

Joseph Russell

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EDUCATION

California Baptist University · B.S. Computer Science, AI/ML concentration · GPA 3.8 · ABET-accredited · Expected April 2027

COUNTER-UAS AND AUTONOMY PROJECTS

HAPS: Hostile Aircraft Protection System · Senior Capstone, Navy sponsor NSWC Corona · In Progress · Python, PyTorch, Computer Vision, Embedded Linux

- Building the onboard computer-vision tracking and guidance software for a 3D-printed interceptor launched at inbound drones, the same mission profile as a seeker-guided counter-drone interceptor
- Building the ML training and evaluation pipeline that locks onto and tracks a target in real time from the interceptor's onboard camera
- Building sensor fusion that merges multiple ground sensor feeds into a single track for handoff to the onboard seeker
- Bringing up the embedded Linux stack on the interceptor's flight computer: camera driver setup, process management, ground-station communication

Anduril AI Grand Prix: Autonomous Drone Racing · Python, Autonomy, Simulation

- Built the Python autonomy stack for a fully autonomous drone-racing entry; advanced past the opening round into Qualifier 2 of Anduril's global software-only competition

CircleLock: Embedded Firmware with Actuator Safety · In Progress · C, ESP-IDF, Swift/SwiftUI, ECDSA

- Built ESP32-C5 firmware and a SwiftUI app where the phone signs an offline ECDSA P-256 challenge in its Secure Enclave, so the cloud relays the command but never decides to act
- Designed watchdog-capped servo control, learned-travel jam detection and a link-loss failsafe; split every module into hardware and host-testable halves, passing 411 tests with no board attached

FormulaFly: Physics Simulation and RL · In Progress · Python, MuJoCo, Blender, Reinforcement Learning

- Building a MuJoCo control model that maps a simulated fly's wingbeat asymmetry to steering and its trackball motion to throttle and brake, posed live inside a racing simulator

EXPERIENCE

Software Engineering Intern (Year-Round), Southern California Edison · Grid Services, DMS/DSCADA · June 2026 – Present

- Engineered a multi-agent LLM pipeline (router, planner, analyst and verifier stages) with a correction flow that validates and repairs model output and generated code before it reaches the user; shipped it in H2O, a desktop analytics app delivered to leadership as a versioned installer and selected for SCE's Intern Expo
- Authored a host-health scoring design that fuses six telemetry signals into per-host scores (OpenTelemetry, Prometheus, Grafana, Python)
- Uncovered a logging defect emitting an estimated 300–400M events/day and wrote the SPL search logic that isolated the root cause; cut a dashboard's heaviest query ~96% (50M → 2M events scanned)
- Built a file-updater tool deployed via Kubernetes and Jenkins CI/CD to stop duplicate log ingestion into Splunk

Additional experience: Software Developer (Contract), Medical Eyeglass Center, May–Aug 2025 (TypeScript, React, Firebase) · Business Development Intern, VETS, LLC, Mar–Jun 2025 (GPT-driven federal proposal automation)

TECHNICAL SKILLS

Autonomy and embedded: embedded Linux (camera drivers, process management), ESP-IDF firmware, watchdogs and failsafes, MuJoCo simulation

ML and computer vision: PyTorch, real-time object tracking, sensor fusion, model training and evaluation, reinforcement learning

Languages: Python, C++, C, Bash, SQL, TypeScript, Java, Swift

DevOps: Kubernetes, Jenkins CI/CD, GitHub Actions, Git, Linux (Ubuntu), SSH

AI and LLM: multi-agent systems, tool use / function calling, RAG, LangChain, Ollama

Hardware and CAD: KiCad (PCB design), SolidWorks, Onshape, Fusion

Security: ECDSA P-256, Secure Enclave key handling; critical infrastructure, NERC CIP trained