Antonio Franco

Full-time co-op availability (Jan 2027–Dec 2028) | Open to relocation | linkedin.com/in/Antonio-J-Franco

Mechatronics engineering student who enjoys hands-on building, testing, and troubleshooting across hardware and software. Motivated by curiosity, problem-solving, and creating reliable work people enjoy and trust.

Education

Bachelor of Science in Engineering – Minnesota State University, Mankato — August 2026 – December 2028
Certificate of Achievement in Engineering – Ventura College — May 2026

Projects

Portfolio: francoaj.com

3-DOF Robotic Leg
- Designed and assembled 3-DOF, quadruped-style prototype robotic leg with mixed actuation mechanisms including gear-driven joint, planetary gearbox, and linear actuator linkage system
- Implemented and solved inverse kinematics system in MicroPython to compute joint angles and generate end-effector motion along step-shaped curves using a control loop
- Built Blender models with forward and inverse kinematics armatures to compare against simulated behavior
- Modeled linear actuator and linkage geometry by measuring extension vs. rotation cycles and approximating joint angle mapping as a linear function for simpler control input conversion
- Integrated off-the-shelf motor control and power electronics to focus development on mechanical design, kinematics, and motion planning

Axial Flux Alternator
- Worked with a small team to research alternator specifications and develop the mechanical design
- Designed mechanical components in Onshape for 3D printing, iterating on parts based on test results
- Designed and built 4-speed mechanical winding tool to track winding count and accelerate manual assembly

Automotive Maintenance
- Perform routine vehicle maintenance including oil changes, tire rotations, and spark plug replacement
- Replaced mechanical components, including suspension drop links and valve cover gaskets

Air Quality Monitor
- Integrated an off the shelf sensor, microcontroller, and epaper display
- Modeled, sliced, 3D printed, and assembled a sturdy sensor housing without fasteners
- Set up Wi-Fi access point on a server with a database table and live dashboard that the sensor logs data to
- Developed data processing script to calculate and record 10-minute mean of sensor readings

QMK Mechanical Keyboard
- Researched and selected components to design the keyboard from scratch
- Designed the case in CAD to 3D print and made the wiring diagram of the key matrix
- Wrote and compiled custom QMK firmware

Raspberry Pi IoT & Networked Systems Platform
- Maintaining self hosted services with a Tailscale Tailnet and local network Wi-Fi access point
- Docker, Tailscale, SQLite (with CRUD server)
- Networking, self-hosting, automation

Skills

Programming & CAD: Python, SQLite, Supabase, Onshape, Blender
Embedded: Microcontrollers, Linux Administration
Fabrication: Soldering, 3D Printing