Andrew Mitchell

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Education

University of Notre Dame, Notre Dame, IN *2021-2025*

- Bachelor's of Science, Majoring in Computer Engineering, current Junior
- Cumulative GPA: 3.9, Dean's List - 3 semesters

Technical Skills/Courses

Languages/Technologies - Python, C, JavaScript/TypeScript, React, Next.js, HTML/CSS, Git/Github, Unity/C#, Bash, OpenCV, scikit-learn, RISC-V, x86, Linux/Unix, MATLAB, Verilog, Cadence Virtuoso
Software Courses - Data Structures, Systems Programming, Compilers & Language Design, Intro to AI, Theory of Computing, Programming Challenges, Fundamentals of Computing, Engineering Programming
Hardware Courses - Digital Integrated Circuits, Computer Architecture, Logic Design, Intro to Electrical Circuits
Other Courses - Discrete Mathematics, Linear Algebra & Differential Equations, Physics I and II

Experience

Engineering & Science Computing at Notre Dame - Computer Consultant *August 2022 - Present*

- Process, set-up and deliver university computers to staff, and assist faculty with troubleshooting IT problems.

NASA Jet Propulsion Laboratory - Software Engineering Intern *June 2023 - August 2023*

- Worked with a partner to improve the DSN Telemetry Accountability Project under the Deep Space Network Emulator team, which tracks telemetry data as it travels from spacecraft to JPL by generating accountability records at specific venues along the path.
- Implemented new capabilities in C which allow the project to handle multiple different types of telemetry data simultaneously and correctly process each stream.

Fountain Bowl - Customer Service Associate *July 2022 - August 2022*

- Solved customer problems and provided a clean and welcoming environment at a local bowling alley.

Self-Employed - Personal Tutor *March 2018 - May 2021*

- Created and implemented lesson plans across various subjects for middle and high school students, teaching challenging topics in one-on-one tutoring sessions.

Projects

Rubik's Cube Solver - *Python, OpenCV, AI search*

- Employs an AI Iterative Deepening A* search with heuristic data tables to implement the Kociemba algorithm, which solves Rubik's cubes in under 3 seconds and in less than 25 moves. Applies computer vision with OpenCV, utilizing edge and color detection to scan the state of the cube, before finding the solution.

Bminor Compiler - *C, x86*

- A complete compiler for Bminor, a custom C-like language, consisting of a scanner, parser, typechecker and code generator. Written in C, it efficiently compiles Bminor code into x86 assembly.

AMTimer - *Next.js, TypeScript, Firebase, HTML, CSS*

- Prototype Rubik's Cube timer capable of generating random scrambles, manipulating a cube model to display the scrambled state, and keeping track of each user's statistics over time.
- Uses Firebase backend for authentication and statistics database.

Self-Driving Car - *JavaScript, HTML, CSS*

- A machine learning project that uses neural networks and genetic mutation to create a car that drives and avoids obstacles on its own.

Other Interests

Drones - Taught myself basic electronic systems and soldering to build my own First Person View quadcopter from parts, learned how to fly and perform tricks with it, crashed and repaired it repeatedly.
Choir - Performed with and held leadership positions in prestigious choral groups from middle school to college.
Cubing - Competitive Rubik's cube solver, achieving a 3x3 average of ~12 seconds and peak ranking in the top 300 in the country in one event, current member of the ND Rubik's Cube Club.