

Chloe Irgang

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SUMMARY

Electrical Engineering freshman with hands-on experience in embedded systems, custom PCB design, and autonomous robotics. Experienced in ESP32 firmware development, sensor integration, hardware debugging, and long-term independent electronics projects.

EDUCATION

University of Michigan, College of Engineering
Bachelor of Science in Electrical Engineering

Ann Arbor, MI
Expected May 2029

TECHNICAL SKILLS

Programming: C/C++, Arduino, MATLAB

Embedded & Hardware: Arduino/ESP32/RP2040 Microcontrollers, PCB Design (Altium, KiCad), Sensor Integration, Motor Drivers, Serial Communication

Instrumentation: Oscilloscope, Multimeter, Bench Power Supply, Waveform Generator, LCR Meter

Fabrication: SMT & Through-Hole Soldering, PCB Assembly and Testing, Breadboarding, Onshape, 3D Printing

Systems: Linux, LaTeX, VS Code, GitHub, Excel, Word

PROJECTS

Autonomous Maze-Solving Robot

- Designed and fabricated a custom PCB in CircuitMaker integrating ESP32 microcontroller, BNO085 IMU, H-Bridge motor drivers, and encoder feedback
- Developed embedded C++ firmware for sensor interfacing and maze navigation logic
- Utilized IMU orientation data and encoder feedback for directional control and precise motion tracking
- Iterated across multiple board revisions and debugged hardware, power, and signal issues using standard lab tools

Autonomous Quadcopter (In Progress)

- Designing a modular drone platform integrating IMU, barometer, and microcontroller-based stabilization
- Developing embedded RTOS firmware for sensor fusion, control logic, and flight stability
- Creating scalable PCB architecture for future drone and embedded robotics platforms

3D LED Matrix Display

- Designed and built a 3D LED matrix display with custom control circuitry and layered signal routing
- Developed software to control animation timing, multiplexing behavior, and brightness control
- Managed power distribution and debugging of large LED arrays for stable operation

EXPERIENCE

Lab Technician, MESH (Michigan Embedded Systems Hub)

Sept 2025 – Present

- Trained students on PCB layout, circuit design fundamentals, and soldering techniques
- Assisted debugging of analog and digital circuits using oscilloscopes, multimeters, and bench equipment
- Maintained lab inventory, tools, and electronic component stock for engineering projects

Intern, Otto's Arcade

May 2025 – Aug 2025

- Diagnosed and repaired arcade cabinets, power systems, and wiring harnesses
- Constructed and soldered custom wire harnesses and electromechanical assemblies

Additional Experience

- Camp Counselor & Technology Specialist – Led STEM activities and translated student flowcharts into C++ microcontroller implementations
- Groundskeeper (2021–2025) – Entrusted to the general upkeep of private cemetery registered as a Michigan Historic Place.