Advaith Gundu

Hopkinton Middle School • Class of 2030

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Profile

Middle school student with 5+ years of programming experience, specializing in machine learning and robotics. Currently developing AI models using reinforcement learning and custom neural network architectures. Led my VEX IQ robotics team to 2nd place at regionals through innovative programming and design approaches. Experienced in systems administration, managing a production home server with containerized services, automated deployments, and mesh networking. Proficient across multiple programming languages from low-level C to high-level Python, with hands-on experience in both hardware integration and software development.

Technical Skills

Programming Languages:	Python, Rust, Web Development (JavaScript/TypeScript), C, C++, Shell Scripting, Nix
Systems & Tools:	NixOS, Linux, Docker, Git, Network Administration
Robotics:	Robot Programming, Mechanical Design, Sensor Integration, Competition Strategy
Infrastructure:	Server Management, Automation, Configuration Management, Backup Systems

Robotics

Robotics Team Leader & Lead Programmer ***2024 – 2025***

Hopkinton Middle School VEX IQ Robotics Team

- Got 2nd place at regionals while leading a team of 7 students in the VEX IQ Challenge
- Wrote complex PID control algorithms for precise autonomous movement and navigation
- Built primitive path planning systems to optimize robot performance during autonomous periods
- Made original mechanisms and code from scratch instead of following the copy-culture common in VEX IQ
- Went through many design iterations throughout the season

Robot Videos

Electronics

Custom Ratgdo Garage Door Controller ***2025***

- Designed custom circuits in Fritzing for integration with the garage door system
- Developed code patches to enable compatibility with the officially unsupported ESP32-C3 SuperMini
- Created a reliable IoT solution using ESPHome for remote garage door monitoring and control

Blog Post

Systems

Home Server Administrator ***2023 – Ongoing***

- Built a containerized microservices architecture using Docker Compose to ensure proper sandboxing of services
- Deployed a Tailscale mesh VPN for secure remote access and fine-grained access control
- Integrated home automation systems with media streaming, file sync, and monitoring services
- Managed Infrastructure as Code deployments and system configurations using NixOS

Config

Software

BetaCube AI Solver ***2025 – Ongoing***

- Implementing reinforcement learning with a custom ResNet-style architecture for solving Rubik's cubes
- Experimenting with self-supervised and RL training approaches to optimize learning efficiency
- Designed an in-house Rubik's cube library for optimized cube state representation and manipulation

GitHub

Personal Website (Geodic) ***2025 – Ongoing***

- Built a modern personal website using SvelteKit for my anonymous pseudonym
- Implemented a responsive design with clean UI/UX and optimized performance

Website

UCI.js Chess Engine Library ***2024***

- Developed a JavaScript library for communicating with chess engines using the UCI protocol
- Enabled seamless integration between web applications and chess engine backends

GitHub

Rubik's Cube Color Recognition ***2020***

- Built a computer vision system to detect and identify colors on a Rubik's cube using camera input
- Implemented image processing algorithms to recognize cube state from a live video feed

Demo

Memory Game ***2020***

- My first real programming project that sparked my passion for software development
- Learned fundamental programming concepts like event handling, game logic, and user interfaces

Play

Fun fact: This resume was written in HTML & CSS instead of LaTeX or Word!