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