Jonathan Flores

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AI Developer with experience designing, evaluating, and optimizing machine learning and deep learning models using Python. Strong background in computer vision and video analysis, with experience in CNNs, Transformers-based architectures, and multimodal models combining vision and language. Focused on deploying and optimizing AI models for real-world environments, including real-time inference, computational constraints, and edge deployment scenarios.

Experience

Instituto Politécnico Nacional (IPN)   Mexico City, Mexico
AI Developer / Machine Learning Engineer   Feb 2023 – Present

- Developed and fine-tuned machine learning and deep learning models in Python for computer vision and video analysis.
- Implemented and evaluated CNNs, Transformers, and hybrid-based architectures for spatiotemporal representation learning and domain-specific video classification.
- Built end-to-end pipelines for data processing, dataset curation, model training, and evaluation.
- Integrated AI models into larger systems, focusing on efficient inference and deployment under computational constraints.

Solera   Mexico City, Mexico
Software Development Engineer in Test I   Aug 2022 – Jan 2023

- Performed manual and automated testing for web and mobile applications using Python and Selenium.
- Developed and maintained automated test suites to validate application workflows, API communication, and data consistency.
- Led the integration and validation process between mobile and web modules, ensuring reliable automated communication between systems.
- Worked with CI/CD pipelines using Jenkins to support continuous testing and deployment.
- Collaborated within Agile teams using Jira, working closely with developers to identify, report, and resolve issues.

Education

Instituto Politécnico Nacional (IPN)   Mexico City, Mexico
PhD Candidate in Communications and Electronics Engineering   Feb 2023 – June 2027
Research focus: Online video anomaly detection and abnormal human action recognition.
Thesis: TransLowNet: Online modular framework for abnormal human action detection and multiclass video analysis

The University of Electro-Communications (UEC)   Tokyo, Japan
Research Student in Computer Vision and Intelligent Systems   Sept 2023 – Sept 2024

Instituto Politécnico Nacional (IPN)   Mexico City, Mexico
Master of Science in Microelectronics Engineering   Oct 2020 – Aug 2022
Thesis: SOMN_IA: Portable system for driver drowsiness and distraction detection

Skills

Programming & Systems: Python (Advanced), PyTorch, MATLAB, Linux, Git, REST APIs, CI/CD, Agile/Scrum
Computer Vision & Video Analysis: 2D CNNs (ResNet, MobileNet, YOLO, SSD), 3D CNNs (C3D, I3D, X3D), Vision Transformers (ViT, Swin), Hybrid video models (UniFormer)
Machine Learning, NLP & Multimodal Models: Supervised and Unsupervised Learning, CNN- and Transformer-based models, Generative models (VQGAN), NLP models (BERT, BART, GPT-4, LLaMA 3), Vision Language Models (CLIP, ImageBind)
Model Training & Deployment: Model training, fine-tuning, evaluation, inference, deployment under computational and edge constraints
Languages: Spanish (Native), English (Conversational / Technical)