Fernando Crespo Vazquez

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Education

University of Central Florida Orlando, FL
Bachelor of Science in Computer Science - 3.9 GPA *Aug. 2023 – May 2027*
Coursework: Data Structures and Algorithms, Object Oriented Programming, Systems Software

Experience

Software Engineer Intern September 2025 - Present
Lockheed Martin *Orlando, FL*

- Engineered an automated ETL pipeline in Python to extract and calculate metrics from high-density telemetry CSV's, **reducing report generation by 90%**
- **Integrated modular Object-Oriented components** into a telemetry analysis framework to synchronize data retrieval and automate calculation of complex derived metrics
- **Optimized multi-source data aggregation using Pandas**, streamlining the simulation feedback loop by providing engineers with immediate, automated visibility into complex telemetry results

Projects

LockedIn | *Next, Gemini, FastAPI, MediaPipe Face Mesh, YOLOv8* September 2025

- Architected a real-time behavior modification platform using **FastAPI** and **WebSockets**, achieving **sub-100ms** latency to deliver instant feedback on user distraction
- Optimized backend concurrency by offloading heavy CV inference to background threads via **AsyncIO**, preventing event loop blocking and maintaining persistent socket connections
- Implemented a client-side throttling mechanism in **React**, decoupling high-frequency WebSocket streams from the UI render cycle to prevent browser freezing
- Designed a normalized database schema to efficiently store social graph relationships and high-volume time-series session analytics.

Socket Sense | *Python, TensorFlow, C++, Embedded Systems* August 2025 - November 2025

- **Awarded 2nd Place** for engineering an AI-powered robotic sorting system, leading the architecture of a **CNN that achieved 97.7% accuracy** in hardware classification
- Developed **embedded control logic in C++** to bridge high-level Python ML inference with physical hardware, ensuring real-time synchronization between classification and actuation
- Integrated **Google Voice Recognition API** to build a voice-command interface, enabling hands-free user interaction and automated hatch activation

Kestrel Autonomous Drone | *Python, NumPy, PyTorch, ROS* May 2025 - Present

- Engineered a **real-time DeepSORT tracking pipeline** on a **Jetson Nano**, optimizing the system to run for autonomous drone control
- Solved critical occlusion failures by fine-tuning a **MobileNetV3 model with Triplet Loss** to achieve **85% Rank-1 Accuracy**, allowing drone to re-identify targets even after losing line-of-sight
- Designed a custom tracking cost function combining **Mahalanobis Distance and Cosine Similarity** to minimize ID switches
- Integrated the pipeline into a **distributed ROS architecture**, decoupling heavy inference from state estimation to ensure low-latency flight commands

Public Notes | *React, Next, AWS S3, tRPC, PostgreSQL, TypeScript, Tailwind* May 2025 - June 2025

- Built a scalable note taking platform for university courses, with role-based access for admins to approve content
- Integrated **AWS S3** signed URLs for dynamic file storage, ensuring scalable and secure cloud-based file handling
- Automated stale data cleanup via **AWS Lambda** triggered by **Amazon EventBridge** and monitored with **CloudWatch Logs**
- Implemented **tRPC APIs** to enable user interactions and streamline communication between client and server

Technical Skills

Languages: Python, C, Java, JavaScript, TypeScript, HTML, CSS
Frameworks/Libraries: React, Nextjs, Express, Tailwind
Tools: Git, GitHub, Prisma, Windows, Linux