Ervin Tan Zhang-Hng

Singapore | ervintan018@gmail.com | https://www.linkedin.com/in/ervintanzh/ | https://makisekurisux.github.io
Work Authorization: Singapore Citizen (no visa required) | Eligible: H-1B1 Visa (US) | UK Skilled Worker / HPI Visa (sponsorship)

EDUCATION

National University of Singapore — Singapore
Bachelor of Computing, Computer Science (Focus Area: Information Retrieval) — *Expected Graduation: May 2027*

EXPERIENCE

GovTech Singapore — Jan. 2026 – Current
Software Engineer Intern — *Singapore*
- Engineered an application integrating Singpass OpenID Connect (OIDC) to automate user identity extraction.
- Traced authentication events and validated OIDC token exchanges using Datadog and Amazon CloudWatch.

GIC — May 2025 – Dec. 2025
Software Engineer Intern — *Singapore*
- Architected an autonomous agent platform using LangGraph and LangChain to power multi-step, multi-tool LLM research pipelines.
- Orchestrated Apache Airflow DAGs integrated with RAG pipelines and LLM APIs, automating portfolio analysis and report generation.
- Optimized RAG retrieval accuracy and output reliability by evaluating and implementing advanced chunking strategies and embedding models.
- Reduced workflow runtime by 75% by refactoring synchronous code into asynchronous Python, accelerating insight delivery for portfolio teams.

Voltade — Dec. 2024 – Jan. 2025
Software Engineer Intern — *Singapore*
- Generated 1,500+ business leads by engineering a discovery engine utilizing Google Custom Search, LLM APIs, and RAG.
- Developed and deployed an internal search application to automate the categorization and retrieval of potential SME clients.

RAiD, Republic of Singapore Air Force — Jan. 2022 – Aug. 2024
Software Engineer (National Service) — *Singapore*
- Developed a full-stack Telegram bot to facilitate Air Force-wide communication using TypeScript, React, Prisma, and PostgreSQL.
- Resolved 2,000+ inquiries in 6 months by engineering an automated FAQ bot using DialogFlow and JavaScript, significantly reducing manual workload.
- Reduced data processing time from 10 hours to under 1 hour by architecting a scalable ingestion pipeline with asynchronous Python.

Trustwave — Singtel — Sep. 2020 – Feb. 2021
Software Engineer Intern — *Singapore*
- Engineered efficient data pipelines using Apache Spark to optimize the processing of 10M+ records.
- Designed and implemented interactive data visualization dashboards using D3.js, React, and TypeScript to improve data accessibility.
- Developed complex GraphQL schemas to extract and aggregate data from ArangoDB and MongoDB.

PROJECTS

AskAmey − AMEX Hackathon (2nd Place) | *Python, LangGraph, LangChain*
- Built an AI assistant for AMEX card recommendations using LangGraph and LangChain with accurate reasoning paths.
- Implemented scraping and Pydantic-based parsing pipelines to structure AMEX card data for vector store/graph retrieval.
- Designed retrieval workflows supporting reward, promotion, and card eligibility queries in a conversational interface.

MindConnect | *React Native, NodeJS, Expo-Go, Heroku, Firebase, Git*
- Developed a React Native application to allow people seeking mental health support to speak with a peer or counsellor.
- Built a Node.js/Heroku back end that runs daily database maintenance at 8 a.m. via scheduled jobs.

Project Crisis | *Python, scikit-learn, Flask, Heroku, Docker, Git*
- Created a capture-the-flag style challenge to teach adversarial ML concepts through practical CTF problems.
- Built and deployed multiple AI models (phishing detection, web-defacement classification, DDoS identification).
- Delivered Jupyter notebooks and a Flask web interface so participants could run and test attacks locally or in the cloud.

TECHNICAL SKILLS

Languages: Python, Java, C, C++, Go, SQL (Postgres), JavaScript, TypeScript, HTML/CSS
Technologies / Frameworks: AWS, Terraform, Docker, Datadog, Redis, React, Node.js, FastAPI, Streamlit, Airflow, Linux
Libraries: pandas, NumPy, Matplotlib, Plotly, Playwright, BeautifulSoup, Selenium, Twilio, OAuth 2.0
Artificial Intelligence: LangChain, LangGraph, RAG, OpenSearch, LLMs, Hugging Face, NLP, PyTorch, Scikit-learn