Yushan Zhou

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RESEARCH INTERESTS

Human-Computer Interaction, AR/VR-facilitated educational and communicational tools, Intelligent and Interactive User Interfaces, Educational Technology, AI/ML education for K-12.

EDUCATION

University of Rochester | Rochester, NY — Aug 2023 – present
Ph.D. student in Computer Science

University of Rochester | Rochester, NY — Aug 2021 – May 2023
Master of Science in Computer Science — GPA: 4.0/4.0
Awards: Academic scholarship with 30% tuition waiver.
Core courses: Human-Computer Interaction, AR/VR Interaction Design, AI, Data Mining, Machine Vision

Stony Brook University | New York, NY — Aug 2014 – May 2018
Bachelor of Science in Computer Science (Minor in Electrical Engineering) — GPA: 3.8/4.0
Scholarships and Awards: Academic Achievement Award (3 times with 4.0 GPA per semester), Dean's List (7 semesters)

RESEARCH EXPERIENCE

AR4ML Project, ROCHCI Lab at University of Rochester | Rochester, NY — Feb 2022 – present
Research Assistant, advisors: Xiaofei Zhou, Dr. Zhen Bai

- The goal is to build intelligent education applications to utilize Augmented Reality (AR) unique benefits in Machine Learning (ML) education for K12 students.
- Conducted literature reviews of how AR can bring unique learning benefits to K-12 STEM education.
- Hosted 10+ co-design sessions with stakeholders, including AI experts, middle school teachers, and students, to learn students' mind sets and brainstorm potential AR or tangible interfaces supporting AI education and appropriate ML concepts that are suitable for young learners.
- Designed and implemented multiple AR mobile applications (developed in Unity and ran on Android devices) to teach middle school students the concepts of multidimensional data objects, data similarity, content-based recommendation system algorithms, and related ethical issues in real-life recommendations.
- Conducted 10+ user study sessions with high school and middle school students with underrepresented background.
- Analyzed user behaviors through verbal and non-verbal frameworks and applied qualitative and quantitative methods to evaluate participants' knowledge gain, satisfaction, and effectiveness of the design.
- **Paper in submission**: "Bee and I need diversity!" Break the Filter Bubble of A Recommendation System through Embodied AI Learning (IEEE VR'24)
- **Exhibited at**: Gaming for All: A Women in Games Celebration at The Strong National Museum of Play, Nov 2022
- **Exhibited at**: 7th Annual Frameless XR Symposium at RIT, Nov 2022

AI4K12 Project, ROCHCI Lab at University of Rochester | Rochester, NY — Feb 2022 – May 2022
Research Assistant, advisors: Xiaofei Zhou, Dr. Zhen Bai

- The goal is to build web-based tools to teach K12 students ML knowledge with content they are familiar with, and eventually to build authoring tools for K12 teachers and enable them to design and build ML lessons that fit different curriculums.
- Assisted 25 user study sessions with 25 high school students to evaluate the glyph data visualization and interaction design.
- Analyzed user behaviors through pre- and post- interviews and applied qualitative methods to evaluate participants' ML knowledge gain, user satisfaction and effectiveness of the design.
- **Paper in submission**: Supporting multidimensional data interpretation for K-12 students in the era of machine learning (CHI'24)

WORKING EXPERIENCE

Graduate Student Association, University of Rochester| Rochester, NY Jun 2022 – May 2023

Social Programming Officer

- Led and organized multiple social and academic events to encourage engagement among graduate students.
- Collaborated with different student groups, university organizations, and community corporations to curate an extensive range of social, sports, and community resources for graduate students, both on and off campus.

Amazon | Seattle, WA Jun 2018 – Sept 2020

Software Development Engineer at Self-service Performance Ads

- Developed and maintained advertisement management tools that satisfied volatile user and business requirements.
- Increased ads management efficiency by building and improving automated bulk operations.
- Enhanced worldwide UX by implementing 10+ new features of advertisement tools from front-end to back-end and launching new version of console view.
- Integrated with AWS tools (DynamoDB, API Gateway, etc.) to improve capacity and stability of the ads service.

SBU Tutor Center | New York, NY Sep 2015 – May 2018

Leader Tutor, Academic Tutor in Java Programming and Data Structure

- One-to-One tutored students with various academic backgrounds and sparked their interests in programming.
- As leader tutor, interviewed tutor candidates and organized training sessions and workshops about tutoring strategies and career counselling.
- Held tutorials in Java programming, algorithms, data structure, and calculus.

Amazon | Seattle, WA May 2017 – Aug 2017

Software Development Engineer Intern

- Designed and implemented performance report for Headline Search Ads based on business requirements.
- Assisted with a product life cycle from specifications through QA tests.
- Collaborated with external users and teams to elicit new business requirements using agile methods.

ACADEMIC PROJECTS

CV Project: Age Classification and Synthesis | Rochester, NY Jan 2022 – May 2022

- Applied simplified deep CNN to classify a person's age and gender from an image.
- Predicted lifespan appearance changes from a single image by applying a multi-domain image-to-image GAN architecture to predict change trends in head shape and facial textures.

AR for LEGO Assembly| Rochester, NY Aug 2021 – Dec 2021

- Facilitated LEGO assembly by detecting the current step and prompting instructions for the next step.
- Scanned 3D objects in real-time to determine the current step and prompted a picture of bricks of the next step.
- Detected pictures and generated animation of the entire assembly process.

Other AR Practices:

- Detected and tracked human faces, added various filters, and generated animations when the faces moved.
- Detected planes and pictures and generated virtual 3D objects on that, users controlled the virtual objects to move and interact with other virtual objects.

District Generation System | New York, NY Jan 2018 – May 2018

- Identified pain points and risks of Gerrymander and elicited measurement metrics by analyzing the voting process and the legal boundary of redistricting.
- Developed the architecture of a district generation system using the OO structure and specified each component and their interaction using user cases and user stories.
- Implemented a descriptive GUI of the system using jQuery and added customizable functional features.
- Designed the system database using MySQL; integrated database with other modules with JDBC and performed system testing to remove obvious defects.

Course Registration System | New York, NY Aug 2017 – Dec 2017

- Designed the architecture of the system and operation logic according to the project requirements.

- Developed dynamic HTML-based web pages using Apache Tomcat, Java Servlet, and JSP.
- Connected backend database using JDBC and fixed existing bugs; invited students and professors to experience system prototype and modified the application according to the feedback.

LANGUAGES AND SKILLS

- Programming Languages: Python, Java, JavaScript, C#, Swift, MySQL
- Technical Skills: OpenCV, PyTorch, Pandas, NumPy, Unity, Xcode, Reality Composer, React, AWS tools.
- Design Skills: Figma, Sketching, Prototyping, Service Design, Interaction Design.
- Languages: English (Proficient), Chinese (Native)