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Ashton E. Thomas

Education

University of Michigan - Rackham Graduate School 01/2025 – 05/2026
Major - MSE Computer Science *Ann Arbor, MI, USA*

University of Michigan College of Engineering 08/2022 – 05/2025
Major - BSE Computer Science, GPA - 3.81 / 4.0 *Ann Arbor, MI, USA*

Relevant coursework: Computer Organization, Computer Vision, Cryptography, Data Structures & Algorithms, Data Analytics, Quantum Computing, Web Development, Web Systems

Northwestern Michigan College – Dual Enrollment 01/2020 - 05/2022
Major - ASA Science and Arts, GPA – 3.96 / 4.0 *Traverse City, MI, USA*

West Senior High School 09/2018 – 05/2022
High School Diploma, GPA - 4.0 / 4.0 *Traverse City, MI, USA*

Research

Polk Lab — *University of Michigan* 09/2024 – Present
Computational Neuroscience Research Assistant *Ann Arbor, MI, USA*

- Utilized FS-FAST and Makefiles to process fMRI data, contributing to the analysis of age-related neural dedifferentiation and its impact on neurocognition in healthy aging and Alzheimer's disease.
- Collaborated with a PhD student to develop a machine learning model aimed at mimicking neural distinctiveness of the human brain, while also enabling the separation of background noise from spoken language.
- Worked alongside Prof. Thad Polk to develop a script that processes CSV files with 1000s of columns, utilizing wildcard parsing to dynamically filter columns. The script includes a node hierarchy for efficient column interrelation and supports operations such as adding, removing, printing, and row filtration.

Computer Science Research Program — *University of Michigan* 11/2024 – Present
Research Assistant in Human-Computer Interaction and Immersive Technologies *Ann Arbor, MI, USA*

- Aiding Prof. Anil Çamci's interdisciplinary research at the intersection of Human-Computer Interaction, Immersive Technologies, and Sonic Arts. Contributing to the development and analysis of projects involving virtual reality and spatial audio, with applications in media arts and performance technology.

Experience

Amazon 09/2024 – Present
Software Development Engineer Intern *Boston, MA, USA*

- Partnered with a team of more than 20 engineers to design, test, and optimize Alexa devices, enhancing functionality and elevating user experience.
- Independently developed and implemented new features for Alexa devices, optimizing performance and user experience with the use of React Native, Kotlin, TypeScript, and related technologies.

Ground Vehicle Systems Center (SEC) 05/2024 – 08/2024
Software Engineer Intern *Warren, MI, USA*

- Leveraged MagicDraw & Excel to design databases for Jira tickets and hardware, leading to improved efficiency.
- Created Python scripts to parse large csvs with 1000s of datapoints to update integrated networks in Jira.

Madi Taylor Photo 06/2021 – 07/2024
Full Stack Developer Intern *Traverse City, MI, USA*

- Developed and maintained the corporate website, crafting a cohesive user interface with HTML, CSS, and JS.
- Implemented robust back-end payment solutions and form validation to streamline user transactions.

Class Papers

Navigating the Consensus Landscape: An Analysis of Blockchain 2023
Geoguessr AI: A Look into AI Geolocation Accuracy 2024

Projects

Geoguessr AI, Computer Vision 2023 – 2024
- Designed and implemented a modified ResNet-50 architecture for geographic location identification from images.
- Fine-tuned the model using 61,000 images, addressing challenges related to lighting and seasonal variations.
- Achieved approximately 90% accuracy in predicting U.S. geographic locations from visual data.

Google Search Engine, Web Systems 2024
- Engineered a scalable search engine leveraging a segmented inverted index implemented with MapReduce for efficient data processing.
- Integrated tf-idf for text analysis and PageRank for link analysis to improve the relevance of search results.
- Developed a REST API to deliver fast and accessible search query results.
- Designed and implemented a user-friendly interface for seamless interaction with the search engine.

Instagram Clone, Web Systems 2024
- Developed an Instagram clone in three stages, progressively enhancing functionality and user experience.
- Built a static site using HTML, CSS, and Python to establish the foundational structure and design.
- Created a server-side dynamic site with Flask and SQL relational databases, enabling features like user authentication, content management, and interactions.
- Implemented a client-side dynamic version using JavaScript, React, and REST APIs, introducing seamless content updates, infinite scroll, and double-tap to like functionality.

Study Group Coordinator, Quantum Computing 2024
- Designed and developed a Study Group Scheduler with Quantum algorithms leveraging Grover's algorithm for efficient group formation under CNF constraints.
- Created and implemented Bitflip and Phase Oracles to translate CNF constraints into quantum operations.
- Engineered a quantum counting circuit to estimate the number of feasible solutions for optimal scheduling.
- Utilized quantum algorithms to optimize solution search, showcasing advanced problem-solving techniques in quantum computing.

Technical Skills

Coding Languages: ARM, C/C++, CSS, HTML, JavaScript, Kotlin, Latex, Matlab, Python, SQL, TypeScript
Developer Tools: Git, VSCode
Engineering Tools: AutoCAD, ARCGIS, Excel, Jira, MagicDraw
Frameworks: Flask, React, React Native
Libraries: Jinja, Keras, NumPy, PyTorch, Qiskit
Operating Systems: Linux, Mac, Windows

Extracurricular Activities

Michigan Data Science Team 2024
University of Michigan EV & Mobility Scholars 2023 – Present
MHackers 2022 – 2024
National Honors Society 2021 – 2022
First Robotics 2021 – 2022

Grants/Awards/Honors

University of Michigan Grant, University of Michigan University Honors, University of Michigan Dean's List, Mary Sue and Kenneth Coleman Student Scholarship, Michigan Comp Scholarship, Michigan Regents Merit Scholarship, Riopelle/Dowden Technical Award, Robert Paul Dost Award, Ernest B. Isaacsen Award, Guy M. Wilson Award, Presidential Education Award, Marilla Church of the Brethren Scholarship, Northwestern Michigan College Dean's List

Interests/Hobbies

Asoiaf, Computing, Geopolitics, Hiking, Neuroscience, Running, Traveling

Languages

English: Native (C2)
Spanish: Basic Intermediate (A2)
French: Beginner (A1)
German: Beginner (A1)
Korean: Beginner (A1); can read Hangul