Andrew Diab

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Professional Summary

Purdue ECE 4+1 (GPA 3.62). Build reliable, privacy-conscious software across mobile and embedded systems. Strong in **Swift/SwiftUI**, Python, and C/C++; experienced with sensors, DMA/ADC, and systems performance. End-to-end delivery: architecture, implementation, CI, testing, and profiling (Instruments).

Education

Purdue University   *Expected May 2026*
B.S. Computer Engineering (ECE 4+1) • West Lafayette, IN
GPA: 3.62 • Relevant Coursework: ECE 201/202, 264, 270, 301, 362, 368, 369

Technical Skills

Languages: Swift/SwiftUI, Python, Java, C/C++, JavaScript, MATLAB, LabVIEW
Apple: Xcode, Core Data, Combine, URLSession, XCTest/XCUITest, Instruments, Keychain, ATS, HIG
Systems/Embedded: STM32, SPI/I2C, DMA, DAC/ADC, LiDAR, Sonar, Modbus, RT debugging
Tools: Git/GitHub, Flask, React Native, Linux, Bash, Make/CMake, Markdown
Focus: Mobile & embedded systems, secure API integration, real-time data visualization, performance optimization

Selected Projects

Rysk — Group Challenges iOS App (Founder and Lead Developer)   *2025–Present*
Swift/SwiftUI • Combine • Core Data
- Architected MVVM app with state driven by **Combine** publishers; models persisted via **Core Data** with background contexts.
- Features: challenge creation, **live standings/streaks**, countdown timers, group cards; offline-first UX with merge policies.
- Networking: **URLSession** + Codable; request retries, exponential backoff, and background fetch for timely updates.
- Quality: **XCTest/XCUITest** on view models and critical flows; CI-ready targets. Profiled with **Instruments** (Time/Leaks).
- Design: minimalist grey/lavender palette consistent with HIG; Dynamic Type/VoiceOver labels defined for key screens.
- Git flow: feature branches, rebasing, protected PRs; release notes for TestFlight-style betas.

CRAMS — Coral Reef Autonomous Mapping & Monitoring (Creator & Technical Lead)   *Ongoing*
Embedded C/C++ • Python • Sensors
- Integrated GPS/IMU with **LiDAR, sonar, stereo cameras** and water-quality sensors for autonomous mapping.
- Implemented perception pipeline and real-time telemetry; resilient logging/health checks for field reliability.
- Built operator UI for live map/metrics; emphasized fault tolerance and recoverable boot sequences.

STM32 Beat Sequencer (Embedded Developer)   *Ongoing*
STM32 • DMA • DAC • SPI • I^2C
- WAV playback via **DMA + DAC**; SD-card streaming over **SPI**; keypad input on **I^2C NeoTrellis**.
- Multi-sound layering, BPM control, RGB LED feedback; low-latency input scan and debouncing.
- Implemented circular DMA buffers and double-buffered audio to eliminate underruns.

RDRTech — FinTech App (Founder)   *Jan 2025–Present*
Mobile/Web • Secure APIs • Data Viz
- Spare-change investing with automated debt-payoff and diversified portfolios; integrated secure financial APIs.
- Built transaction ingestion, investment tracking, and dashboards; ran user tests to iterate on flows.

Professional Experience

Technology Service Corporation — Software Engineering Intern   *May 2025 – Aug 2025*
Bloomington, IN
- Built a **Flask** web app to distribute system reports across branches (eliminated desktop-tool dependency).
- Developed **LabVIEW + Modbus** UI for universal power supply; created a guided PCB diagnostic workflow reducing debug time.
- Introduced Python automation to complement LabVIEW; documented handoff and maintenance scripts.

Lockheed Martin — Intern   *Jun 2021 – Aug 2021*
Orlando, FL
- Deployed proprietary software on 50+ systems; improved deployment efficiency by 20% with checklists and scripts.
- Reduced support response time by 15% through rapid troubleshooting and ticket triage.

Leadership & Honors

Eta Kappa Nu (HKN), IEEE Honor Society — Active Member (mentorship, technical workshops, events)   National Math Honor Society — Member   Volunteer STEM Mentor — Tutored 30+ students (Arduino, LEGO Mindstorms)