Shanshan (Shane) Zhu

zhu36s@mtholyoke.edu| +1 669-300-9008
LinkedIn: linkedin.com/in/shane-zhu/| GitHub: github.com/Shane-33

EDUCATION

Mount Holyoke College, South Hadley, MA — Expected Dec 2024
Bachelor of Arts in Computer Science & Experimental Psychology — GPA: 3.57/4.0 | Major GPA: 3.9/4.0

SKILLS SUMMARY

- **Programming Languages (Proficient**): Python, Java, C, C#, Swift, JavaScript, TypeScript, R, SQL, Go, MATLAB; proficient in cross-platform development, including front-end, back-end, and mobile app development
- **Tools (Proficient):** Django, React, React Native, TensorFlow, PyTorch, Keras, MongoDB, SQL Server, Unity3D, Streamlit, WebGL, Docker, Kubernetes, Git, Apache Kafka.
- **Coursework**: Intro to Computer Science, Data Structure, Discrete Mathematics, Computing Systems, Python Programming, Software Design, Computing Vision, Operating System, Theory of Computation, Machine Learning, Naturing Language Processing
- **Languages**: Chinese (Native), English (Fluent), Cantonese (Fluent).

RESEARCH EXPERIENCE

Hodges Lab, Mount Holyoke College | South Hadley, MA — Jan 2024–Present
Research Assistant

- Conducting over 200 neuroscience trials examining sex-specific neuronal activation in cognitive bias and depressive behaviors.
- Preparing brain region imaging samples and analyzing neurogenesis using estrus cycle studies and DCX/MAM markers.

ExploreCSR Program, Brown University & Google | Providence, RI — Jan 2024–June 2024
Research Assistant

- Led the development of DiagramGPT, integrating Keras, TensorFlow, and GPT-4 to analyze data efficiently, enhancing dialogue accuracy by 20% and speed by 30%.
- Conducted literature reviews, developed project proposals, and presented research to over 100 scholars at the Brown CS Symposium, increasing interest in NLP research by 15%.

BEARS Lab, Mount Holyoke College | South Hadley, MA — June 2023–Present
Software Engineer and Research Assistant

- Developed immersive VR projects using C and C# in Unity, incorporating Varjo AR features and optimizing 3D rendering through Unity3D, reducing rendering time by 30% and enhancing user immersion.
- Designed and maintained SQL Server databases, ensuring data integrity and consistency across multiple VR projects, resulting in 100% uptime for critical systems.
- Applied eye-tracking techniques with Python to analyze user behavior, driving data-driven improvements in VR interface design, and increasing interaction quality by 20%.

WORK EXPERIENCE

VeyTel, LLC | Pittsburgh, PA — June 2023–August 2023
Software Engineering Intern | Tech Stack: Swift, Machine Learning, iOS Development

- Developed the iOS medical application Dermaviz using Swift, Xcode, and React Native, collaborating with designers to optimize UI/UX, resulting in a 20% increase in user satisfaction and app usability.
- Implemented MongoDB and cloud-based backend services, improving app scalability by 50% and decreasing response times by 25% for real-time medical data processing.
- Managed codebase using Git and CI/CD pipelines, conducting code reviews that identified and fixed 10+ security vulnerabilities, contributing to stable releases and a 15% reduction in development time.

Dandilyonn | Remote — June 2023–August 2023
Software Engineering Intern | Tech Stack: React Native, Expo, JS, TS - Awarded "Best App"

- Developed the cross-platform mobile app "Can-did" using React Native and Expo, integrating scheduling and task management, improving user efficiency by 35% through optimized backend integration and real-time updates.
- Implemented Redux for efficient state management and real-time data synchronization with MySQL, reducing app load times by 40% and enhancing data security, increasing user trust by 25%.

ACTIVITIES & LEADERSHIP

Amherst College Hackathon | Amherst, MA   Dec 2023
Team Lead
- Led a cross-functional team to develop MyFridge, a Django-based web app aimed at reducing food waste by optimizing ingredient usage. Integrated Google API and OpenAI to deliver personalized recipes based on users' available ingredients, enhancing user engagement by 25%. Project awarded with the "Most Creative" prize.

Teals Program, Microsoft | Remote   June 2023–June 2024
Course Instructor
- Co-taught Cybersecurity at Fairfax Senior High School, instructing over 100 students in the fundamentals of computer science and network security using tools such as Wireshark and Encryption. Delivered remote lessons and hands-on labs through Zoom and Canvas, sparking student interest in cybersecurity careers and improving course completion rates by 20%.

MoZone, Mount Holyoke College | South Hadley, MA   June 2023–June 2024
Peer Educator
- Organized campus-wide workshops on diversity, equity, and allyship, fostering an inclusive campus community.

PROJECTS

EcoRankAI | AI EarthHack, Harvard University partnered with Manulife, Microsoft, DotsLive   Jan 2024
Tech Stack: Python, Streamlit, OpenAI, Pandas

- Developed a cloud-based interactive interface using Streamlit and OpenAI GPT for natural language processing and text analysis, optimizing user experience and increasing accessibility for non-technical users; project awarded with the GenAI Top 15 prize.
- Automated document analysis and key information extraction from uploaded CSV files, leveraging Pandas for data preprocessing and Plotly for dynamic data visualization, improving trend prediction accuracy by 25%.

Smart-City | Personal Project   Jan 2024
Tech Stack: Webpack, GIS, JavaScript, HTML, CSS

- Created Smart-City, a web-based simulation using Webpack and GIS techniques to render 3D city models and visualize geographic data, optimizing resource loading and enhancing performance by 40%.
- Simulated Minecraft-like mechanics to allow users to build and manipulate virtual city environments, integrating RESTful APIs for real-time data management and user interaction tracking.

PEER-REVIEWED PUBLICATIONS

Zhu, S., & Mohammad, M. (In preparation). Leveraging AI and numerical optimization for enhanced financial fraud detection: A scalable and adaptive framework. In preparation for the 2025 *IEEE Conference on Artificial Intelligence (IEEE CAI)*.

Mohammad, M., & **Zhu, S.** (submitted). Integrating symbolic logic with Deep Neural Networks to build systems capable of both learning from data and reasoning logically in medical treatment planners. Conference paper submitted to the 10th *International Congress on Information and Communication Technology (ICICT-25)*.

Mohammad, M., & **Zhu, S.** (accepted). AI-powered digital human clones for enhanced business communication: Evaluating engagement, data retention, and ethical implications. Abstract accepted for the 2025 *International Business Analytics Conference Proceedings*.

Zhu, S., & Mohammad, M. (accepted). AI-powered models for real-time fraud detection in financial transactions to improve financial security. Abstract accepted for the 2024 *International Conference on Machine Learning and Cybernetics (ICMLC)*.

Mohammad, M., **Zhu, S**., & Itauma, I. (2024). An empirical analysis of the functionalities and confidence scoring mechanisms in leading Large Language Models. *International Business Analytics Conference 2024 Proceedings, 1*(1).

CONFERENCE PRESENTATIONS

Zavalny, A., **Zhu, S**., Fee, C., & Jung, H. (2024). *Enhancing AI-assisted diagram generation with GenDiagram.* Conference poster presented at the 2024 Brown CS Research Symposium, Providence, RI.

Loftman, A., Guzman Amato, A. M., Xu, B., **Zhu, S.**, Ten Kate, C., & Hodges, T. E. (2024). *Adolescent social instability stress affects cognitive bias in male and female rats across the lifespan.* Conference poster presented at the UMass-Amherst Medical Poster Session, Amherst, MA.

AWARDS

- GenAI Top 15 prize, AI EarthHack, Harvard University partnered with Manulife, Microsoft, DotsLive.   Jan 2024
- Most Creative Project, Amherst College Hackathon   Dec 2023
- Lynk Summer Research Fund, Mount Holyoke College ($3,000)   June 2023