

Patrick W. Marshall

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SUMMARY

B.S. Computer Science student at Milwaukee School of Engineering (MSOE) with class projects, lab work, and software engineering experience. Developed workplace and software engineering skills through contractor work. Skills in Data Science, Machine Learning, Artificial Intelligence, Web Applications, and GPU Programming.

EDUCATION

B.S. Computer Science (Minor in Math)	Milwaukee School of Engineering	GPA: 3.50	Exp. Dec. 2025
M.S. Machine Learning	Milwaukee School of Engineering	GPA: 3.75	Exp. Aug. 2026

TECHNICAL SKILLS

Data Science and Machine Learning: Python, PyTorch, TensorFlow, Scikit-Learn, NumPy, Pandas, Jupyter Notebook, SQL, Artificial Intelligence, Large Language Models, Deep Learning, Reinforcement Learning, LaTex

GPU Programming: C++, CUDA, SYCL, cubLAS and cuDNN, Kernel Analysis, Multi-Instance GPU

Web Applications: Java, JavaScript, NodeJS, Flask, FastAPI, Microservices Architecture

Tools: Docker, GitHub, GitLab, AWS, Nsight Systems and Nsight Compute

WORK EXPERIENCE

Software Engineer Contractor | GE Healthcare | May 2024 – Present | 30-40 hrs. per wk.

GPU Benchmarking Suite: Automate a GPU benchmarking suite to test new hardware components and software to determine which is best suited for medical machinery.

- Used multiple GPU programming interfaces, such as CUDA and SYCL, to make comparisons between their performance on different GPUs
- Modified and automated an existing open-source benchmarking suite made up of 16 benchmarks of different workload types
- Used Docker to create an environment to run the suite
- Utilized NVIDIA Nsight Systems and Nsight Compute to analyze GPU kernel executions and workload distributions
- Analyzed and presented data to draw conclusions about current hardware and programming interfaces
- Worked and communicated with external teams to develop plug-ins for existing programming interfaces

GPU Workload Analysis: Analyze GPU performance across different medical applications and benchmarks, and seeing how the workloads are distributed across GPU resources in different configurations

- Gained familiarity with NVIDIA GPUs, Nsight Systems, and Nsight Compute
- Learned how workloads are distributed across GPU configurations
- Hands-on experience with many modern GPUs and other high-end system hardware
- Implemented and modified custom workloads to see their impacts on GPU performance
- Created data visualizations and analysis presentations weekly, showcasing key takeaways from experimentation

COMPUTER SCIENCE PROJECT EXPERIENCE

RL Policy Behavior Masking | Undergraduate Research : Create a Reinforcement Learning Agent that has controllable behaviors that can be adjusted in real-time while maintaining steady performance.

- Read and comprehend computer science literature weekly
- Developed a custom fully observable environment based around the board game '*Stratego*'
- Researched and implemented new reinforcement learning algorithms to create a controllable agent by adjusting behaviors in real time, such as changing the agent from focusing on ending the game the quickest to focusing on capturing opponent pieces
- Learned LaTex and how to write in a formal research paper style

Lung Nodule Analysis | Data Science Project : Utilize Data Science techniques to analyze medical images of lung nodules to predict their malignancy.

- Cleaned a dataset containing lung nodule medical images and their corresponding feature values from real radiologists
- Researched Variational Autoencoders (VAE) and how they can extract information about a subject's features from an encoded image
- Applied supervised learning models to map VAE-encoded image representations to radiologist rated features, identifying correlations with attributes such as spiculation and malignancy.
- Applied minor shifts to the encoded representations, then decoded back to images looking for any noticeable changes in specific features which would tell us that the modified encoding is related to that feature

CO-CURRICULAR INVOLVEMENT

AI Club | Medical Imaging Researcher | September 2023 – Present

- Attend and participate in weekly meetings where we discuss new artificial intelligence technology.
- Work in a research group with other students to learn more about artificial intelligence and its benefits in medical imaging.

MSOE NCAA Men's Soccer Team | August 2022 – May 2025

- During fall season, balance 2-hour daily practice and bi-weekly game travel with a full class schedule.
- Practice problem-solving in high stress, real-time competition environment and adjusting accordingly.
- Study, learn, and execute numerous game strategies and mechanics

Developed teamwork, communication skills, time management and prioritizing skills, competitive character, highly disciplined work ethic, and performance excellence.