Amber Lu

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Education

California Institute of Technology — **Pasadena, CA**
M.S. in Electrical Engineering — *Sep. 2025 – Expected Dec. 2026*

University of Illinois Urbana-Champaign — **Urbana, IL**
B.S. in Computer Engineering, GPA: 3.96/4.00 — *Sep. 2021 – May 2025*
Relevant Courses: Data Structures, Intro to Algs & Models of Comp, Artificial Intelligence, Applied Parallel Programming

Experience

Lilith Games — **Shanghai, China**
Software Engineer Intern — *Jul. 2024 – Oct. 2024*

- Built a **multi-modal RAG agent for game testing**. The agent explores in-game UI interactions during test execution and automatically generates a help document (containing screenshots and text descriptions of UI elements), which is later retrieved to guide regression tests (e.g., daily quests, in-game purchases), reducing repetitive manual Quality Assurance (QA) effort by 30% across frequent game version updates.
- Built an **anomaly detection system** using language models to detect UI issues (text overflow, garbled characters, overlapping elements), achieving **90% precision**, and integrated into the internal QA pipeline.
- Enhanced the game localization **machine translation pipeline** by mining terminology from human translation records, expanding the terminology database and improving translation consistency across target languages.

University of Illinois Urbana-Champaign, DIPNet Project — **Urbana, IL**
Research Assistant, advised by Prof. Tong Zhang — *Nov. 2024 – Jun. 2025*

- Applied **Distributional Input Projection Network (DIPNet)** to improve generalization by enforcing smoothness in input representations across layers.
- Led the experimental validation on **Vision Transformers (ViTs)** under adversarial attacks (Gaussian noise, FGSM) and **Large Language Models (LLMs)** on math reasoning tasks, tuning hyperparameters for best performance.
- Achieved up to **+7.3% accuracy gain** over baselines on ViT adversarial tasks.

University of Illinois Urbana-Champaign, SciCode Project — **Urbana, IL**
Research Assistant, advised by Prof. Hao Peng — *Mar. 2024 – May 2024*

- Built **SciCode**, a benchmark of 80 research problems and 338 subproblems spanning Physics, Math, Materials, Biology, and Chemistry, for evaluating language models' scientific code generation ability.
- Integrated scientist-curated problems, code, and test cases into a unified dataset format; optimized prompts and **designed the evaluation pipeline**; conducted evaluation across proprietary and open-source language models.
- Open-sourced the dataset and pipeline on GitHub; accepted at NeurIPS 2024 (Datasets & Benchmarks Track).

Projects

GameUniverse: Full-Stack Game Searching Website (Course Work) — **Urbana, IL**
Database Systems, UIUC — *Sep. 2023 – Dec. 2023*

- Developed a **full-stack web application** for Steam game search of 13k+ games; released the project on GitHub.
- Designed and optimized **relational database schema (MySQL)** to support advanced filtering and keyword search.
- Built a responsive **React** interface for interactive search and game detail display; added user authentication and wish list features.

Publications

Towards Better Generalization via Distributional Input Projection Network. Preprint at arXiv:2506.04690.

SciCode: A Research Coding Benchmark Curated by Scientists. Accepted at NeurIPS 2024, D&B Track.

Skills

Programming Languages: Python, C/C++, SQL, HTML/CSS, JavaScript

ML/DL: PyTorch, HuggingFace Transformers, LoRA/QLoRA, CUDA, LangChain, DDP, Apex/AMP

Data & Systems: MySQL, Docker, Linux, Flask, React

Tools: Git, TensorBoard, Weights & Biases, VS Code, PyCharm