Yourui Shao

youruishao115022@gmail.com | github.com/iuruoy-shao

Education

California Institute of Technology, B.S. in Computer Science   *Exp. Grad.* 06/28
- **Courses:** Vector Calculus, Linear Algebra, Programming Methods, Software Design, Mechatronics

Experiences

Research Intern @ San Jose State University   Aug 2024 – Present
- Working with Prof. William Andreopoulos to develop low-cost methods for word embeddings via generating bit arrays to encode word occurrence relationships; as alternative to existing neural network-based generation.
- Iteratively improved algorithms via analyzing underlying mathematical and NLP techniques.

Software Engineer Intern @ AirProce Technology   Jun 2021 – Aug 2021
- Webscraped and generated geographical weather station data. Developed Java backend weather API retrieval system used in mobile application for IoT air filtration systems.

Projects

Multitasking Coding Agent   Jul 2025 – Present
- Building CLI coding AI agent capable of developing features in parallel with git branch management and CrewAI.

Reinforcement Learning for *Fish*   Jan 2025 – May 2025
- Researched social dynamics in reinforcement learning via deception in the multiplayer card game *Fish*.
- Optimized and trained multi-tiered model of Q-learning and hand prediction neural networks based on human decision-making. Programmed parsing and state-action conversion of real-world and simulated gameplay data.

Pavyl, pavyl.com   Jan 2025 – Mar 2025
- Built AI assistant with infinite, linear-cost cross-conversational memory with RAG.
- Developed model switching and web search and memory tooling with Vercel SDK and OpenRouter.

AMC Problems Trainer, problemstrainer.app   Feb 2023 – Oct 2024
- Fine-tuned DistilBERT on American Mathematics Competitions (AMC) problems with TeX vocabulary additions for multi-label classification at 94% accuracy. Paper presented at IEEE BigDataService.
- Designed and built practice-based, adaptive learning system for math with Flask + Jinja.

Acceptify AI, acceptifyai.com @ University of California, Los Angeles   Jul 2024 – Aug 2024
- Developed Random Forest model and interactive web app predicting post-secondary education outcomes at 85-92% accuracy using multimodal (numerical and text-based) features. Paper presented at IEEE FMLDS.
- Generated 21,000+ data points from unstructured Reddit post content via feature extraction with LLMs.

Publications

Predicting College Admission Results with Machine Learning on Unstructured Online Data, 2024 IEEE FMLDS   Nov 2024

An Accurate Classification and Recommendation Method of Competitive Math Problems, 2024 IEEE BigDataService   Jul 2024

Awards

Math Prize for Girls Qualification, x2   2023 & 2024
- Placed nationally within top 100 of pre-collegiate female-identifying math contestants.

American Invitational Mathematics Examination (AIME) Qualification, x4   2021 – 2024

Skills

- **Languages & Tools**: Python, CrewAI, Flask, PyTorch, JavaScript, TypeScript, HTML/CSS, SQL, LaTeX, git
- **Concepts:** Natural Language Processing, Transformers, Reinforcment Learning, Deep Learning, Statistical Analysis, REST APIs, Embedded Systems, Full Stack