Patrick Astorga

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Portfolio: patrickmastorga.github.io

EDUCATION

Georgia Institute of Technology Atlanta, GA
MS in Mathematics Expected May 2027
Georgia Institute of Technology Atlanta, GA
BS in Mathematics, Minor in Computing & Intelligence, GPA: 3.9/4.0 Aug 2022 – May 2026

RELEVANT COURSEWORK

- CS 4641: Machine Learning
- MATH 6643: Numerical Linear Algebra
- MATH 4210: Mathematics of Data Science
- EEE 7331: Special Topics in Deep Learning
- MATH 8803: Neuronal Dynamics & Networks
- CS 6476: Computer Vision

PROFESSIONAL EXPERIENCE

Honeywell Fort Mill, SC
AI/ML Intern May 2026 – Aug 2026

- Unified agent development across multiple teams with a custom Python framework incorporating MCP and Agent2Agent protocols, RAG, custom models and orchestration methods into a single declarative config
- Developed a scalable self-hosted time series analysis MCP server with optimized SQL and Python code and efficient caching of data reducing latency and cost compared to the existing Databricks Genie Spaces
- Built a novel root cause analysis agent utilizing a dynamically instantiated execution graph detecting anomalies in customer telemetry data while using 50% less tokens compared to the existing ReAct agent

EXTRACURRICULARS

Georgia Tech Department of Math Atlanta, GA
Undergraduate Lecture Assistant Jan 2026 – May 2026

- Hosted office hours, wrote exam questions, and graded exams for Multivariable Calculus
- Increased accessibility by converting over 40 pdf exams into HTML format with a new automated workflow

Georgia Tech Club Lacrosse Atlanta, GA
Defense Aug 2022 – May 2024

- Back-to-back Southeastern Lacrosse Conference champions

PROJECTS

AlphaZero Style Chess Engine | Personal Project July 2026 – Aug 2024

- Programmed a AlphaZero style chess engine from scratch in Rust, reaching 2200 Elo on a MacBook with self-play
- Utilized Monte Carlo Tree Search guided by a deep transformer network for an intelligent, selective search
- Integrated supervised pre-training with unsupervised fine-tuning, to speed up convergence with limited compute

DALLE Style Image Generation | Personal Project Nov 2025 – Dec 2025

- Developed a small-scale DALL-E-inspired image generation pipeline in Python using the CelebA dataset
- Engineered two-stage generative framework of a VQ-VAE with prefix-token conditioned Transformer network
- Evaluated generative performance and image fidelity using quantitative metrics like Fréchet Inception Distance

Stockfish Style Chess Engine | Personal Project Dec 2023 – May 2024

- Programmed a Stockfish style chess engine from scratch in C++ with neural network evaluation
- Optimized move generation with bitwise operations to enable engine to visit over 10M chess positions per second
- Implemented integer quantized network with custom SIMD implementation reducing inference time by over 10x

SKILLS

Programming: Python, Rust, SQL, C++
Frameworks: PyTorch (Python), Burn (Rust), Git, EDA (PCB/Circuit design), Databricks
Interests: Cooking, Hiking, Homebrewing