

Lars Patkowa

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EDUCATION

Bachelor of Science in Aerospace Engineering, May 2029

The University of Alabama, Tuscaloosa, AL

ENGINEERING EXPERIENCE

Alabama Rocketry Association – Liquid Rocket Team, Avionics, September 2026 – Present

The University of Alabama, Tuscaloosa, AL

- Ported and tested VectorNav IMU and ADC interfaces from Python to C++ on BeagleBone avionics
- Eliminated ~0.1 Hz ADC slowdown, achieving ~60 Hz ADC and ~40 Hz IMU acquisition
- Implement binary flight-data logging and configure Open MCT telemetry

RELEVANT PROJECTS

Model Rocket Motor Thrust Stand, August 2026

- Designed and built a test stand for measuring and recording model rocket motor thrust
- Integrated a cantilever load cell, high-resolution ADC, ESP32, and Bluetooth logging
- Designed mounting hardware using CAD and 3D printing

Automatic Headlight Control, April 2025

- Designed and installed an ESP32 automatic headlight controller in the vehicle wiring harness
- Programmed debounce logic, 3D printed an enclosure, and adjusted optical sensitivity

ESP32 Wi-Fi & BLE IoT Bridge, September 2026

- Built an ESP32 Wi-Fi/BLE bridge to enable local control across an isolated network
- Integrated ESP RainMaker for remote lighting control and Amazon Alexa support

Gym Log iOS & Apple Watch Application, July 2026 – Present

- Designed and published a SwiftUI workout-tracking app for iPhone and Apple Watch
- Added workout history, cross-device sync, and JSON/CSV import/export

WORK EXPERIENCE

Swim Lesson Instructor, Oasis Water Park, Bloomingdale, IL, June 2026 – August 2026

- Instructed swimmers of varying ages and skill levels in swimming technique and water safety

Bagger / Checker, Woodman's Markets, Bloomingdale, IL, August 2025 – January 2026

TECHNICAL SKILLS

Programming & Development: C/C++, Swift/SwiftUI, Python, Bash/Unix

Embedded Systems: ESP32, BeagleBone, I2C, SPI, UART, ADCs, sensor integration

Tools: Git, Xcode, PlatformIO, Open MCT

CAD & Fabrication: Fusion 360, Onshape, 3D printing

CERTIFICATIONS

Fundamentals of Deep Learning — NVIDIA Deep Learning Institute, October 2025