Zachary J. Fleckenstein

ZachFleck.com • ZachFleck42@Gmail.com • (513) 850-3668 • Fishers, IN • Active Secret Clearance

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WORK EXPERIENCE

Senior Software Engineer May 2026 - Present
Software Engineer June 2024 - May 2026
Kraus Hamdani Aerospace Remote

Developed software across autopilot firmware, ground control, and fleet infrastructure for an aerospace startup building fully-electric, ultra-long-endurance unmanned aerial systems for the U.S. military

- Conceived, architected, and owned the platform through which every aircraft across internal and U.S. military fleets is configured, updated, validated, and maintained
- Eliminated vehicles losses and operational failures caused by silent misconfigurations, replacing error-prone manual validation with automated checks and real-time alerting
- Reclaimed thousands of hours of annual maintenance overhead by automating routine procedures that previously required uncontrolled tooling and specialized technician training
- Developed and debugged flight firmware in a production ArduPilot fork, translating issues surfaced in the field into flight-tested features and fixes
- Served as a primary developer on a bespoke ground control application, shipping operator-facing features across planning, telemetry, and live mission control
- Established military-certified continuous-monitoring (ConMon) CI/CD pipelines for automated security auditing, quality analysis, building, signing, testing, and distribution of sensitive software
- Designed and maintained both internal- and external-facing APIs for automated telemetry aggregation, software and document distribution, user authentication, and business operations
- Worked on-site with flight crews as a primary liaison between DoD, engineering, and leadership

Embedded Firmware Engineer *(full-time to June '24, then contract)* October 2023 - October 2024
Mesh Systems Carmel, IN

Built new IoT products as the embedded developer on cross-functional teams of electrical, mechanical, and cloud engineers, delivering for customers including Kraft-Heinz, Eaton, and Walmart

- Developed and deployed embedded C and C++ code from prototype to production, spanning low-power IoT sensors to complex mechanical systems with dozens of peripherals and integrations
- Led integration and deployment testing for the Kraft-Heinz Remix, a consumer machine deployed in the field, designing test protocols and driving devices through regulatory conformance
- Wrote custom drivers for a multitude of sensors and peripherals, including stepper motors, ADCs, pressure and temperature sensors, serial flash memory chips, and vacuum pumps

Full Stack Developer August 2022 - July 2023
ClearObject Fishers, IN

Built and supported internal products and customer projects for Rolls-Royce and Cintas as one of seven developers at an IoT and data analytics company

- Prototyped new IoT technologies end-to-end, writing embedded C++, deploying and posting to REST APIs, and displaying telemetry on TypeScript web applications
- Architected, operated, and optimized a multi-million row SQL database for Rolls-Royce, creating complex views, optimizing queries, and upgrading hardware as necessary
- Created and presented business intelligence metrics to clients via daily and weekly reports
- Implemented and refined CI/CD pipelines and test suites to ensure software reliability and stability

Project Manager January 2020 - May 2021
International Association for Human Values West Lafayette, IN
Represented an international non-profit at Purdue University, serving as liaison between the volunteer leadership team and the parent organization

- Secured and managed annual grants totaling over $100k to support campus-wide initiatives
- Connected daily with team leads to monitor and provide feedback on project statuses / deadlines
- Maintained strong relationships with campus administrators to ensure smooth execution of projects

PERSONAL PROJECTS

Drone Mission Simulator August 2023
A full stack web-deployed application that dynamically generates simulated data of a drone searching for, pathing to, and monitoring a target object across randomly-generated hostile terrain

- Backend written in Rust to simulate a modern embedded sensor data producer and provider
- Actix Web API serves a TypeScript / React UI; sims 3D rendered / animated on a WebGL canvas
- PostgreSQL database retains simulation history, managed directly from backend through Diesel
- Services containerized with Docker and managed via Docker Compose for consistent deployment
- Frontend deployed with Firebase, backend API deployed with GCP Cloud Run / AWS Lambda

IoT Soap Dispenser December 2022
Developed concurrently with a professional project at ClearObject in which I was tasked with developing a novel Internet of Things product to showcase the versatility of the company's new IoT dashboard

- Designed, built, and programmed a smart soap dispenser that sensed liquid-level to within ± 2%
- Wired custom circuitry, wrote embedded C++ programs, and deployed onto an Arduino Nano
- Encrypted JWTs on-device using embedded-optimized RSA and SHA256 algorithms
- Collected and posted telemetry data via an HTTP API for display and analysis on a React UI

Original Pac-Man Machine Repair and Restoration November 2022
ClearObject Inc.'s offices contained a malfunctioning original 1980 Midway Pac-Man arcade machine when I was hired in August of 2022. I took it upon myself to repair the machine

- Used electrical engineering skills to identify, diagnose, and replace malfunctioning components
- Sourced novel, discontinued electrical components to ensure an authentic and faithful restoration
- I maintain the high score on the working machine to this day

EDUCATION

Bachelor of Science: Neurobiology and Physiology May 2020
Purdue University West Lafayette, IN

President August 2019 - May 2020
SKY@Purdue West Lafayette, IN

- Coordinated with an executive team and dozens of volunteers to hold over 40 events a semester
- Held multi-day meditation and yoga retreats for over 250 participants across the academic year
- Established relationships with leadership teams from other campuses to coordinate national efforts

President January 2018 - May 2019
Purdue University Neuroscience Society West Lafayette, IN

- Restructured the leadership and vision of the organization to adapt to a modern university
- Engaged in and oversaw biotechnological projects, such as an EEG-controlled RC-car
- Communicated with university administration to organize novel events such as human-brain labs