

Ivan Cisneros

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EDUCATION

Carnegie Mellon University

Master of Science in Robotics

Thesis: "A VPR-Based Technique for UAV Localization in Unvisited Environments"

Selected Coursework: Computer Vision, Machine Learning, SLAM, Planning and Decision-Making in Robotics

Pittsburgh, PA

Aug 2022

Harvard University

Bachelor of Science in Electrical Engineering, minor in Computer Science

Thesis: "A Sensor System for Autonomous Unmanned Aerial Vehicle Landing"

Selected Coursework: Autonomous Robot Systems, Artificial Intelligence, Convolutional Neural Networks

Cambridge, MA

Dec 2016

EXPERIENCE

Motional

ML Research Engineer

Remote

Jan 2024 – Present

- Designed and prototyped a novel Video-Language-Model approach for discovering long-tail temporal scenarios in 50+ TB of on-road autonomous driving data, establishing the technical foundation for scalable event retrieval.
- Developed and launched a company-wide VLM-powered video mining platform for improving ML datasets, cutting scenario labeling time by 60%+ and reducing complex data discovery and dataset curation workflows from weeks to hours.
- Enhanced reliability and performance of an executive-facing ML telemetry scenario mining tool for autonomous vehicle development, resolving all identified high-priority defects and shipping production-ready AWS deployments using Docker.

Carnegie Mellon University, Robotics Institute

Robotics Research Engineer, AirLab

Graduate Student Researcher, advised by Dr. Ji Zhang

Pittsburgh, PA

Oct 2022 – Oct 2023

Sept 2020 – Sept 2022

- Designed and implemented a GNSS-denied visual localization pipeline for UAVs, improving robustness under severe appearance changes in real-world environments.
- Developed a machine learning perception architecture for omnidirectional camera-based UAV localization in 3D, using domain adaptation and simulator-trained models to improve cross-environment generalization.
- Optimized and deployed deep learning models for real-time edge inference on NVIDIA Jetson platforms using PyTorch, TensorRT, model tracing, and quantization, reducing onboard processing latency and enabling reliable field operation.
- Owned field deployment of multi-rotor UAV localization systems, combining drone piloting, hardware integration, sensor and compute payload customization, and real-world testing to validate vision-based localization methods.

NASA – Jet Propulsion Laboratory

Electrical Engineer / Technical Project Manager

Pasadena, CA

Feb 2017 – Jan 2020

- Redesigned, tested, and integrated electronics for the Spacecraft Atmosphere Monitor mass spectrometer, now operating on the International Space Station; developed Python software interfaces and test benches to support verification and integration.
- Served as lead electrical engineer for the SiCMag space-grade magnetometer, translating science requirements into electronics design requirements and developing sense/control circuitry, power PCBs, PCB layouts, and assembly/test documentation.
- Managed a 20-person team on a \$10M subcontract for the Photon Counting Camera detector subsystem for the Deep Space Optical Communications instrument, part of NASA's Psyche mission.

Tesla

Hardware Engineering Intern

Palo Alto, CA

Sept 2015 – Sept 2016

- Designed and implemented electronic modules and C++ controller firmware for Tesla Model S Battery Management System automated testing, improving assembly-line workflows and modular in-circuit test coverage.
- Conducted board-level analysis of electronic subsystems, including Autopilot v2 modules, contributing to improved hardware performance and reliability across multiple vehicle components.

SKILLS

ML / Computer Vision: Deep Learning Models, VLMs, LLMs, Foundation Models, Transformers, CNNs, NLP, Supervised Learning, Model Training and Fine-Tuning, Prompt Engineering

Robotics / Autonomy: ROS, UAVs, Localization, Visual Place Recognition, SLAM, Simulation, Field Testing, Edge Deployment

Programming / Tools: Python, C++, MATLAB, Bash, PyTorch, OpenCV, TensorRT, Docker, Git, Linux, AWS

Simulation / Data / Hardware: Unreal Engine 4, AirSim, Synthetic Data Generation, QGIS, Remote Sensing Data, PCB Design, Hardware Integration

PUBLICATIONS & PATENTS

Interactive Few-Shot Multimodal Dataset Curation

Patent submitted, Jan. 2026

Demonstrating ViSafe: Vision-enabled Safety for High-speed Detect and Avoid

RSS, 2025

FoundLoc: Vision-based Onboard Aerial Localization in the Wild

arXiv preprint, 2023

ALTO: A Large-Scale Dataset for UAV Visual Place Recognition and Localization

arXiv preprint, 2023

iSimLoc: Visual Global Localization for Previously Unseen Environments with Simulated Images

IEEE T-RO / IROS, 2023