

Ayan Nair

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EDUCATION

University of Michigan

M.S.E. in Computer Science

Ann Arbor, MI

Expected May 2027

University of Michigan

B.S.E. in Computer Science, Completed in 3 Years

Ann Arbor, MI

May 2026

- **Awards:** Dean's List, Regents Scholar, University Honors
- **Relevant Coursework:** Operating Systems, Distributed Systems, Web Systems, Computer Networks, Computer Security

EXPERIENCE

SpaceX

May 2026 – Aug 2026

Software Engineer Intern

Hawthorne, CA

- Developed power-aware simulation infrastructure for Starship orbital simulations, supporting realistic modeling of avionics power cycling, reboot behavior, and offline states across 40+ simulated avionics boxes for flight software validation
- Architected and implemented a reusable C++ UDP simulation client that dynamically controls network communication across 500+ simulation channels in response to simulated power state, emulating avionics sleep, reboot, and offline behavior
- Built a shared job scheduling framework for Starship HITL simulation infrastructure featuring capability-aware scheduling, dynamic load balancing, and Python-based worker capability matching, reducing required queue infrastructure by 50%
- Unified HOOTL fast static fire simulation workflows by enabling launch pad support for 80+ test cases using Python, Bazel, and Lens/DevSim/XSim, eliminating redundant test logic across 6 simulation directories and streamlining test maintenance

Astera Labs

May 2025 – Aug 2025

Software Engineer Intern

San Jose, CA

- Evaluated inference performance of LLM applications on NVIDIA MGX servers with Astera Labs' Scorpio switches, running MLPerf benchmarks across up to 8x NVIDIA H200 GPUs to analyze throughput-latency and scalability tradeoffs
- Built a Python and Linux-based test automation framework to run benchmarks, parse logs, plot metrics, and monitor system utilization, cutting down manual setup and analysis time by 50% and ensuring reproducibility across systems
- Optimized static batching for LLaMA models in MLPerf, enabling large-scale throughput vs. latency tradeoff analysis across diverse workloads, identifying key system bottlenecks and boosting end-to-end inference performance by 30%
- Installed and debugged CUDA drivers while diagnosing system-level issues across distributed GPU systems, delivering actionable performance insights to internal VPs and external clients alongside Field and Product Applications teams

DeepCharge Inc.

May 2024 – Aug 2024

Software Engineer Intern

Boston, MA

- Spearheaded development of hardware and software features for an AI-driven wireless charging system, collaborating across embedded and backend teams to design system architecture, define requirements, and deliver production-ready components
- Designed a Flask- and Embedded C-based cooling and camera communication pipeline, improving charger efficiency by 82%
- Built a SQL dataset of 1,500+ labeled images to train and improve an OCR model for charging percentage detection

PROJECTS

Thread Library | C++, Context Switching, RAIL, Operating Systems, Concurrency

- Engineered a C++ thread library with context switching, FIFO scheduling, and interrupt-safe mutexes and condition variables for multiprocessor execution, supporting thread creation, joining, and yielding with efficient context management
- Achieved true concurrency across up to 16 CPUs, implementing spinlock- and atomic guard-based synchronization with FIFO scheduling to manage contention, coordinate thread execution, and ensure correctness under parallel workloads

HereWeGo!PT | Python, Selenium, Next.js, LangChain, FAISS, SQL, RAG

- Designed a full-stack platform with FAISS indexing and GPT summarization for semantic search across 5,000+ tweets
- Developed a Selenium- and SQL-based pipeline integrating RAG for semantic search, reducing query latency by 75%

LEADERSHIP

Kappa Theta Pi - Professional Technology Fraternity

Dec 2025 – Present

Vice President of Technical Development

Ann Arbor, MI

- Organized the fraternity's first university-wide hackathon, securing sponsorships from Red Bull and Figma and coordinating logistics and marketing to attract 100+ participants, while facilitating judging with School of Information faculty
- Develop and maintain the official KTP website using TypeScript and Next.js, building scalable features such as a national chapter map and enhancing overall performance, usability, and user engagement for 250+ members per semester

SKILLS

Languages: Python, C++, Go, TypeScript, JavaScript, Java, SQL, SystemVerilog

Technologies: React.js, Next.js, Node.js, Flask, PostgreSQL, MongoDB, AWS, Docker, Linux, Git, RESTful APIs

Interests: Music Production, Violin, Tabla, Sports Analytics, Table Tennis