

John McAlinden

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EDUCATION

Georgia Institute of Technology

B.S. in Computer Science and Mathematics

Expected May 2027

4.0 / 4.0 GPA

- Relevant Coursework: Computer Architecture, Systems and Networks, Machine Learning, Data Structures and Algorithms, Honors Linear Algebra, Multivariable Calculus, Probability, Discrete Math

EXPERIENCE

FIRST Robotics

Software Lead

- Implemented motion profiling for robot to follow a path defined by custom generated quintic splines
- Integrated odometry localization for a differential drive to allow for correction during autonomous collisions
- Developed algorithm to identify a vision target, increasing autonomous score by 125%
- Built React frontend using TypeScript to allow live debugging with real vs. simulated robot
- 2nd and 3rd highest average autonomous scores worldwide out of over 6000 teams

Math Done Right

Head Tutor

- Covered AMC 8/10 and MathCounts topics such as combinatorics and number theory for 2nd-5th graders
- Designed lesson plans with clear and intuitive examples to help students understand complex concepts
- Created handouts and homework for 3 one hour lessons per week

PROJECTS

[VALORANT AUTOMATIC VIDEO EDITOR](#) | *Python, OpenCV, PyTorch, Yolo, NumPy, moviePy*

- Trained YoloV5 AI to extract highlights from a VALORANT video
- Sourced and labeled a dataset of 10000 diverse images for optimal training results (95%+ consistency)
- Worked with OpenCV and moviePy to efficiently manipulate given video into final result

[CUSTOM INTERPRETED LANGUAGE](#) | *Java*

- Built completely custom programming language with capacity for conditionals, loops, and expressions
- Utilized recursive descent parsing to effectively parse expressions in linear time
- Implemented error handling for syntax and runtime errors

[SNAKE NEURAL NETWORK](#) | *Java*

- Recreated the game Snake and a dynamic testing environment
- Created machine learning algorithms (neural network + genetic algorithm) from scratch to play the game, with agents reaching a length of 15 within 2 hours of training

[NBA BETTING BOT](#) | *Python, Pandas, Matplotlib, BeautifulSoup*

- Utilized web scraper to pull and log NBA moneyline odds from DraftKings Sportsbook
- Built testing environment to test out different betting strategies using implied odds
- Generated and analyzed plots of odds over time to identify situations where arbitrage is present
- Working on automating betting process to take advantage of common patterns

[ASKREDDIT VIDEO CREATOR](#) | *Python, PyTute, PRAW, gTTS*

- Developed web scraper and video creation algorithm to automatically create short form content
- Worked with YouTube and Reddit APIs as well as DOM navigators to fluidly automate creation process
- Added support for both captions and TTS using gTTS and playwright sync

HONORS AND AWARDS

- **USACO Gold:** Top 600 pre-college competitive programmers nationally
- **FIRST Robotics:** 2024 World Semifinalist and Edison Division Champion | Texas State Championship Finalist

SKILLS

- **Languages:** Java, C++, C, Python, JavaScript, HTML, CSS, TypeScript
- **Tools:** Linux/Unix, git, React, PyTorch, YOLOv5, OpenCV, NumPy, pandas, BeautifulSoup, Matplotlib

INTERESTS

- Competitive Programming, Trading, Brazilian Jiu Jitsu, Wrestling, Poker, MMA, Basketball, Football, Reading