Mihir Vador

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EDUCATION

University of Michigan — May 2026
Bachelor of Engineering in Computer Science, Mathematics and Economics. Minor in Electrical Engineering — *GPA 3.8/4.0*
Courses: Operating Systems, Data Structures and Algorithms, Computer Vision, Probability Theory, Real Analysis Linear Algebra, Discrete Mathematics Computer Organization

EXPERIENCE

Software Engineering Intern - AeroVironment — June 2024 – Present
- Leading the integration of the Skydio X2D into Kinesis, involving extensive system design, networking, C++, Java, Kotlin, JNI, multi-threading, and fault tolerance, resulting in a 30% increase in system robustness and a 25% improvement in operational efficiency.
- Working on drones from AeroVironment, Skydio, Parrot, and Red Cat. Also on Boston Dynamics' Spot.
- Creating new libraries and firmware features in C++ making using multi-threading and parallelization, resulting in a 20% increase in system stability and performance.
- Optimizing the video streaming platform using UDP, RTP, RTSP, and GStreamer, achieving a 40% reduction in latency and a 50% improvement in video quality and reliability.
- Developing computer vision solutions by creating YOLO models for embedded systems, enhancing real-time object detection and tracking capabilities.

Machine Learning Research Assistant - ARC Gaming Lab — January 2024 – Present
- Conducting research with the US Army for video compression and behavioral cloning
- Created a novel video compression method using Tucker decomposition, and achieved 200x video compression and reducing training time by nearly 50%.
- Developing a transformer-based model for enhanced context analysis and compression of video game data, experimenting with implementing Retrieval-Augmented Generation (RAG).
- Working on behavior cloning using diffusion models to replicate and predict human-like behavior in video game environments

Software Engineering Intern - Origami Risk — May 2023 – August 2023
- Developed React front-end and Node.js back-end; designed RESTful APIs with C# for efficient data communication.
- Enhanced PostgreSQL schema with indexing and query optimizations for faster data retrieval.
- Automated regression and unit testing using Docker and Git.
- Led a 13% codebase migration from .NET 5 to .NET 6 for better performance.
- Optimized C# program compilation using MSBuild, Roslyn, NuGet, and caching, reducing development cycle times.

PROJECTS

Diagnosing Multiple Sclerosis | Python, Tensorflow, SciPy, Cuda
- Designed a CNN for 3D and 2D MRI brain scan analysis, resulting in 85% accurate diagnoses across a range of disease progressions.

Financial Models | Python, yfinance, Numpy, Pandas
- Created and backtested trading algorithms, including Bollinger Bands, EMA10 RSI14 Crossover, and LSTM in Python. Achieved a 242% profit on TSLA during a 2-year backtest for EMA10 RSI 14 and a 43% profit on MSFT over a 2-year backtest using Bollinger Bands.

Thread Library | C++, Multi-Threading, Mutexes, Conditional Variables, Semaphores, Unix
- Implemented a kernel level C++ thread library in Unix, handling CPU booting, thread management, 80+ CPU support, interrupts, atomicity, and FIFO scheduling order. Also implemented spin-locks, mutexes, and conditional variables using Unix context management.

Multithreaded Network Fileserver | C++ , Boost Library, Threads, Sockets
- Built a heavily concurrent, crash consistent network fileserver supporting multiple users and nested files/folders.
- Utilized committing writes to enable crash consistency, Boost threads and upgradeable reader-writer locks to optimize for maximum concurrency, and POSIX sockets to enable network communication with clients.

TECHNICAL SKILLS

Languages: C/C++, Java, Kotlin, Python, SQL (Postgres), JavaScript/TypeScript, HTML/CSS, R, Dart, ARM Assembly, React.JS
Libraries: PostgreSQL, MySQL, TensorFlow, PyTorch, Node.JS, Tailwind
Developer Tools: Git, Docker, AWS, Linux/Unix, Google Cloud Platform, Visual Studio, PyCharm, Eclipse