TONY HSU TAI

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EDUCATION

Northeastern University   *Boston, MA*
Master of Science in Computer Science – **GPA: 4.00/4.00**   *Sep 2024 - May 2027*

- Selected Coursework: Data Structures and Algorithms, Object-Oriented Design, Database Management Systems, Foundations of Artificial Intelligence, Computer Systems, Building Scalable Distributed Systems

Northeastern University   *Boston, MA*
Master of Science in Engineering Management – **GPA: 3.88/4.00**   *Jul 2019 – May 2021*

TECHNICAL SKILLS

Programming Languages:	Python, TypeScript, Java, C/C++, SQL, HTML, CSS
Frameworks & Libraries:	React, FastAPI, Node.js, Express.js, Socket.IO, Tailwind CSS
Database Management:	MySQL, PostgreSQL, MongoDB
Tools & Platforms:	Docker, Git, REST APIs, JWT, WebSockets

PROJECTS

🔗 **Microgreen Order Management System** | *Python, TypeScript, MySQL, React, FastAPI, REST APIs, JWT*

- Designed a **production-grade MySQL relational database schema** based on real-world business requirements, migrating operations from spreadsheets to a centralized database system.
- Implemented **30+ stored procedures, views, foreign-key constraints, and indexes** to encapsulate business logic and ensure data integrity, consistency, and deterministic workflows.
- Built a **FastAPI REST backend** that exclusively executes database stored procedures (no inline SQL), enforcing a clean separation between API, business logic, and persistence layers.
- Developed a **React + TypeScript frontend** with **JWT-based authentication**, enabling authenticated users to perform full **CRUD operations** across operational datasets.

🔗 **PokeDuel:** *Pokémon Battle Game* | *TypeScript, React, Socket.IO, Node.js, Express.js, REST APIs, WebSockets*

- Implemented a **real-time multiplayer system** using **Socket.IO and WebSockets**, handling concurrent connections and synchronizing shared game state across active sessions.
- Designed a **RESTful Express.js API** to manage matchmaking, session lifecycle, player limits, and secure access keys.
- Built a **React-based UI** styled with **Tailwind CSS**, integrating a **third-party REST API** for live Pokémon data and enhancing UX with state-driven **Motion animations**.

🔗 **Product Lens: Competitive Intelligence Dashboard** | *Python, TypeScript, FastAPI, DigitalOcean Gradient AI, LLMs*

- Built a **multi-agent LLM-based analysis system** using **DigitalOcean Gradient AI**, defining **three specialized agentic models** for pricing, product, and market signal extraction.
- Engineered a **dynamic prompt orchestration pipeline** where agents consume an XML-based context document generated from frontend inputs to guide structured web research.
- Enforced a **strict JSON schema validation layer** and integrated results into a **React + TypeScript dashboard**, enabling competitor summaries and longitudinal historical comparisons.

WORK EXPERIENCE

Operations Manager   *Sep 2021 – Jun 2024*
Boston Microgreens, LLC   *Boston, MA*

- Streamlined harvest operations using data-driven analysis and procedural redesign, **reducing harvest time by 22%** and resulting in the **development of 46 detailed SOPs** to improve efficiency and scalability.
- Designed an automated germination tracking system that eliminated manual checks and **decreased germination task time by 63%**, leveraging rule-based logic and scheduling workflows.
- Developed a scheduling and tracking system that automated seeding, germination, and harvest planning for **50+ weekly orders**. The tool has been running smoothly for **2+ years without failure.**
- Implemented a comprehensive financial dashboard to track and monitor financial health. It revealed that **11% of varieties were not generating profit**, leading to strategic adjustments to improve profitability.