

## Charlie Sands

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### (Formal) Education:

- Northville High School class of 2024.
- Current GPA: 3.95/4.0
- Five out of five on both 2021 AP Computer Science A and 2021 AP Computer Science Principles exams.
- Accepted to University of Michigan Dearborn for Computer Science classes (dual enrollment)

### Skills:

- Programming: Proficient with C, Java, Python and \*NIX shell scripts. Familiarity with Assembly, C++, Go.
- \*Nix Based Operating Systems: Administrates and secures multiple Linux and FreeBSD servers in both virtual and physical environments, Linux contributor. Daily use and maintenance of Arch and Gentoo Linux computers.
- Software Design: Understanding of how to structure code in multiple programming paradigms. Always strives for maintainability and efficiency.
- Computer Hardware: Proficient with low level hardware interfaces/protocols, intermediate circuit design with micro-controllers.

### Personal Projects:

- Wi-Fi Tracking Device: Uses multiple Linux-based computers working as a networked cluster to simultaneously trilaterate the location of hundreds of mobile devices (applied mathematics and algorithms in software).
- 3D Rendering Engine: Uses multiple high performance hardware APIs in order to efficiently move data from software to hardware and back (hardware acceleration of data processing).
- AC Pressure Controller for performance car: Uses embedded microcomputers in order to continuously poll multiple sensors in real time and control critical hardware (embedded electronics and low-level, real-time programming).
- Motor Controllers: Designed and built four H-bridge brushed motor controllers for World Robotics Olympiad robot (understanding of electronics and hardware interface and how to design simple custom hardware).
- First Robotics Outreach Program: Wrote Java software for First Robotics Competition (FRC) robot, a web-based programming IDE and code to bridge the two different APIs to allow younger students to write simple Python code for the FRC robots (understanding of flow of data between different technologies and programming paradigms).

### Open Source:

- Contributor to the Linux Kernel, the operating system kernel present in all Linux computers written in C.
- Contributor to Ghidra, a NSA executable analysis and modification tool written in Java.
- Documentation contributor to Alacrity, a GPU accelerated terminal emulator written in Rust.

### Activities:

- Computer Science Honors Society (president and founding member)
- Robostangs First Robotics Competition programmer
- National Honors Society member
- Academic Games
- Cross Country Runner
- Percussionist

Qualities:

- Hardworking: Strives to deeply learn about any interesting topics.
- Perseverant: Does not give up and abandon good ideas in favor of something newer or easier. Completes projects before starting new ones.
- Honest: Works to earn everything achieved. Does not compromise integrity in order to get ahead of other people.

Awards/Accomplishments:

- Team first place at the Michigan League of Academic Games (MLAG) state and Academic Games Leagues of America (AGLOA) national tournament in ON-SETS (set theory), EQUATIONS (mathematics) and LINGUISHTIK (grammar).
- First place team over all at the MLAG state tournament and third place team over all team at AGLOA national tournament in 2022.
- Numerous past awards at MLAG state and AGLOA national academic games tournaments over five years of involvement.