Arya Lyngdoh Lakshmanan

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Education

New York University | **M.S. Scientific Computing** | **GPA: 3.45/4.00** May 2026
Courses: Numerical Methods, Machine Learning, Deep Learning, GPU Architecture & Programming
Focus: High-performance modeling/forecasting

Rutgers University | **B.S. Astrophysics & Financial Economics** May 2023
Awards: Highest Honors, Aryabhata Endowed Award, Magna Cum Laude
Thesis: Statistical modeling of dark matter and supernovae

Experience

AI and LLM Consultant | WordsworthTech Inc Dec 2023 – Apr 2024, May 2025 – Aug 2025

- Architected a Node.js API to orchestrate low-latency interactions between the StreamAlive platform and LLMs (Gemini/OpenAI), optimizing for high-concurrency live session environments
- Developed custom parsing logic and validation layers to handle stochastic LLM outputs, ensuring strict type-safety and reliability for downstream application logic
- Established quantitative metrics to monitor token usage and response quality, implementing caching and prompt-tuning strategies that reduced operational costs while maintaining model performance

Undergraduate Research Assistant | Rutgers University Aug 2021 – May 2023

- Researched the effect of frequent supernovae on the dark matter within dwarf galaxies under Dr. Kristen McQuinn (NASA Roman Space Telescope Mission Head)
- Developed regression models in Python to estimate dark matter distributions in dwarf galaxies
- Engineered automated testing routines for galaxy simulations, reducing computation time and minimizing error margins in large-scale dataset analysis

Projects

Multi-GPU Performance Analytical Model | *CUDA, C++, Python* Sep 2025 – Dec 2025

- Quantified compute vs communication tradeoffs to identify scaling limits under PCIe constraints, informing when multi-GPU parallelism degraded performance
- Implemented performance micro-benchmarks in CUDA to calibrate hardware parameters (PCIe throughput, FLOPs) on arbitrary Nvidia architectures
- Validated the model against bottlenecked algorithms (N-Body, Conjugate Gradient), successfully identifying hardware saturation points and scaling limits

Rust/CUDA Simulation Engine | *Rust, CUDA, WebGPU, GLSL* Sep 2025 – Present

- Re-engineered a solar system simulation engine in Rust, migrating from my prior JavaScript WebGL/GLSL implementation to a Rust WebGPU API
- Accelerated procedural texture generation by implementing a specialized version of Perlin Noise in CUDA

Rust-Based Deep Learning Audio Classifier | *Rust, Burn, PyTorch* Aug 2024 – Present

- Engineered an asynchronous, multi-threaded deep learning training and inference pipeline in Rust using the Burn framework to classify audio features with Transformer-based attention mechanisms
- Implemented a classification batcher with dynamic padding masks to efficiently process variable-length sequential data, optimizing memory usage during inference

Rutgers Astronomical Society | *President, Treasurer* Sep 2021 – May 2023

- Managed budget and led weekly public seminars for 100+ attendees; served as department liaison for university events

Technical Skills

Languages: C++, CUDA, Python, Rust, JavaScript, SQL, R, GLSL
Machine Learning: PyTorch, Transformers, Model Evaluation, Burn (PyTorch equivalent)
Systems & Tools: Bash, Docker, Git, LaTeX, Node.js, WebGPU, WebGL