

# Tze Yi (Ty) Tiong

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## 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 | Python, OpenShift

- Led deployment of IBM Maximo's AI-powered asset maintenance platform on OpenShift for energy client, delivering PoC demo and workshops addressing client questions on model accuracy and industry standards
- Resolved critical OpenShift installation failures by debugging system logs and YAML configurations in collaboration with IBM's global engineering team, directly preventing loss of a \$50K/year renewal contract
- Researched and 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

### Pantas Climate Solutions

May 2024 - Aug 2024

Software Engineer Intern | Python, PostgreSQL, AWS

- Built carbon emissions calculator for portfolio, supporting sales team on technical document that closed investment firm deal
- Developed Python/Pandas data pipeline to fetch and clean data from Bloomberg API, Excel input files and PCAF-accredited datasets, optimized with AWS Lambda and SNS for 50% faster async retrieval
- Designed PostgreSQL schema for 5 asset classes and resolved N+1 query issues, reducing page load by 300ms in production
- Implemented Django REST API with RabbitMQ task queue for async carbon calculations and QuickSight report generation

### University of Michigan - Transportation Research Institute

Dec 2024 - Mar 2025

Software Engineer Intern | JavaScript, Vue

- Migrated legacy jQuery query tool to modern Vue.js/Vuetify architecture, improving UI 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

- Designed privacy-preserving audio sensing system for autoimmune disease research, achieving 75% activity classification accuracy by fine-tuning Hugging Face AST model with PyTorch
- Built real-time Python/NumPy audio processing pipeline with multiprocessing on Orange Pi hardware for 96kHz streams
- Developed full-stack annotation app with SwiftUI, Django, and PostgreSQL to label audio data for ML training, leveraging WiFi provisioning and token authentication for multi-sensor device pairing

## 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 UDP heartbeat monitoring for worker fault tolerance, scoring and ranking 10,000+ Wikipedia documents using TF-IDF
- Developed React search engine with Flask backend deployed on AWS EC2, implementing load balancing across 3 servers using modulo-based request distribution