Aaron Hsu

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EDUCATION

University of Michigan - College of Literature, Science, and Arts — **Ann Arbor, MI**
B.S in Computer Science, Minor in Statistics — *May 2025*

- **Relevant Coursework:** Data Structures and Algorithms | Computer Organization | Database Management Systems | Statistical Computing | Intro to AI | Intro to Computer Security | Conversational AI | Statistics and AI | Web Systems

SKILLS

- **Languages:** Python, SQL, C++, C, Java, JavaScript, HTML/CSS, R
- **Libraries/Frameworks:** React, Flask, TensorFlow, Keras, PyTorch
- **Tools/Platforms:** Git, Visual Studio, VS Code, Jupyter Notebook, Microsoft Office, AWS, Docker

WORK EXPERIENCE

First Solar — **Perrysburg, OH**
Software Engineering Intern — *May 2024 - September 2024*

- Implemented automatic, 30-second interval retry configurations for MassTransit consumers inside of RabbitMQ integrated applications, allowing the system to effectively handle transient errors and prevent data loss.
- Built an end-to-end retrieval augmented generation system using LangChain on 500+ company documents, successfully deploying a GPT-integrated web application and reducing mean time to repair (MTTR) from 5 hours to 3 hours.
- Applied prompt engineering techniques to optimize SQL queries, reducing execution and retrieval times by up to 50%, significantly enhancing the data analytics team's productivity.
- Presented project results and solutions leveraging Generative AI tools on product deployment to C-Suite executives. Recommendations were well-received and led onboarding efforts for new hires regarding continuation of the project.

Tiimo — **Copenhagen, DK**
Web Development Intern — *May 2023 - September 2023*

- Conducted biweekly smoke tests of Android beta application alongside the development team.
- Documented issues in Notion/Linear; developed solutions for 30+ functionality bugs and proposed various UI/UX fixes.
- Integrated code-level changes based on feedback from user reviews to enhance accessibility for neurodivergent users.

Shinsung SoundMotion — **Ann Arbor, MI**
Engineering Intern — *May 2022 - September 2022*

- Designed various PCBs using Sprint Layout and Cut2D, integrating models into silicon neural probes for clinical testing. Engraved designs on copper boards using a Wegstr CNC Prototyping Mill aiding in production of prototyping.

University of Michigan - Center for Entrepreneurship & College of Engineering — **Ann Arbor, MI**
Instructional Aide — *September 2023 - Present*

- Oversee operations for two upper-level courses including attendance, grading, and preparing lecture material.

PROJECTS

Automated Retrieval Augmented Generation (RAG) Quality Assessment – *Python, LangChain*

- Developed a script to evaluate RAG systems across different GPT/embedding model combinations, fully automating the testing process and eliminating the need for manual data entry.
- Conducted 10+ experiments using various LLM parameter settings (chunk size/overlap, temperature, top-k, etc.).

AI Cooking Assistant – *Python, Flask*

- Developed an open-source chatbot that helps users create recipes/meal plans and provide suggestions based on user preferences.
- Integrated Hugging Face LLMs with a Python backend and Flask frontend, utilizing SQLite to manage user data.

Server-Side Dynamic Pages – *Python, Flask, SQL*

- Implemented server-side dynamic page rendering using Flask. Integrated reusable Jinja2 templates for modular and dynamic web page construction and utilized SQL queries for efficient relational database interactions.
- Employed secure user authentication mechanisms, utilizing session cookies and SHA-512 password hashing with salt.
- Deployed the application to AWS EC2 using Nginx, routing HTTP requests to a Gunicorn-powered Flask application and automating environment setup with shell scripts.

Graph Traversal and Optimization Algorithms - *C++*

- Implemented classes to represent graph structures, leveraging abstraction and encapsulation to model vertices, edges, and spatial constraints in graph traversal algorithms.
- Utilized algorithms including Minimum Spanning Tree (Prim's/Kruskal's) and heuristic/branch-and-bound approaches for TSP, optimized with priority queues, adjacency lists, and dynamic distance calculations for large datasets.