Ayan Nair

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Education

Rutgers University — New Brunswick, NJ

B.S. and Honors in Computer Science, B.A. in Mathematics, 3.7 GPA — *Sep. 2021 – May 2025*

- Ph.D. Level Coursework: Operating Systems, Networking, Algorithms
- Undergraduate Level Coursework: Randomized Algorithms, Graph Theory, Number Theory, Deep Learning

Experience

SE Intern — June 2024 – Aug. 2024

Snowflake — *New York, NY*

- Shipped and supported production-level LLM fine-tuning demos used by internal SE teams and external clients.
- Built LLM benchmarking web app using Streamlit; validated fine-tuned models with TruEra for bias, explainability, and accuracy regression.
- Kickstarted Snowflake's LangChain partner package. Built reusable infrastructure for vector search and multi-LLM workflows, with automated testing and benchmark harnesses in pytest.

Data Analytics Intern — Oct. 2020 – Sep. 2021

Auradigm Corporation — *Princeton, NJ*

- Built end-to-end pipeline for recommendation engine, used to recommending data analytics dashboards/reports to users based on their activity. Built scalable infrastructure for ML recommendation systems with distributed compute.
- Used PyTorch, Numpy to implement Neural Matrix Factorization model from scratch by reading AI research papers. Implemented distributed backend systems for training, evaluation, and inferencing.
- Designed and implemented recommendation system using PostgreSQL and Spark for analytics dashboards. Tuned SQL queries and schema design to improve latency and support multi-user performance across datasets.

Projects

UAVLogViewer Intelligent Flight Analysis Tool | *Vue.js, FastAPI, LangChain, ChromaDB, Pandas* — Jun. 2025

- Developed full-stack AI chatbot for open-source UAVLogViewer repo, with Docker, Vue.js, and FastAPI backend.
- Built end-to-end, production-grade, intelligent AI pipeline using ChromaDB (FAISS), LangChain, and OpenAI to agentically and accurately analyze Pandas DataFrames, with 90% response accuracy.
- Engineered a dynamic, efficient pipeline to convert flight logs into JSON, parse into Pandas DataFrames, and generate vector-based context from scraped documentation, allowing AI to intelligently query DataFrames.

Extending the Linux Kernel | *C, CMake* — Jan. 2025 – May 2025

- Extended Linux 5.15.0 virtual memory, scheduling capabilities. Ran Linux using QEMU Virtual Machine, monitored performance overhead using tools like perf
- Added extent tracking system call to Linux Virtual Memory system, using kernel red-black tree and linked list libraries. Wrote benchmarking scripts in C and Bash.
- Implemented, tested, and benchmarked cooperative scheduling system call in Linux CFS kernel code.

Integer Matrix Multiplication Optimization | *C, CMake, AVX2, UNIX, Bash Scripting* — Feb. 2025

- C-implemented SIMD-optimized matrix multiplication with AVX2, shared memory IPC; tested under constrained caching environments using Valgrind.
- Wrote Bash scripts to validate IPC correctness, modeled workloads for multi-GPU, multi-node parallelism.
- Achieved largest speedup (12x) against 20 other competitors on 10,000 x 10,000 sized matrices.

Implementing AI From Scratch | *Python, PyTorch, TensorFlow, OpenCV* — Dec. 2020 – Aug. 2021

- Recreated AI models (DQN, DCGAN, NMF) in PyTorch; validated GPU training stability and inferencing.
- Wrote Medium articles explaining above implementations, garnered over 2000 impressions over all articles.

Technical Skills

Languages: C, C++, Java, JavaScript, TypeScript, Go, Python, Bash
Frameworks: React/React Native, Node.js, Next.js, Flask, TailwindCSS, FastAPI, Django
Developer Tools: Git, Docker, AWS, MongoDB, Snowflake, Kubernetes, Github Actions, Jupyter, Tableau, CUDA, TensorRT
Libraries: PyTorch, TensorFlow, LangChain, Streamlit, Pandas, NumPy, OpenAI, FAISS