Tze Yi (Ty) Tiong

tytiong2@gmail.com | (734) 717-0337 | tzeyi.github.io/ | linkedin.com/in/tze-yi-tiong/

Education

University of Michigan, Ann Arbor **Aug 2023 - Dec 2025**
B.S. in Computer Science (GPA: 3.7)

- **Leadership/Part-Time:** Michigan Hackers Project Lead, AUP Head of Activities, University IT Consultant
- **Relevant Courses:** Data Structures & Algorithms, Web Systems, Database Systems, Machine Learning, Operating Systems, Cyber Security, Data Analysis, Computer Organization, Human Centered Software, Object Oriented Programming in 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 (Data, Cloud & AI) | Python, OpenShift

- Prototyped LangGraph-based RAG chatbot (Python, WatsonX, Elasticsearch) for healthcare client to improve context retention across multi-turn conversations, addressing limitations in production LangChain system
- Resolved critical OpenShift (Kubernetes) installation failures by debugging logs and YAML configurations with IBM's global engineering team, unblocking demos for 3 sales teams worldwide
- Deployed IBM Maximo on OpenShift and built Python ML models to forecast asset lifecycle for energy client, presenting proof-of-concept that secured follow-up workshops for a $50K/year contract 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, optimized with AWS Lambda / SNS to reduce retrieval time (4 → 2 min), deployed to production for an investment firm client
- Developed Django backend to generate financial reports asynchronously using RabbitMQ task queue, and resolved N+1 database query issues, reducing page load time by 300 ms in production
- Designed SQL schema for 5 financial asset classes, linking 5,000+ user and third-party records for carbon footprint analysis

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, Swift, PostgreSQL

- Developed full-stack data annotation app with SwiftUI, Django and PostgreSQL to label audio data for ML training, utilizing WiFi provisioning, token authentication and push notifications to streamline sensor pairing from 5 to 2 steps
- Optimized real-time Python audio processing pipeline on Orange Pi hardware, reducing latency by 60% via multiprocessing
- 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

Project Experiences

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

GPT-2 From Scratch | *PyTorch* **May 2025**

- Implemented and trained GPT-2 transformer architecture in PyTorch with multi-head attention and BPE tokenization; fine-tuned model achieving 92% accuracy on spam email classification