ADAM ZARAK

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https://adam-zarak.github.io/

EDUCATION

University of Central Florida, College of Engineering & Computer Science **May 2025**
B.S. Mechanical Engineering Orlando, FL
Minor in Computer Science

EXPERIENCE

Automated Logic Corporation **May 2024 – Aug.2024**
Control Systems Engineering Intern Orlando, FL

- Created databases in ALC WEBCTRL to serve over 30 HVAC client systems, improving accessibility and performance for operations teams
- Designed 10+ control panel schematics using Microsoft Visio, ensuring compliance with internal automation standards
- Validated sensor-controller communication and system logic in testbeds, reducing the onsite debugging time by 40%
- Conducted 2 integration tests across project sites to ensure end-to-end system readiness before deployment

UCF Biomechanics Laboratory **Sept. 2023 – Apr. 2024**
Undergraduate Research Assistant Orlando, FL

- Visualized over 50 3D cardiac motion models leveraging 2D MRI sequences in 3DSlicer and Sequence Registration tools
- Instructed 5 PhD candidates to process imaging data for Machine Learning Model training
- Drove modeling that reduced data preprocessing time by 25% through custom segmentation workflow

PROJECTS

Spotify Wrapped Analyzer **Nov. 2024 – Nov. 2024**
Full Stack Development & Machine Learning Integrator Orlando, FL

- Built and deployed a FastAPI web app analyzing user originality from Spotify Wrapped data, integrating GPT for personalized feedback and generating 100,000+ social media engagements

Vertical Rocket Erector **Sept. 2022 – Nov. 2022**
Mechanical Design lead Orlando, FL

- Led design and fabrication of a load-bearing rocket erector in AutoCAD, reducing material by 20% while maintaining 2.5x safety factor; led a 3-person team to live demo success

Stock Market Analyzer **Nov. 2021 – Jan. 2022**
Data & Algorithm Developer Orlando, FL

- Developed Python toolkit to analyze stock trends via moving average strategies, visualizing trading insights for 15+ Fortune 500 companies and reducing risk by 10% through signal tuning

LEADERSHIP

Return-To-Launch-Site (RTLS) Rocketry, Guidance, Navigation & Control Lead **Aug. 2024 – Apr. 2025**

- Engineered a MATLAB-based flight algorithm with adaptive PD control, accomplishing 85% landing accuracy within 800ft in 1000 Monte Carlo Analysis trials
- Integrated and calibrated 6+ avionics components (GPS, IMU, barometer, magnetometer, radio) into a dual-core ESP32 system with full telemetry capabilities
- Executed Hardware-in-the-Loop (HIL) tests simulating descent from 750 ft; successfully actuated parafoil servos in response to sensor input
- Authored and presented ~300 pages of technical documentation and delivered a live final demonstration to UCF faculty and sponsors

Autonomous Boat **Jan. 2022 – Apr. 2022**
Embedded Systems & Navigation lead Orlando, FL

- Programmed Arduino-based autonomous boat with real-time ultrasonic obstacle avoidance, achieving 100% self-guided navigation and 30% stability boost via hydrodynamic hull design

TECHNICAL SKILLS

- **Systems & Tools:** ESP32, UART/I2C/SPI protocols, Sensor Fusion, Kalman Filtering, HIL testing, Telemetry, Radios
- **Technical:** Proficient in Python, MATLAB & Simulink, C, Java, C++, Git/GitHub, Arduino, SolidWorks, AutoCAD, ANSYS