Zack Jandali

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Active Secret Clearance - Department of Defense

Job Experience

NAVAIR - Software Engineer (Embedded ML Systems)

China Lake, Ca | Apr 2023 – Present

- **Led team** in model deployment, debugging, and optimization on **early-stage embedded devices**, resolving key software and hardware integration issues and maintaining accuracy **within 2%,** despite hardware limitations using **Python and C++**; included ONNX integration into embedded systems.
- **Independently** redesigned**,** tested and evaluated embedded hazard light algorithm in **Python** for 7 trailer-mounted Radio Frequency (RF) emitters, replacing a broken system with robust real-time signals for safer field operations.
- Built a **full-stack data pipeline** in **C++, QML, JavaScript** (QML and JS both learned for this project) for a distributed RF emitter system on Raspberry Pi networks, cutting data review time by **over 90%**. Integrated new GUI into existing GUI with **intuitive playback controls** to streamline analysis for the data review team.
- Extended the system's **1,000+ line** legacy codebase with **300+ new lines**, ensuring robust TCP/UDP communication with the Command Control System (CCS) and integrating new functionality within strict architectural constraints.
- **Acted as primary liaison** between government and contractor teams for **cross-functional collaboration**, streamlining communication and debugging through clear and accurate problem descriptions.
- **Automated IMU (HW123) sensor calibration** via bias estimation, eliminating manual setup and speeding deployment across the team. **Involved I2C and GPIO low-level hardware interfaces.**

Personal Projects

Raspberry Pi Camera Streaming System with Facial Recognition | Python, Tensorflow, Embedded Dev
Developed a real-time video streaming system with facial recognition, enabling Raspberry Pi cameras to communicate with Windows servers over Ethernet/WiFi networks. Built using Python with socket-based TCP/IP communication and multi-threaded architecture for concurrent operations. Integrated OpenCV and TensorFlow for face recognition, implementing automatic network detection and MJPEG streaming for efficient data transmission.

Audio Denoising System using Deep Learning U-Net Architecture | Python, PyTorch, Audio Processing
Developed an audio denoising system over the span of two weeks using custom U-Net neural networks to remove noise from audio recordings. Implemented custom AudioUNet models with encoder-decoder structure, multiple specialized loss functions (SI-SDR, spectral L1, RMS gain), and comprehensive training pipeline handling VoiceBank-DEMAND dataset (28-speaker training set with 11,569 audio files). Includes toggleable K-fold cross-validation, custom loss visualization, and large-data-handling techniques. Technologies included PyTorch (on CUDA), torchaudio, librosa, and comprehensive evaluation framework for audio quality assessment. Plans to add robust data preprocessing for quicker training.

Hand Pose Classifier - Python, Jupyter Notebooks

Designed and built a full end-to-end ML pipeline. Implemented optimizations to meet real-time constraints, achieving accurate hand pose classification >99% at >30 fps.

Structure from Motion Project - Python

Developed a full pipeline to construct 3D models from multiple 2D images using classical computer vision techniques. Implemented stages including Image Acquisition, Calibration, Feature Detection and Matching, Camera Pose Estimation, 3D Point Triangulation, Dense Reconstruction, Meshing, and Texture Mapping.

Skills

Languages: Python (7 years exp), C++ (8 yrs), C, Linux CLI (7 yrs), QML (1 yr), JS/CSS/HTML (<1 yr)
Packages: PyTorch (4 yrs), OpenCV (2 yrs), scikit-learn, pandas, ONNX, Tensorflow
Skills: Machine Learning, Deep Learning, Embedded Systems, Computer Vision, I2C/GPIO, Data Pipelines, Web Scraping, Signal Processing, Networking, System Integration, Full-Stack Development, RAG, Agentic AI

Education

UC, Irvine Honors | Cumulative GPA: 3.67 | Aug 2016 - Jun 2022
BS in **Computer Science** specialized in **Intelligent Systems**
Transferred from Saddleback College Honors Program

Google Data Analytics Certification | Coursera 2022
IBM Deep Learning Certification | Coursera 2025

GitHub Links

github.com/zjanda/facial-recognition - July 2025
github.com/zjanda/Sound-Denoising - Aug 2025
github.com/zjanda/Hand-Classifier - 2022