

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

- Relevant Coursework: Data Structures and Algorithms, Object-Oriented Design, Discrete Structures, Database Management Systems, Foundations of Artificial Intelligence

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++, JavaScript, HTML/CSS, R

Frameworks and Libraries: React.js, Socket.IO, Node.js, Express.js, Vite, Tailwind CSS, Postman, Docker, Next.js

Database Management: MySQL, MongoDB, Prisma ORM

PROJECTS

🔗 **PokeDuel: Pokemon Battle Game** | TypeScript, React.js, Tailwind CSS, Socket.IO, Node.js, Express.js, Vite, Motion

- Implemented a real-time multiplayer system using **Socket.IO**, managing concurrent **WebSocket connections** and ensuring consistent synchronization of game state across all clients in active rooms.
- Designed a **RESTful API with Express.js** to manage game matchmaking, enforce player limits, and generate unique access keys to manage multiplayer sessions securely.
- Built a **React-based** team builder styled with **Tailwind CSS**, integrating **third-party API to fetch live Pokemon data** and enhancing interactivity with state-driven **Motion animation** built directly into React components.

🔗 **Spotify Wrapped Clone** | Typescript, Next.js, React, Tailwind CSS, Spotify Web API

- Designed and developed a personalized "Spotify Wrapped" experience, implementing **OAuth 2.0 with PKCE to authenticate users** and fetch personalized data (top tracks, artists, genres, etc.)
- Implemented **client-side integration with the Spotify Web API**, managing OAuth tokens refresh flows, and processing asynchronous JSON responses to transform raw listening history into aggregated user insights.
- Built interactive dashboard in Next.js, using **client-side API fetching and React state hooks** to render user stats with responsive updates from the Spotify Web API and optimized re-renders for smooth interactivity.

🔗 **Adventure Game Engine** | Java, Java Swing, Maven, JUnit5

- Designed a JSON-driven game engine in **Java** that parses user-provided worlds into dynamic entities (rooms, puzzles, monsters), following the **MVC architecture** for modularity and scalability.
- Developed custom controllers to manage gameplay logic across modes (text, batch, GUI) and built an interactive **Java Swing interface** with layered panels for rendering game summaries, inventory, and movement actions.
- Ensured reliability through **JUnit5** test suites with **90% branch coverage**, validating complex game logic and enabling players to load and explore custom worlds.

WORK EXPERIENCE

Operations Manager

Sep 2021 – Jun 2024

Boston Microgreens, LLC

Boston, MA

- Streamlined harvest operations using data-driven analysis, **reducing harvest time by 22%** through new procedural design and an efficiency model using **R**.
- Designed an automated germination tracking system that eliminated manual checks and **decreased task time by 63%**, leveraging rule-based logic and scheduling workflows.
- Mapped and optimized end-to-end operations, leading to the **development of 46 detailed SOPs** to improve process efficiency and scale operations.
- Developed an Excel-based 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.