

Jonathan A. Diaz

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Professional Experience

Signal/Image Processing Engineer / Scrum Master | Lockheed Martin | May 2025 - Present

- Led a cross-functional team of 6–10 engineers, spanning GNC, image processing, and software, resolving complex issues and integrating algorithms for software releases, enabling consistent delivery across multiple concurrent efforts.
- Developed internal testing frameworks and unit tests that reduced debug time from days to hours, improved repeatability, and identified defects in simulation before hardware-in-the-loop testing.
- Consolidated and completed a 2-year IRAD algorithms effort after funding ended, synthesizing prior work across gimbal, image processing, integration, and M&S teams; senior managers leveraged this work to plan potential follow-on programs, preserving multi-million-dollar program savings.
- Created internal tools and workflows that increased visibility into system behavior, accelerated issue resolution, and improved test repeatability, benefiting engineers across multiple programs.
- Acted as Scrum Master while maintaining technical ownership, proactively mitigating risks and ensuring continuous team productivity across two program increments.

Signal/Image Processing Engineer | Lockheed Martin | May 2023 - May 2025

- Designed and deployed classical image processing pipelines (Hough Transform, edge detection, morphological operations) that improved feature extraction and robustness under noisy or degraded conditions, meeting processor-in-the-loop constraints.
- Implemented and validated a frequency-domain downsampling algorithm using FFTW, achieving faster runtime with equivalent performance under new sensor capabilities, replacing a more resource-intensive firmware solution with a software model.
- Integrated and tuned Extended Kalman Filters for multi-state tracking, improving track continuity and filter convergence, and resolving subtle estimation bugs.
- Performed deep-dive analysis of algorithm failure modes using Monte Carlo simulations and synthetic imagery, enabling early identification of degraded performance and informing improvements to performance analysis and modeling tools.

A/AI Research CWEP Intern | UCF / Lockheed Martin | May 2022 - May 2023

- Developed and evaluated computer vision and machine learning prototypes using Python, C++, and MATLAB, focusing on image classification and object detection workflows.
- Investigated model deployment trade-offs across hardware platforms (NVIDIA GPUs and Intel CPUs), including performance, resource utilization, and framework compatibility.
- Supported senior engineers by designing experiments, analyzing results, and iterating on algorithms for applied computer vision use cases.

Technologies

- **Languages:** C++, C, Python, Bash, MATLAB, R, CMake/Make
- **Technologies:** VSCode, GDB, GoogleTest, Linux, Gitlab, Anaconda, Docker/Podman, Jira

Education

- M.S. Statistics and Data Science | **University of Central Florida** | 2021 - 2023
- B.S. Economics, Minors Math, Computer Science | **University of Central Florida** | 2017 - 2021

Certifications

- **Deep Learning Specialization**
 - Machine Learning (unsupervised and supervised), Neural Network (Convolutional), Transformers
- **Fundamentals of Digital Image and Video Processing**
 - Image compression/transmission, image enhancement/recovery, image segmentation, spatial/frequency transformations
- **Kalman Filter Boot Camp (and State Estimation)**
 - Fundamentals of Kalman filtering, state estimation, and sensor fusion, for dynamic systems, as well as tracking and prediction applications