, Language Grounding

## EDUCATION

### The University of Texas at Dallas

Ph.D Student in Electrical & Computer Science

Aug 2024 – Present

### The Ohio State University

M.S. in Computer Science and Engineering

Aug 2021 – May 2023

GPA: 3.51/4.00

### The Ohio State University

B.S. in Computer Science and Engineering / Magma Cum Laude, Dean's List

Jan 2018 – Dec 2020

GPA: 3.87/4.00

## EXPERIENCE

### Research Assistant, Software Engineering Lead

The Ohio State University (Amazon Alexa Prize SimBot Challenge)

Aug 2022 – Jun 2023

Columbus, OH

- Directed the engineering team for SalsaBot, utilizing **AWS** to create a seamless end-to-end workflow.
- Architected and executed a state-driven dialogue system alongside a language macro module. Propelled the team to a top-three standing in the last month, elevating our team rating **from 2.36 to 3.64 out of 5.00**.
- Oversaw comprehensive testing methodologies, including iterative, unit, and end-to-end tests, fortifying system robustness and dependability.
- Formulated an advanced web monitoring with **AWS Cloudwatch** Query, optimizing user feedback collection.

### Data Scientist Intern

AI Camp

May 2022 – Aug 2022

Palo Alto, CA

- Directed a team of over 15 students in developing cutting-edge NLP web applications, harnessing the power of **GPT-2 and Flask**. This initiative culminated in an outstanding **average rating of 4.53/5.00**.
- Modernized the internal rating mechanism and spearheaded pivotal discussions on curriculum enhancement.
- Played a key role in shaping the NLP, deep learning, and Flask curricula, and actively participated in periodic curriculum updates.

### Software Developer Lead

Sponsored by Honda

Sep 2020 – Dec 2020

Columbus, OH

- Designed and implemented an advanced self-service kiosk dialogue system for internal applications, equipped with chatbot functionalities, enhanced by integrating a cutting-edge language understanding module using **Microsoft Azure Bot Framework** and **LUIS**.
- Established a resilient software architecture and streamlined the development workflow.

## RESEARCH

### TimeWise: A Learning Management Chatbot

University of California, Irvine, Johns Hopkins University

Oct 2023 – Present

- Engineered an advanced chatbot tailored for adult online learners. Utilized Learning Management System (LMS) data and conversational agents to provide personalized coaching. Employed **LLM** and **LangChain** and sophisticated prompt engineering techniques to enhance time management skills.
- Designed and deployed an interactive web application and web plugin, leveraging the robust infrastructure of AWS to ensure scalability and reliability.

### SalsaBot: An Embodied Agent

The Ohio State University

Aug 2022 – Jun 2023

- Directed the engineering team in the conceptualization and design of a **embodied agent**.

- Pioneered the development of advanced language intent classification techniques, coupled with a robust macros module, to optimize action planning in intricate **vision-and-language navigation** scenarios.
- Architected state-of-the-art dialogue modules, further amplifying the efficiency of baseline vision models to ensure seamless and intuitive interactions.

### Writing Assessment Evaluation Utilizing LLMs

Jan 2023 – May 2023

*The Ohio State University*

- Conducted comprehensive performance evaluations of leading Chinese LLM platforms in the context of essay evaluation.
- Undertook a thorough analysis outlining the benefits and constraints of using LLMs for grading jobs. Analyzed the subtle variations between GPT3.5 and GPT4 in particular downstream applications.
- Designed an innovative pipeline approach for essay assessment with the power of LLMs.

## PUBLICATIONS

### [4] SalsaBot: Towards a Robust and Generalizable Embodied Agent

Chan Hee Song, Jiaman Wu, Ju-Seung Byun, **Zexin Xu**, Vardaan Pahuja, Goonmeet Bajaj, Samuel Stevens, Ziru Chen, Yu Su

*Embodied AI Workshop at CVPR, 2023*

### [3] Towards a Robust and Generalizable Embodied Agent

Chan Hee Song, Jiaman Wu, Ju-Seung Byun, **Zexin Xu**, Vardaan Pahuja, Goonmeet Bajaj, Samuel Stevens, Ziru Chen, Yu Su

*Amazon Science, 2023*

### [2] Exploring the Role of Artificial Intelligence in Facilitating Assessment of Writing Performance in Second Language Learning

Zilu Jiang, **Zexin Xu**, Zilong Pan, Jingwen He, Kui Xie

*Languages, 2023*

### [1] Measuring Elementary Students' Behavioral Engagement in Web-based Science Inquiry Learning

Jingwen He, Bihui Jin, **Zexin Xu**, Danhui Zhang

*Journal of Online Learning Research, 2022*

## TEACHING

### Graduate Teaching Associate | *The Ohio State University*

Sep 2022 – Dec 2022

- Mentored graduate students in the CSE6521: Advanced Artificial Intelligence course.
- Orchestrated a virtual conference for over 30 students and provided support in assessing student theses.
- Conceived a comprehensive PyTorch tutorial, including data science tasks to foster proficiency.

### Undergraduate Teaching Assistant | *The Ohio State University*

Jan 2020 – May 2020

- Provided guidance to students in the Foundations I: Discrete Structures course.

### Undergraduate Teaching Assistant | *The Ohio State University*

Aug 2019 – Dec 2019

- Guided the survey of Artificial Intelligence I: Basic Techniques course.

## PROJECTS

### Tele-Tube | *NLP, Chrome Extension*

Jun 2022 – Aug 2022

- Summarized and synchronized YouTube video captions for enhanced user experience.
- Developed a Chrome extension in **JavaScript** and **Python**. Leveraged **text memorization** and **topic modeling** with BART-Large-CNN.
- Directed the team in spearheading the application design and structure.

### Lyric Timestamp Auto Generator | *NLP, PyTorch*

May 2022 – May 2022

- Elevated the music listening experience by implementing cutting-edge deep neural network, **Fourier transform**, and **voice isolation** techniques to seamlessly synchronize lyrics.

## SKILLS

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**Certificate:** AWS Cloud Technical Essentials

**Languages:** Python, Java, C/C++, C#, SQL, JavaScript, R, HTML/CSS

**Frameworks & Tools :** AWS, Django, Flask, Node.js, Docker, Microsoft Azure bot framework, Git

**Libraries:** LangChain, PyTorch, OpenCV, Pandas, NumPy, Scikit-learn, Matplotlib, OpenMP, CUDA

## REFERENCE

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### **Yu Su, Ph.D.**

The Ohio State University

*Distinguished Assistant Professor of Inclusive Excellence, Department of Computer Science and Engineering*

NSF ICICLE Institute AI Team Lead

**Email:** su.809@osu.edu

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### **Kui Xie, Ph.D.**

Michigan State University

*Red Cedar Distinguished Professor*

Chairperson of Department of Counseling, Educational Psychology, and Special Education

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### **Zilong Pan, Ph.D.**

Lehigh University

*Assistant Professor of Teaching, Learning and Technology*

Instructional Technology Program

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### **Zilu Jiang, Ph.D.**

Johns Hopkins University

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