

# Patrick Astorga

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## Summary

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A current sophomore of the College of Sciences at Georgia Institute of Technology majoring in Mathematics (3.78 GPA). Team leader in GT Hackathon, passionate innovator, and member of the GT Lacrosse Team. Passionate about programming interesting web applications, designing algorithms for statistics and game-theory, and prototyping tech solutions for real-world problems. Excited to work with an organization leveraging intelligent and data-driven insights to enhance software capabilities.

## Core Competencies

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- Programming languages (Java, JavaScript, Python, Swift)
- Data Structures and Algorithms
- Full-stack web development
- Mathematics (Linear Algebra, Combinatorics, etc.)
- Invention process and prototyping

## Education

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### Georgia Institute of Technology | Atlanta, GA

August 2022 – May 2025

Bachelor of Science in Mathematics, Minor in Computer Science | GPA 3.78

- **Honors:** Dean's List
- **Relevant Coursework:** Data Structures & Algorithms, Intro to OOP, Linear Algebra, Applied Combinatorics

## Projects

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### Concussion Detection Device for Contact Sports | Prototype Device

January 2021 – Present

- Designed and manufactured a **custom PCB** integrated with a microcontroller and high-g accelerometer
- Synchronized an **IoT network** with a **full-stack web application** to simultaneously project real-time data to sidelines while managing **SQL database**
- Filed **provisional patent** and pursuing non-provisional US patent
- **Awards:** 1<sup>st</sup> place + Health and Medical Technology Award, GT InVenture Prize High School Division State Finals; 3<sup>rd</sup> place, Invention Convention Worldwide U.S Nationals

### Problem Solving Notepad App | Prototype Application

October 2023

- Led team in the rapid development of a smart notepad app for **HackGT X**
- Implemented **RESTful API** integration including **Wolfram Alpha** and specialized **OCR** engine
- Seamlessly integrated data processing with **dynamic front-end** interface to maximize user productivity

### Zero Sum Game Algorithms

Spring 2022

- Developed from-scratch algorithms in **JavaScript** to play games including connect-four, checkers, and chopsticks
- Designed an interactive **front-end** game interface using **Phaser.js**
- Implemented the **minimax algorithm**, enhanced with **alpha-beta pruning**
- Fine-tuned **heuristic functions** based on player feedback

## Skills

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**Languages:** Java, JavaScript, Python, HTML, CSS, Swift, C++, SQL

**Frameworks:** Node.js, Express.js, Bootstrap, EJS, JQuery

**Tools:** EasyEDA (PCB/Circuit design), Git, Bash

**Research/Communication:** Invention Process, Prototyping

**Languages:** English (Native), Spanish (Conversational)