Patrick Astorga

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Summary

A current junior at Georgia Institute of Technology majoring in Mathematics (3.90 GPA). Team leader in ventures across campus, passionate contributor to personal projects, peer-to-peer tutor on campus, and member of the GT Lacrosse Team. Passionate about machine learning and statistical algorithms, programming interesting applications, and prototyping tech solutions for real-world problems. Excited to work with an organization leveraging data-driven decision-making to create meaningful impacts against real-world challenges.

Education

Georgia Institute of Technology | Atlanta, GA   August *2022 – December 2025*

Bachelor of Science in Mathematics, Minor in Computer Science; *Faculty Honors | GPA 3.90*

Relevant Coursework

- **MATH 4210**: Mathematics of Data Science
- **CX 4240**: Computing for Data Analysis
- **MATH 4261**: Mathematical Statistics I
- **MATH 3235**: Probability Theory
- **MATH 1554 & 3406**: Linear Algebra I & II
- **CS 3600**: Introduction to Artificial Intelligence

Projects

Overdose Sensing Injector for Opioid Addicts | Startup   *April 2024 – Present*

- Through Georgia Tech's **Create-X** program, researched/developed a device to **fight opioid related deaths**
- Designed/manufactured **wearable device** featuring **custom PCB** integrating **pulse oxygen and heartrate sensors**
- Fine-tuned sensor model algorithm with extensive testing on dataset

Chess Engine | Personal Project   *December 2023– Present*

- Developed a chess engine in C++ with the **minimax algorithm** enhanced with **alpha-beta pruning**
- Trained **neural network** evaluation function in **python**; implemented network **from scratch** in **C++**
- Fine-tuned **heuristic functions** and search parameters with extensive testing **on large dataset** of positions

Concussion Detection Device for Contact Sports | Prototype Device   *January 2021 – Present*

- Led team in invention/prototyping process of device to help **diagnose concussions**
- Designed/manufactured **customizable solution** featuring **custom PCB** with high-g accelerometer synchronized with an **IoT network** and a **full-stack web app** projecting real-time data into a **SQL** database.
- **Patent pending** U.S. Patent Application Publication No. US-2024-0206800-A1
- **Awards:** 1st place + Health and Medical Technology Award, GT InVenture Prize High School Division State Finals; 3rd place, Invention Convention Worldwide U.S. Nationals

Work Experience

Mathnasium of Morningside | K-12 Tutoring   *August 2024 – Present*

- Help K-12 students improve their math skills through **personalized instruction**
- Utilize a variety of approaches to teaching math, including **visual, auditory, and kinesthetic**

Knack Tutoring | Peer-to-peer tutoring   *January 2023 – Present*

- Provide tutoring to students on campus for various **math/physics courses**
- Completed 41 hours of tutoring with a **5-star rating** with 18 ratings and reviews

Skills

Core Competencies: Problem Solving, Teamwork, Mathematics, Computer Science, Invention process/prototyping
Languages: Python, C++, JavaScript, Java, SQL, HTML, CSS
Tools/Frameworks: numpy, pandas, pytorch, Github, GCC/Clang, EDA (PCB/Circuit design)