

Marcella Houston

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EDUCATION

University of Michigan

Ann Arbor, MI

Bachelor of Science in Computer Science, Minor in Writing

8/2022-5/2026

- **GPA: 3.9**, HAIL Scholar, Intro Programming Showcase Event Grand Prize, University Honors
- **Courses:** Data Structures & Algorithms, Advanced Operating Systems, Database Management, Computer Organization, Web Development, Software Engineering

Hokkaido International Foundation

Hokkaido, JPN

Study Abroad

6/2025-8/2025

- **Activities:** Intensive 3rd Year Japanese, Independent Study (Original Origami), Homestay, 5 Culture Classes

PROJECT EXPERIENCE

Thread Library

1/2026-3/2026

- Designed and implemented a multiprocessor-safe thread library in C++ for true and emulated parallelism
- Worked as a team of 3, pair programming and code reviewing for shared understanding of code
- Automated test case building and verification using Bash scripting and Make

Scalable Search Engine

10/2025-11/2025

- Created a fault-tolerant MapReduce distributed system and a 5-stage job pipeline to efficiently build an inverted index of terms, web pages, and tf-idf scores across >3000 web pages
- Sent TCP and UDP messages between a manager and workers utilizing multi-process systems, prioritizing low task latency and tolerating any failure of workers
- Built and queried a separate index server and search server to abstract away implementation for users

Instagram Clone

8/2025-10/2025

- Authenticated users and defended against attacks like CSRF and XSS to provide a secure user experience
- Integrated a SQLite database that interacts with static upload images, leading to no redundant storage
- Deployed to AWS features like posting, commenting, and infinite scroll to ensure scalability
- Implemented client-server communication across 9 URL endpoints using Flask and a REST API

VVVVVV (Open Source Project)

4/2025-5/2025

- Implemented and merged a new feature to a 15-year-old codebase, gaining hands-on, real-life experience with handling large-scale, legacy projects
- Assured quality using industry QA strategies such as fuzz testing, resulting in no discovered faults or bugs

WORK EXPERIENCE

Walmart

Charlotte, MI

Food & Consumables Associate

8/2020-Present

- Helped among 6 departments as needed, showcasing dependability among a large pool of expertise
- Taught 3 new associates the latest grocery team processes, leading to properly consolidated dairy coolers
- Completed roughly 3 trainings a month in up-to-date retail industry best practice to embody lifelong learning for customer and associate safety and efficiency

ADDITIONAL

- **Computer Languages:** C/C++, Python, Java, Swift
- **Tools/Frameworks:** Git, Valgrind, Bash, REST API, Click, Oracle SQL, SQLite, MongoDB
- **Web:** React, Flask, Jinja, HTML/CSS, JavaScript, JQuery, Vue.js
- **Hobbies/Interests:** Minecraft Data Packs, Creative Writing, Sewing, Origami, Board Games
- Won 3rd at the 2025 Michigan Japanese Speech Contest