Madison Heyer

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Education

University of Michigan **Ann Arbor, MI**
M.S.E in Computer Science August 2025 - May 2026 (Expected)
- **Relevant Coursework**: Compilers, Artificial Intelligence, Advanced Scalable Systems, Human-AI Interaction

B.S.E in Computer Science, Minor in Statistics (GPA 3.8/4.0) August 2021 – May 2025
- **Relevant Coursework:** Machine Learning, Human-Centered Design, Computer Architecture, Web Systems, Databases, Computer Networks, Software Engineering, Computer Vision, Data Science, Statistical Computing
- **Honors/Awards:** Engineering Honors Program, Summa Cum Laude, Leinweber Software Scholarship

Experience

EECS 489: Computer Networks **Ann Arbor, MI**
Graduate Student Instructor August 2025 – Present
- Led weekly labs and office hours for 100+ students, guiding implementation of socket programming, reliable data transfer, and congestion control protocols in C/C++.
- Debugged and reviewed student codebases, reinforcing best practices in network programming, performance analysis, and test-driven development.
- Created supplemental course materials and programming examples to clarify complex networking concepts such as TCP flow control, packet loss recovery, and throughput optimization.

Center for Healthcare Research and Patient Safety (CHEPS), University of Michigan **Ann Arbor, MI**
Software Engineer May 2023 - Present
- Implemented a staffing tool with a robust backend to expedite scheduling for 100+ Michigan hospital staff.
- Designed a C++ optimization library, improving scheduling accuracy and resource allocation.
- Established coding standards and unit testing guidelines, maintaining high code quality and project consistency.

Electric Outdoors **Detroit, MI**
Computer Science Intern May 2025 – July 2025
- Developed and optimized C++/Python AI-powered embedded systems, improving energy management efficiency for sustainable IoT devices.
- Contributed to full-stack development (web and mobile), accelerating UX/UI improvements and enhancing back-end infrastructure.
- Researched emerging AI, IoT, and smart energy technologies to inform future product design.

DENSO **Southfield, MI**
Data Analytics & AI Intern May 2024 - August 2024
- Designed and implemented ETL pipelines and dashboards in Python, visualizing assembly line cycle times and uncovering key performance trends.
- Built ARIMA/LSTM models and Python dashboards to forecast assembly line cycles, extracting operational insights and aligning with business needs.
- Collaborated with cross-functional teams to translate business needs into deployable analytics solutions.

Projects

CoScribe: Personal Lecture Transcriber **August 2023 – April 2024**
- Developed a Chrome extension integrating with the University of Michigan's lecture capture system, helping students review and summarize course content efficiently.
- Implemented OpenAI-powered content scripts to extract lecture summaries, ensuring accuracy and relevance for student review.
- Designed and built user-friendly UI components with JavaScript, HTML, and CSS, featuring dynamic controls and interactive pop-ups.

Skills

- **Languages:** C/C++, Python, Java, SQL, JavaScript, HTML/CSS, Bash
- **Frameworks & Libraries:** React, Flask, TensorFlow, Pandas, Hadoop, MapReduce, Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn, Beautiful Soup, Requests, OpenCV, PyTorch
- **Developer Tools:** Git, GitHub, Google Cloud Platform, Visual Studio Code, Jira, Slack
- **OS & Cloud:** Linux, Windows, AWS, GCP