

Contact Information

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Samuel L. McClanahan

About me

High school student engineer with hands-on experience in mechanical design, embedded systems, cybersecurity and system integration through robotics leadership and industry internships. Proven ability to collaborate across disciplines and deliver reliable designs under real-world constraints at high levels of competition. Interested in applying systems-level thinking to mechanical, aerospace and other high-reliability engineering domains.

Technical skills

CAD & Mechanical Design

- CAD in PTC Onshape, Dassault SolidWorks, Autodesk Fusion 360
- Mechanical subsystem design, design reviews
- Part Drawing (Onshape, Solidworks)
- CAM (Fusion)

Fabrication & Prototyping

- Manual machining
- Power tools & robotic assembly
- 3D printing (design, slicing, operation)

Networking, Cybersecurity

- Cisco networking administration & configuration (Packet Tracer)
- Routing (EIGRP, OSPF)
- VLANs, ACLs, NAT, DHCP/DNS services
- System hardening (Windows)

Programming & Software

- C, C++
- Python

Electronics & Embedded Systems

- Soldering & wiring
- Basic embedded systems (ESP32)

Communication & Creative Skills

- Verbal and technical communication
- Classical piano (12 years)
- Jazz trumpet (3 years)

Languages

- Spanish, Seal of Biliteracy

Education

Lowell High School, GPA: 3.86 UW, 1480 PSAT

Relevant Coursework:

AP Physics 1

AP Physics 2

AP Calculus BC

Multivariable Calculus via West Valley College

Awards

AP Scholar

MTAC State Honors (Piano, 4x)

MTAC Branch Honors (Piano, 3x)

San Francisco All-City Jazz Band, 1st Trumpet (2x)

Seal of Biliteracy (Spanish)

Relevant projects

RAG-Based Cisco Semantic Search API (2025)

Built a Python/FastAPI service using embedding and locally hosted AI models to enable natural-language search across 900+ Cisco CLI commands; deployed on OpenWebUI.

ESP32-CAM Portable Vision Device (2025)

Developed firmware in C, designed a 3D-printed enclosure, and hand soldered wiring. Streamed images to a Python backend for LLM vision processing with SMS alerts.

Self-Hosted Ubuntu SBC Server (2025)

Configured AdGuard Home DNS filtering, NAS storage, and multiple AI inference backends on a self-maintained server.

Professional experience

DoseNet Radwatch, UC Berkeley, Engineering Intern | Summer 2023–2024

Designed custom 3D-printed enclosures for air-quality and radiation monitoring systems using Solidworks.

YuppAI, Intern | Summer 2024–2025

Produced GTM and market analyses and a discord bot for an a16z-backed AI startup; supported operations and logistics. <https://yupp.ai/>

Math & SAT Tutor | 2024-

Individual math and SAT/PSAT10/9 tutoring for middle and high school level students

Robotics experience (Extracurricular)

Captain | Highlander Robotics (FRC), 2024-

Top ~50 worldwide

- Help to lead and coordinate mechanical design of 150-lb competition robots using PTC Onshape
- Coordinate mechanical, electrical, and software integration
- Manage timelines, design reviews, and ~\$100k annual budget
- Ensure subsystem reliability and manufacturability under strict deadlines

Mentor | FRC 10221, 2024-2026

- Teach CAD, mechanical design, and electrical fundamentals
- Support design reviews and build cycles
- Handle financial and organizational logistics

Cybersecurity experience (Extracurricular)

Co-Founder | AFA CyberPatriot Team 2025-2026

- Ranked 3/4787 nationally at states round
- Specialize in networking design, routing, segmentation, ACLs, and hardening for Cisco Packet Tracer challenges
- Developed custom agentic Cisco semantic search tooling for the team
- Hardened Linux and Windows systems (permissions, policies, services)

Competitor | SuperDiceCodeLovers 2026-

- Ranked 1st overall in DEF CON CTF qualifiers
- Developed agentic tooling and environment
- Overall highest score in LiveCTF category

Competitor | Cosmic Bit Flip 2026-

- 5th place nationally in CMU PicoCTF
- 17/1551 internationally in UofTCTF

Competitor | 10221 (CTF) 2026-

- 1st place overall in VanderbiltU SquirrelCTF