

MATTHEW ARCHIBALD

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EDUCATION

Bachelor of Science in Mechanical Engineering

Brigham Young University - Idaho

September 2019 - July 2025

Rexburg, Idaho

- 3.4 GPA.

KEY PROJECTS

Quadcopters and Fixed Wings

- Designed, built, and configured a 3D-printed racing drone in Solidworks. Raced and won 2nd place in the 2020 ASME IAM3D competition. The drone could drive, fly, and carry cube payloads using an electromagnet.
- Built, soldered, configured, repaired, and customized a dozen racing drones running betaflyt since 2019.
- Autonomous quad built using Ardupilot and Mission Planner with Crossfire telemetry.
- Applied fiberglass composites to a flying wing with a friend.

Electrical

- E-bike conversion with work in progress spot welded 16s 4p Lifepo4 E-Bike Batteries, and compact 3D printed quick lock case designed in Solidworks.
- Diagnosed, troubleshooted, and repaired 120v apartment wiring with floating grounds on 7 outlets.
- 100+ hours spent soldering, several hand wired protoboards, introductory PCB design experience.
- Used hot air soldering to replace a blown surface mount mosfet on an expensive 4-in-1 ESC. Revived an Orange Cube flight controller from vendor firmware lock by soldering an st-link directly to the pcb and overwriting it.

Software

- Created, programmed, and soldered a complete transmitter and receiver system for an RC car using Arduino. The car transmitted real-time sensor data to my remote including distance, temperature, and light levels. The remote's accelerometer allowed steering through tilt control.
- Raspberry Pi Pico, ICM 20948 & GPS based flight controller that converts PPM input to PWM and DShot for flying wing control. Logs data for state space system identification. Working to implement stabilized and autonomous flight.
- Using Truenas, Docker, NGINX, port forwarding, Lets Encrypt SSL, and a TLD from Porkbun, built my own website running entirely on my own hardware. Hosts my LLMs, family photos, movie library, nextcloud, and online portfolio.

WORK AND VOLUNTEER EXPERIENCE

UAS Team Intern

Idaho National Laboratory

Summer 2024

Idaho Falls, ID

- Supported in UAS Team operations, testing, and flights.
- ADSB Antenna and server with full featured web UI map showing airplane locations within ~ 50 mi.
- Programmed, 3D modeled, and sourced parts for 4 GPS loggers allowing flight logging of otherwise untrackable UAVs.

ASME Section Chair

BYU-Idaho

Fall 2023 - Spring 2024

- Planned and led weekly activities for hundreds of students.
- Tripled freshmen participation through planning, targeted events, and personal invitations.

Teaching Assistant

- Guided and mentored 40 students in skills including soldering, Arduino programming, and circuit analysis.

Lab Manager Technician

BYU-Idaho Maker Labs

Fall 2023

- Led expansion of lab's equipment array by introducing eleven new 3D printers, and improved training materials to cater towards early engineering students.
- Guided students on operation of FDM and SLA 3D printers, laser engravers, a plasma table, and HAAS CNC Mill.
- Cut monthly costs and improved efficiency with a redesigned equipment scheduling system and automated email notifications.