

Jacob Roberts

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Computer Science Graduate Student

Systems Programming | Full-Stack & App Development | Firmware & Embedded Development

EDUCATION

Bachelor of Science (B.S.) Computer Science

University of Central Florida | Orlando, FL

GPA: 3.1/4.0 | Aug 2023 - Aug 2026

Master of Science (M.S.) Computer Science

University of Central Florida | Orlando, FL

Expected December 2027

SKILLS

Programming Languages: C, C++, Go, Rust, JavaScript/TypeScript, Swift, Java

Systems & Platforms: Cloudflare, AWS, Digital Ocean, Unix/Linux, React Native, Firebase, Postgres

Development Tools: Git, Docker, GitHub Actions, Cargo, Make/CMake, Jira, Xcode, Godot

Toolchains: ESP-IDF, Silicon Labs Ecosystem (Simplicity Studio), iOS Dev Ecosystem

EXPERIENCE

CHIDA@UCF | Orlando, FL

Vice President | August 2025 – Present

- Revitalized a dormant hardware-first engineering organization, expanding active membership from 4 to 20+ students through workshops, technical content, and campus engagement.
- Coordinate a 6-officer leadership team in delivering bi-monthly workshops on hardware architecture, embedded systems, low-level programming, and applied computing concepts.
- Develop curriculum covering digital logic, PCB design, HDL programming, driver implementation, and FPGA development for student engineering audiences.

PROJECTS

LockIN | Developer | June 2026 - Present

- Built a native iOS productivity app that shields distracting apps behind iOS Screen Time (Family Controls): users bank “unlock minutes” by answering standardized-test questions correctly and spend them on per-app usage time.
- Architected a framework-free Swift package: append-only ledger, difficulty-scaled earn engine with a daily cap, and derived-balance unlock controller, covered by 30 XCTest cases and cleanly isolated from all OS integration.
- Implemented a Device Activity Monitor extension plus custom shield UI/action extensions, with usage-threshold auto-relock, foreground state reconciliation, and debit-first spend ordering that refunds on OS failure.

What 2 Watch | Developer | July 2025 – August 2026

- Engineered a semantic “vibe” search pipeline using OpenAI embeddings and vector similarity, surfacing films, series, and anime by mood and tone rather than keyword overlap.
- Developed a TMDb ingestion tool and Reddit scraper for automated catalog growth, scaling the database from a seed set to thousands of entries with WAL-mode concurrency for safe concurrent writes.
- Deployed and operate a containerized Go/Gin and React application on a cloud VPS, using Docker Compose for multi-service orchestration behind a Caddy reverse proxy with automatic TLS and Cloudflare DNS/CDN in front.

Sensor Mesh Network & App | Developer | April 2026 - July 2026

- Implemented a custom BT Mesh vendor model on multiple EFR32MG24’s with custom opcodes for sensor telemetry
- Architected a BLE-to-MQTT gateway on the Silicon Labs SiW917 SoC bridging mesh-only peripheral nodes to Firebase Realtime Database, implementing per-node state tracking (connection status, device address, characteristic handles)
- Designed a bidirectional command pipeline using Firebase polling with clear-after-apply semantics and GATT writes to peripheral nodes, enabling remote LED control and sensor interval reconfiguration from a React Native mobile app.

HealthDB | Developer | November 2025 - April 2026

- Built a distributed key-value store in Rust implementing the Raft consensus protocol from the paper — leader election, log replication, heartbeats, and snapshotting across a 5-node cluster.
- Implemented a write-ahead log with CRC32 integrity checks (crc32fast) for crash-safe, recoverable persistence, with bincode-serialized state.
- Wrote the async networking layer on Tokio over TCP, handling concurrent inter-node RPCs (AppendEntries, RequestVote) with timeout and retry handling.