Michael Perkins

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Education

University of South Florida – B.S. in Computer Engineering, Minor in Physics   Exp: **December 2025**

GPA**: 3.57**

Technical Skills

Languages: C, C++, Python, Verilog, RISC-V Assembly, JavaScript, TypeScript, Dart
Hardware & Digital Design: Spartan-6 FPGA, Digital Logic Design, Schematic Capture, DDR2 DRAM
Embedded & Firmware: Arduino, Raspberry Pi, ESP32, Protocols (I2C, UART, USB)
Software & Systems: Node.js, Express.js, React, Next.js, MongoDB, RESTful APIs, Stripe, Agile Dev.
Tools & Test: SPICE, HSPICE, RARS, Git, CI/CD Practices

Engineering Projects

All-in-One Audio Recording Device
- Architected a standalone **FPGA**-based audio recording and playback system on a **Spartan-6** board, integrating **PicoBlaze** soft-core microcontroller and custom **Verilog** modules for a **DDR2** memory controller and audio codec.
- Implemented **finite state machine** (FSM) in **PicoBlaze source module**s (PSM) for state-driven operations including volume control, file management, pause/resume, and deletion, enabling storage and retrieval of up to 9 audio files from **DRAM**.
- Verified functionality through behavioral simulation, testbench development, and hardware debugging, demonstrating end-to-end **embedded system design** and **hardware-software co-design**.

Crowdsourced Gamification of Avian Migration (AVN) – *Capstone Project*
- Engineered a real-time mobile app in collaboration with RTX Corporation, deploying a multi-stage **YOLO**-based computer vision model to detect Tampa-native bird species with >**75%** accuracy.
- Designed sensor fusion algorithms using GPS and IMU data for triangulation, estimating flock locations and trajectories while integrating backend logic for real-time alerts and crowdsourced tracking.
- Incorporated gamification elements (inspired by Tamagotchi and Pokémon Go) to boost user engagement, showcasing full-stack systems engineering from edge processing to cloud integration.

Work Experience

Principal Engineer, Catalogo – *Remote (1099, Contractor)*   Sep 2024 – Sep 2025
- Led end-to-end development of an AI-powered, multi-tenant e-commerce and inventory management platform using **React**, **TypeScript**, and **Node.js/Express.js**, architecting scalable systems for onboarding, product enrichment, payments (via **Stripe** integration), and API-driven integrations.
- Reduced merchant setup time **from weeks to under 20 minutes** by architecting automated backend systems and data pipelines, empowering non-technical users to instantly launch stores.
- Implemented automated testing and deployment procedures, enhancing system reliability, modularity, and quality assurance through engineering principles like **test-driven development** (TDD) and **CI/CD practices**.