Jacob Walcutt

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EDUCATION

Cleveland State University **Jan. 2023 - May 2026**
B.S. in Computer Science | GPA: 3.90/4.0
Relevant Courses: Quantum Machine Learning, Artificial Intelligence, Software Engineering, Computer Security, Computer Architectures, Database Concepts, Operating Systems, Computer Networks, Systems Programming

EXPERIENCE

nVent | Solon, OH **May 2025 – Dec. 2025**
Software Engineering Co-op

- Trained and tested a Convolutional Autoencoder with **PyTorch** to detect anomalous activity in electrical waveforms, achieving a 93% detection rate on real datasets containing electrical arcs
- Engineered an anomaly scoring and thresholding pipeline using reconstruction error in **Python**, reducing false positives by 95% across all test cases
- Ran Bayesian hyperparameter optimization with **Optuna**, significantly cutting experimentation time and achieving a high-performance model with fewer training runs
- Parsed **Node.js** server logs and designed a dashboard using **React.js** and TailwindCSS to track test outcomes, improving testing and documentation efficiency
- Maintained a Jira automation tool tracking 1000+ projects, saving the company $100k+ in annual labor costs

VN Services | Chesterland, OH **June 2024 - Dec. 2024**
Software Development Intern

- Designed and implemented a full-stack web application using **Next.js** and **Flask** capable of securely hosting and querying relational databases stored with **SQLite**
- Containerized the application with **Docker** and deployed to **AWS Fargate (ECS),** configuring task definitions, networking, and environment variables to enable cloud-based data hosting
- Implemented RESTAPI endpoints supporting role-based authentication, CRUD operations, and input validation, improving app security and enforcing consistent API contracts
- Improved the backend features of an internal training platform, implementing server-side changes to support dynamic content delivery and an interactive user experience
- Orchestrated an automation workflow that periodically synchronized database updates with existing visualizations, improving the consistency of observed metrics

PROJECTS

Improving LLM Reasoning through Autoformalization | CSU Senior Design

- Collaborated with 3 CS students to build an Automated Theorem Proving (ATP) system integrating LLMs with **Lean 4** tooling, which we used to verify LLM-generated proofs
- Developed an intuitive chat interface using the **React.js** and **Flask** frameworks connecting user inputs to our RAG-based theorem formalization engine
- Fine-tuned models using RL techniques, improving the percentage of theorems compiled in Lean from 30.4% to 70.2%
- Benchmarked Autoformalized Lean theorems on the ProofNet dataset to verify semantic and symbolic consistency

Cross-Modal Memory Distillation Engine

- Built a local RAG pipeline in **Python** that ingests Obsidian markdown files and Git commits/diffs, enabling natural language search and Q&A across personal knowledge artifacts
- Indexed chunks with embeddings using a FAISS vector store and added a simple retrieval API to return the most relevant context for a given query
- Designed a hierarchical memory model with time-decay and usage-reinforcement scoring, resurfacing important knowledge the user is likely forgetting
- Integrated LLM answer synthesis constrained by retrieved evidence, enforcing a claim-to-source citation format that rejects hallucinated claims and explicitly states when retrieval confidence is low

SKILLS

Languages: Python, JavaScript, TypeScript, C, C#, C++, Rust, Java, HTML, CSS, SQL
Libraries and Frameworks: PyTorch, Scikit-Learn, Flask, Pandas, LangChain, NumPy, React, Optuna, Node.js, Next.js
Tools: SQLite, PostgreSQL, Docker, AWS Fargate, AWS ECS, Terraform, Supabase, Microsoft SQL Server