Carlos Catala

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EDUCATION

University of Central Florida — Orlando, FL
Bachelor of Science in Computer Science, Minor in Mathematics — *Expected Grad: May 2027*

EXPERIENCE

Software Engineer Intern — Jun 2025 – Aug 2025
ZuLeris Interactive — *Orlando, FL*
- Implemented a modular C# event pipeline with async handlers, scriptable objects, and cached dispatching, reducing notification defects by **75%**.
- Refactored UI and objective logic into isolated lifecycle modules, cutting maintenance time by **60%**.
- Standardized event interfaces and data contracts to enable new modes without modifying core systems.

Software Engineer Intern — Apr 2025 – Jun 2025
University of Central Florida IT — *Orlando, FL*
- Led **4** interns to deliver a dashboard for **160+ coaches**, streamlining advising workflows for **65,000+** students.
- Built **tRPC** service layers integrating **Azure OpenAI, Twilio, and Canvas APIs**, automating meeting preparation, communication, and grade retrieval.
- Maintained **100% uptime** with Azure deployments, containerized environments, and GitHub Actions CI/CD supporting zero-downtime releases.

PROJECTS

RICO-32 | Rust, Lua, SDL2
- Developed a **Rust-powered fantasy console** with an embedded Lua runtime, exposing a sandboxed scripting API for cartridge-based game execution.
- Implemented a lightweight 2D engine with sprite batching, lifecycle hooks, and automatic `main.lua` loading for deterministic game initialization.
- Modularized Lua libraries and unified the rendering, input, and update pipeline, enabling low-overhead scripting with predictable performance.

Forge (Knight Hacks Monorepo) | Next.js, React, TypeScript, SQLite, Tailwind, tRPC, Drizzle
- Built a Discord automation suite with **25+ commands** supporting **5,000+ users**, leveraging **tRPC RPC layers** and **SQLite-backed task handlers**.
- Engineered **CI/CD workflows** and domain routing on a **Linux VPS**, cutting deployment time by **70%** and standardizing multi-service releases.
- Developed a React-based club registration platform serving **1,500+ students** and **25+ sponsors**, optimizing onboarding and check-in throughput.

Ctrl-ARM | C++, ADK, A2A, Electron, React, Python, Scikit-Learn, TensorFlow, Pandas
- Won **1st Place** in the **Microsoft AI Challenge** at **ShellHacks 2025** out of 245 teams for building a multimodal muscle-controlled accessibility interface.
- Integrated **MyoWare EMG**, IMU data, and BLE signals with GPU-accelerated TensorFlow + decision-tree models, achieving **90% gesture accuracy**.
- Reduced gesture latency by **70%** by replacing neural networks with a decision tree and optimizing sensor fusion pipelines for real-time use.

Riffs | React, Next.js, TypeScript, Tailwind CSS, Pitchy, FL Studio
- Won **1st place** for **Best App** at **Bitcamp 2025.**
- Created a music tool which converts hummed melodies to editable guitar tabs via pitch detection.
- Integrated a real-time guitar sample playback with tempo control using **Pitchy and FL Studio**, and developed a game-like UI overlay with camera-driven animations to enhance interactivity and learning by **70%** using it.

TECHNICAL SKILLS

Languages: Python, Java, TypeScript, Rust, JavaScript, C#, C, PHP, C++, HTML, CSS, Lua, Assembly
Libraries/Frameworks: React, Tailwind, tRPC, Next.js, OpenCV, Mediapipe, Electron, scikit-learn, TensorFlow, Pandas
Tools: Git, Unity, Prisma, Vercel, Docker, PostgreSQL, Coolify, IntelliJ, VS Code, Supabase, ADK, A2A