

# Tze Yi (Ty) Tiong

[tytong2@gmail.com](mailto:tytong2@gmail.com) | (734) 717-0337 | [tzeiyi.github.io/](https://tzeiyi.github.io/) | [linkedin.com/in/tze-yi-tiong/](https://linkedin.com/in/tze-yi-tiong/)

## Education

### University of Michigan, Ann Arbor

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

Aug 2023 - Dec 2025

- **Leadership/Part-Time:** Michigan Hackers iOS Project Lead, AUP Head of Activities, University IT Consultant
- **Relevant Courses:** Web Systems, Database Systems, Machine Learning, CyberSecurity, Operating Systems, Data Analysis, Computer Organization, Data Structures & Algorithms, Human Centered Software, Object Oriented Programming Java

## Technical Skills

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

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

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

## Work Experiences

### IBM

May 2025 - Aug 2025

Solutions Architect Intern (*Platform Engineering*) | Python, OpenShift

- Resolved critical OpenShift installation failures by debugging system logs and YAML configurations in collaboration with IBM's global engineering team, protecting a \$50K/year renewal contract
- Prototyped LangGraph-based RAG chatbot (Python, WatsonX, Elasticsearch) with explicit state management for healthcare client, demonstrating improved multi-turn conversation accuracy over production LangChain system
- Deployed IBM Maximo AI-powered asset maintenance platform on OpenShift for energy client, delivering demos, PoC environments and workshops addressing predictive model accuracy and industry compliance questions

### Pantas Climate Solutions

May 2024 - Aug 2024

Software Engineer Intern | Python, PostgreSQL, AWS

- Built Python data pipeline to fetch, clean and enrich data from Bloomberg API, Excel inputs and PCAF datasets, optimized with AWS Lambda and SNS for 50% faster async retrieval (4 → 2 min), deployed to production for carbon footprint analysis
- Developed REST APIs in Django to generate QuickSight reports asynchronously using RabbitMQ task queue and resolved N+1 query issues, reducing page load time by 300ms in production
- Designed SQL schema for 5 financial asset classes, linking 5,000+ user and third-party records for carbon accounting

### University of Michigan - Transportation Research Institute

Dec 2024 - Mar 2025

Software Engineer | JavaScript, Vue

- Migrated legacy query tool frontend from jQuery to Vue.js/Vuetify architecture, improving design and code maintainability
- Built interactive dashboards using Chart.js and Google Maps API to visualize 500K+ crash records for Michigan highway safety researchers, integrating legacy PHP backend services

### Interactive Sensing and Computing Lab

Aug 2024 - Dec 2025

Software Engineer (*Research*) | Python, PyTorch, Swift, PostgreSQL

- 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
- Optimized real-time Python audio processing pipeline on Orange Pi hardware, reducing latency by 60% via multiprocessing
- Developed full-stack data annotation app with SwiftUI, Django, and PostgreSQL to label audio data for ML training, implementing Push Notifications, WiFi provisioning and token authentication for multi-device communication

## Project Experiences

### Network File Server | C++, Sockets, Multithreading

Nov 2025

- Built multithreaded client-server file system in C++ with socket programming, implementing upgradable reader-writer locks and fine-grained hand-over-hand locking to optimize concurrent request handling

### GPT-2 From Scratch | PyTorch

May 2025

- Implemented GPT-2 transformer from scratch in PyTorch with multi-head attention and BPE tokenization; fine-tuned pretrained weights achieving 92% accuracy on spam email classification

### MapReduce Search Engine | Python, React, Flask, AWS

Oct 2024

- Built distributed MapReduce framework in Python with TCP, UDP protocols for job distribution and heartbeat monitoring for worker fault tolerance, ranking 10,000+ Wikipedia documents using TF-IDF
- Developed React search engine, load balancing across 3 Flask servers on AWS EC2 using modulo-based request distribution