Marwa Houalla

https://marwa.dev

mhoualla@umich.edu
Washington DC-Baltimore Metropolitan Area

EDUCATION

University of Michigan - Rackham   Ann Arbor, Michigan
Master of Science in Computer Science and Engineering; GPA: 4.0   Dec 2023 - Dec 2024
Relevant Coursework: Generative AI Systems, Natural Language Processing, Databases, Advanced Compilers, Human-Computer Interaction, AI and Education, Ethics in Robotics.

University of Michigan - Engineering   Ann Arbor, Michigan
Honors Bachelor of Science in Computer Science; GPA: 3.9   Sep 2020 - Dec 2023
Relevant Coursework: Advanced Operating Systems, Web Systems, UI/UX Design, Compiler Construction, Software Engineering
Theory of Computation, Data Structures and Algorithms, Human-Driven Software Development, Senior Thesis.

WORK EXPERIENCE

Wayfair   Boston, MA
Software Development Engineer Intern   June 2023 - Sep 2023

- Processed terabytes of warehouse event stream data using Kafka consumer, reducing update latency by 95% over previous solution.
- Optimized MSSQL database using automated C# tasks to prune unnecessary data, improving efficiency by 15-20%.
- Developed high-performance CRUD endpoints with 40% lower latency than previous endpoints, enabling more responsive user experience for business promotions.
- Spearheaded deprecation of redundant event stream data, optimizing storage and retrieval processes to reduce storage space by 30%.
- Participated in stand-up meetings, retrospectives, and sprints, fostering effective teamwork and timely completion of assigned tickets.

University of Michigan EECS   Ann Arbor, MI
Human-Centered Software Development - Lead Graduate Instructor   Jan 2024 - Present

- Administer course operations, coordinate logistics, and lead team of teaching assistants to ensure fair evaluation of student work and maintain high academic standards.
- Guide 160+ student-led projects, prioritizing human-centered design for different user demographics.

Data Structures & Algorithms - Teaching Assistant   Dec 2021 - Jan 2024

- Instructed 5000+ students in fundamental and advanced data structures (stacks, queues, deques, hash tables), algorithm analysis, O-notation, Dijkstra's algorithm, dynamic programming, graph theory, and STL (C++20), to enhance their understanding of computer science concepts.
- Debugged and optimized student projects with 1000+ lines of code during weekly office hours, resulting in a median project score in high 90s.
- Led weekly lab sections, ideated and created exam questions, and provided conceptual guidance through Piazza, improving student comprehension and exam performance.

Computer Organization - Grader   Sep 2022 - Present

- Assess and grade 800+ assignments on computer organization subjects, including caching, spatial and temporal locality, virtual memory, assembly, and CPU architecture, ensuring accurate and timely feedback to support student learning.

T. Rowe Price   New York, NY
Software Engineer Intern   June 2022 - Sep 2022

- Surfaced metrics using Grafana dashboards with Prometheus and CloudWatch, enhancing monitoring and providing insights into system performance and usage for Enterprise HashiCorp Vault application.
- Devised and deployed robust alerting system that ensured immediate notifications of Vault incidents, reducing incident response time by 60% and ensuring timely resolution.
- Integrated Sourcegraph code intelligence into GitLab UI using Docker, improving the development workflow by 20% and enhancing firmwide team efficiency with the codebase.
- Leveraged Prometheus to collect and analyze firmwide VDI data, enabling geolocation-based breakdowns and gaining insights into update and consumption patterns. This analysis led to decision to discontinue VDI provisioning, reducing company expenses by 3%.

RESEARCH

LinkedIn Recommendation Analysis   Ann Arbor, MI
Honors Thesis - EECS Departmental Award Winner   Aug 2022 - May 2023

- Built suite of scripts to extract recommendation data from LinkedIn, applying Bayesian classifiers and Scikit-learn for in-depth analysis, revealing sex-based disparities in hiring recommendations.
- Awarded Highest Honors and CSE Outstanding Research Award.

Implicit Biases in Hiring   Ann Arbor, MI
Researcher - Ford School of Public Policy   Sep 2020 - Aug 2023

- Co-led experimental research with Professor Fabiana Silva on hiring discrimination, resulting in actionable recommendations to address and mitigate biases in hiring process.

SKILLS

Languages/Tools: C++, C, C#, Rust, SQL, Python, JavaScript, HTML, CSS, Docker, Make, Valgrind, gdb/pdb/lldb, LLVM
Libraries/Frameworks: React, Vue, Node.js, Flask, pandas, wandb, Sklearn, NumPy, Matplotlib, Hadoop, Cuda, jQuery
OS: Arch Linux, MacOS, Windows