

Roberto Daniel Verdugo Siqueiros

Computer Vision Engineer & ML Researcher

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in LinkedIn

GitHub

📍 Ensenada, Baja California, México

Professional Summary

Accomplished ML Engineer and Computer Vision specialist with a Master's degree in Science, 2 JCR publications in high-impact journals, and multiple licenses and certifications in deep learning and generative AI. Proven expertise in developing production-ready deep learning systems. Specialized in multimodal AI applications including vision-language tasks, computer vision, NLP, generative AI, synthetic data generation, and foundation model integration.

Core Impact: Designed non-invasive wildlife monitoring systems and automated structural inspection frameworks that significantly outperform traditional methods while reducing processing time and operational costs.

Technical Skills

AI & Machine Learning

Multimodal AI

Generative AI (Diffusion, GANs)

Computer Vision

NLP (Transformers, LLMs)

PyTorch & TensorFlow

Hugging Face

Foundation Models

MLOps & Production

AWS (SageMaker, S3)

Docker & Kubernetes

CI/CD (GitHub Actions)

MLflow & W&B

NVIDIA Triton / KServe

Software & Data

Python (Expert)

Rust & C++

SQL & Vector Databases

API Development (FastAPI)

Git & GitHub

Key Projects

BajaNest: Wildlife Conservation AI System

[Production Ready]

Automated UAV-based system for non-invasive nest monitoring and debris quantification, solving the challenges of time-consuming and dangerous manual inspections.

Technologies:

Python, PyTorch, OpenCV, UAV/Drone Integration, Detectron2

Key Result:

Successfully analyzed 6 nests across 3 years, providing a reliable tool for conservationists to prioritize nest cleaning interventions.

Smart Infrastructure Inspector

[Research Project - Thesis]

A novel framework integrating multiple foundation models (SAM2, Florence2, SDXL) for automated crack detection in structures.

Technologies:

SAM2, Florence2, Stable Diffusion XL, Active Learning, PyTorch Lightning

Performance Highlights:

- Detection:** 92.3% precision, 89.7% recall, 91.0% F1-score.
- Segmentation:** 72% mIoU, 77.2% Dice coefficient.
- Speed:** 2.3s per 1024x1024 image (40% faster than comparable methods).

Education

Master of Science in Computer Science

Universidad Autónoma de Baja California (UABC) |
2023-2025

GPA: 99.67/100 | Academic Merit

Bachelor of Science in Electrical Engineering

Universidad Autónoma de Baja California (UABC) |
2013-2017

Academic Merit

Research Publications

"Fast assessment of debris in osprey... nests using deep learning"

Multimedia Tools and Applications (JCR Q2, IF: 3.6)

[UNDER REVIEW - Final Stage]

"A Data-Centric Framework for Automated Crack Instance Segmentation in Construction Materials via Integration of Foundational Vision Models"

Neural Computing and Applications

[UNDER REVIEW]

Professional Interests

Computer Vision Engineering

MLOps & Production Systems

Foundation Models

NLP

Multimodal AI

Multi-agent Systems

Passionate about leveraging cutting-edge AI to solve real-world problems.