

# Tze Yi (Ty) Tiong

tytiong2@gmail.com | +1 (734) 717-0337 | <https://www.linkedin.com/in/tze-yi-tiong/> | <https://github.com/tzeyi>

## Education

### University of Michigan, Ann Arbor

Dec 2025

B.S. in Computer Science (GPA 3.7)

- Courses: Web Systems, Database Systems, Machine Learning, Cyber Security, Operating Systems, Data Analysis, UX Design

## Work Experiences

### Interactive Sensing and Computing Lab

Aug 2024 - Present

HCI Research Assistant

- Preprocessed collected sensor and app data, and fine-tuned an Audio Spectrogram Transformer to generate embeddings for a multimodal Mixture of Experts model, utilizing transfer learning for event recognition on inaudible frequencies
- Programmed an Orange Pi sensor to process audio at 96,000 Hz, leveraging multiprocessing, memory mapping, and NumPy to reduce latency by 60% with zero chunks lost, alongside WiFi provisioning logic to register the device on an iOS app
- Developed a data annotation app using SwiftUI and Apple Push Notifications to receive real-time sensor data, and a Django and PostgreSQL backend with token-based authentication, hosted on-premise with HTTPS and Docker

### IBM

May 2025 - Aug 2025

Solutions Engineer Intern

- Built and presented IBM Maximo PoC demo to energy companies on anomaly detection and asset life prediction with automated model selection (including Random Forest, Gaussian Mixture Model), addressing customization and industry standard questions
- Trained business partners and implementers on IBM Maximo's 5-node OpenShift deployment to support a 6-figure deal
- Resolved 3 IBM Maximo installation and ML training issues preventing sellers worldwide from demonstrating certain features by debugging Kubernetes pods, OpenShift config files, and Scikit-learn code, restoring functionality within 3 weeks
- Built prototypes in LangGraph and ElasticSearch to benchmark a RAG chatbot deployment for an enterprise serving 2.5+ million users, optimizing accuracy via prompt tuning and client consultation sessions

### University of Michigan - Transportation Research Institute

Dec 2024 - Mar 2025

Front End Developer

- Enhanced query tool for 500,000+ vehicle crash records by building dashboards with Chart.js and Google Maps API, reusable Vue.js components that reduced codebase by 100+ lines, and integrating new PHP backend services
- Modernized a legacy website for the Michigan Office of Highway Safety by conducting QA testing and fixing responsive, state management and design consistency bugs using Chrome DevTools to ensure proper display across all screen sizes

### Pantas Climate Solutions

May 2024 - Aug 2024

Software Engineer Intern

- Built a Django pipeline to parse data, pull API sources and calculate portfolio carbon emissions, utilizing AWS S3 and logging for data persistence; communicated its architecture to clients, helping sales team close deal with a multi billion dollar company
- Reduced enterprises' API fetch time by 50% with AWS SNS and Lambda for asynchronous retrieval, and created a financial report MVP in AWS QuickSight after decoupling its background generation with RabbitMQ task queue
- Designed database models with multi-foreign key relations to manage 5,000+ records, and optimized queries to eliminate N+1 query problems, reducing load times across multiple pages by ~300ms in production
- Deployed GitHub Actions to automate test cases and wrote AWS CloudFormation templates to provision cloud resources

## Projects & Leadership Experiences

### OS Kernel: Thread and Pager Library | C++, Linux

Sept 2025

- Implemented a thread library and CPU scheduler with synchronization primitives (mutex, CV) for multiprocess, multithreaded programs, and a pager to manage virtual memory through page tables, address translation, and swap file eviction

### Michigan Hackers | Project Lead | Swift, Flask, PostgreSQL, Scikit-Learn

Jan 2024 - May 2025

- Led the development of an iOS interview app for 7+ members, featuring a recommendation system to curate questions
- Organized weekly Hacknights to discuss project updates and teach Swift, REST APIs, Git and Figma wireframing

### GPT-2 From Scratch | PyTorch

May 2025

- Built a GPT-2 model from scratch to deepen understanding of transformer architectures, covering multi head attention, BPE tokenization, and next word prediction; fine-tuned pre-trained GPT-2 weights for binary classification on spam emails

### MapReduce Search Engine | React, Tailwind CSS, Multithreading, Network Protocols

Oct 2024

- Developed a distributed search engine with a Hadoop clone using TCP/UDP protocols for heartbeat monitoring and job distribution to score and rank 10,000+ Wikipedia documents via TF-IDF embeddings

## Technical Skills

**Programming:** C, C++, Python, JavaScript, Swift, SQL, NoSQL, HTML, CSS, Git, Shell Script, Jira

**Framework/Deployment:** Django, Express, React, Vue, PyTorch, Scikit-Learn, NGINX, Docker, OpenShift, AWS, Firebase, CI/CD