

Ty Tiong

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EDUCATION

University of Michigan, Ann Arbor

Aug 2023 - Dec 2025

B.S. in Computer Science (GPA: 3.7)

EXPERIENCES

IBM

May 2025 - Aug 2025

Solutions Architect Intern (Data, Cloud & AI) | Python, OpenShift

- Developed RAG chatbot (LangGraph, Llama LLM, Elasticsearch) to improve context retention across multi-turn conversations, providing validation for a production migration from LangChain
- Debugged OpenShift (Kubernetes) installation failure by analyzing logs and YAML configuration, pinpointing Kafka and Tekton CI/CD dependency issues for IBM's global engineering team, unblocking demos for 3 sales teams worldwide
- Built Python ML model with Scikit-Learn and deployed IBM Maximo on distributed AWS environment to forecast asset lifecycle for an energy client, presenting proof-of-concept that drove workshops for a \$50K/year renewal

Pantas Climate Solutions

May 2024 - Aug 2024

Software Engineer Intern | Python, PostgreSQL, AWS

- Built Python data pipeline to fetch, clean and enrich data from Excel inputs, Bloomberg API and PCAF datasets, using AWS Lambda / SNS to reduce retrieval time (4 → 2 min), deployed to production for an investment firm
- Developed Django backend to generate financial reports asynchronously using RabbitMQ task queue, and resolved N+1 database query issues, reducing page load time by 300ms in production
- Implemented SQL schema for 5 financial asset classes linking 5,000+ users and third-party records to track the carbon footprint of a multi-billion dollar company, utilizing AWS S3 Glacier and CloudFormation for disaster recovery

University of Michigan - Transportation Research Institute

Dec 2024 - Mar 2025

Software Engineer | JavaScript, Vue

- Migrated legacy frontend from jQuery to Vue.js, building reusable components that cut code duplication by 100+ lines
- Visualized 500K+ vehicle crash records by developing interactive dashboards with Chart.js and Google Maps API for Michigan highway safety researchers, integrating data via PHP REST APIs

Interactive Sensing and Computing Lab

Aug 2024 - Dec 2025

HCI Research Assistant | Python, Swift, PostgreSQL

- Developed full-stack data annotation app with SwiftUI, Django and PostgreSQL to label audio for ML training, using push notifications, token authentication and WiFi provisioning to streamline sensor pairing from 5 to 2 steps
- Built real-time Python audio processing pipeline to detect and extract events via multiprocessing, ensuring 0 data loss
- Fine-tuned Hugging Face AST model in PyTorch using transfer learning, achieving 75% activity classification accuracy as part of privacy-preserving audio sensing system for autoimmune disease research

PROJECTS

MapReduce Search Engine | Python, React, Flask, AWS

Oct 2024

- Built Hadoop-inspired MapReduce framework in Python with TCP, UDP job distribution and heartbeat monitoring for fault tolerance, ranking 10,000+ Wikipedia documents using TF-IDF
- Developed React search engine with document sharding across 3 Flask servers on AWS EC2, enabling parallel queries

Network File Server | C++, Sockets, Multithreading

Nov 2025

- Built multithreaded client-server file storage system in C++ with socket programming, utilizing upgradable reader writer locks and hand-over-hand locking to optimize concurrency, handling 3,000 requests in 0.9 seconds
- Wrote exhaustive unit and stress test suites with GCov code coverage analysis to detect deadlocks and race conditions

TECHNICAL SKILLS

Languages: Python, C/C++, JavaScript, Swift, SQL, HTML, CSS, Bash Script

Frameworks & Databases: Django, Flask, Express, React, Vue, PyTorch, Scikit-Learn, Firebase, PostgreSQL, Elasticsearch

Infra & Tools: AWS (EC2, S3, Lambda, SNS, QuickSight, CloudFormation), Docker, OpenShift (Kubernetes), RabbitMQ, Git, CI/CD