Alan Liang

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Education

University of Southern California — Los Angeles, CA
M.S. in Computer Science — *Admitted Fall 2025*

University of California, Riverside — Riverside, CA
B.S. in Computer Science — *Sep 2021 – March 2025*
Relevant Coursework: Artificial Intelligence, Machine Learning, Natural Language Processing, Algorithm Engineering, Database Management

Technical Skills

Languages: Python, Java, C++, JavaScript, SQL (Postgres), HTML/CSS
Frameworks & Tools: React, Node.js, Express.js, Flask, FastAPI, Docker, GCP
Libraries: PyTorch, Transformers (Hugging Face), scikit-learn, BLEURT, pandas, NumPy
Developer Tools: Git, VS Code, IntelliJ, Atlassian JIRA
Cloud & APIs: OpenAI, Gemini, LangChain (learning), REST, CI/CD (basic familiarity)

Experience

Undergraduate Research Assistant - LLM Safety and Optimization Research — Jan. 2024 – Jun. 2024
University of California, Riverside — *Riverside, CA*

- Collaborated with a PhD student under Dr. Salman Asif to investigate advanced LLM unlearning techniques, focusing on mitigating hallucinations and defending against adversarial attacks
- Engineered evaluation programs to quantify unlearned LLM performance across key metrics, including output diversity, fluency, and utility preservation
- Leveraged the BLEURT model to quantitatively assess semantic preservation between original and unlearned LLM outputs, identifying potential meaning degradation during the unlearning process
- Conducted comprehensive literature reviews and analyzed academic publications to inform research direction and identify state-of-the-art methodologies in LLM safety

Projects

Verdant - Translation Verifier | *React, Node.js, Typescript, OpenAI, Multer, Google Gemini* — Apr. 2025 – Present

- Engineered AI-powered localization platform with dual OpenAI GPT-4 translation generation and Google Gemini verification workflows, featuring RAG system with MongoDB Atlas Vector Search across 1,080+ curated translation pairs from Apple HIG, Microsoft terminology, and Material Design datasets
- Developed advanced RAG infrastructure using OpenAI text-embedding-3-large (3072-dimensional vectors), semantic similarity matching with 60%+ threshold filtering, and intelligent domain filtering across 9 languages for software UI, web development, and design system translations
- Built responsive React interface with selective error fixing, individual checkboxes, "Select All" functionality, real-time preview modals, session management, and granular translation correction for nested JSON structures with persistent state management
- Implemented scalable backend architecture using Express.js with JWT authentication, Multer multi-file uploads, MongoDB with 100% embedding coverage, comprehensive error handling, and efficient processing pipelines supporting chunking strategies and batch operations

Broke Brokers - Stock Forecasting Platform | *Python, React.js, Node.js, PyTorch* — Jan. 2025 – Mar. 2025

- Collaborated in a team of 5 to design and develop a stock prediction dashboard, implementing an LSTM Machine Learning model with PyTorch for time-series forecasting
- Constructed a dynamic and responsive dashboard frontend using React and Vite, providing users with real-time stock data visualization
- Architected the backend infrastructure using Node.js and Flask, employing Express.js for RESTful API routing and Axios for seamless data fetching from external stock APIs
- Trained and fine-tuned the LSTM model using PyTorch on historical stock data to accurately predict future price movements

Team PORT - Container Logistics Optimizer | *Python, Numpy, Pandas, FastAPI* — Sept 2024 – Dec 2024

- Led development on a container logistics optimization program within an Agile (Scrum) team of 5, utilizing Atlassian JIRA for task management, to determine optimal container loading/unloading sequences and ensure ship balance
- Architected the core application logic for calculating optimal container placement strategies and ship weight distribution
- Implemented the A* search algorithm incorporating sophisticated heuristics, achieving a >50 percent reduction in search time for optimal logistical solutions
- Developed and exposed a RESTful API using FastAPI, enabling communication between the backend optimization engine and a web-based user interface (WebUI)