LUCAS MARTINEZ

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lucas-oma.github.io/about-me/

EDUCATION

New York University   **September 2023 - May 2025**
Master's, Computer Science   *GPA: 3.83*
- Relevant Coursework: Machine Learning, Predictive Analytics, Computer Vision, Deep Learning, ML and Cloud

Universidad Catolica Nuestra Señora de la Asuncion   **January 2017 - November 2022**
Bachelor's, Computer Science

SKILLS

Technical Skills: Machine Learning, Computer Vision, Deep Learning, LLM, RAG, Cloud Computing, Pytorch, Tensorflow, Forecasting, Regression, Clustering, End-To-End, Backend, FastAPI, Node.js, Fullstack, React.js
Programming Languages: Python, C++, Go, JavaScript, SQL, NoSQL
Soft Skills: Problem-Solving, Curious, Creative, Cross-Functional, Attention to Detail, Fast Learner, Agile

PROFESSIONAL EXPERIENCE

TECHNOLOGIES DEVELOPMENT OF PARAGUAY (TDP)   **Asunción, Paraguay**
Software Engineer   *January 2022 - August 2023*
- Managed and optimized in-server payment processing for 400,000+ users, handling over 3 million daily transactions and reducing processing time by 80%
- Led the development of a scalable digital banking and wallet system, serving 60,000+ users, with AI-driven user verification (computer vision, facial recognition, OCR integration)
- Directed the initial steps of an LLM chatbot implementation, establishing a scalable document processing and retrieval system.
- Enhanced the in-app public transit routing system with real-time data, improving accuracy and boosting user satisfaction (gained viral traction on Twitter).

CADI S.A.   **Asunción, Paraguay**
Software Developer   *November 2018 - February 2020*
- Built a robust billing system for a web platform serving small and medium businesses, streamlining operations and reducing manual errors
- Redesigned the inventory control system enabling real-time inventory updates across multiple devices.

PROJECTS & OUTSIDE EXPERIENCE

Duplicated Job Posting Detection System   **New York, NY, USA**
Python, Milvus, DiskANN, Embeddings   *April 2025 - Present*
- Developed a job duplicate detection system using SentenceTransformers and Milvus for semantic similarity search
- Also integrated a FastAPI service for real-time matching and evaluation with custom threshold tuning.
- *Link to project*

JobRAG   **New York, NY, USA**
                                                                                          April 2025 - Present
- Designed a system that combines retrieval-augmented generation with job embeddings to enhance job search and exploration
- Integrated Qdrant for vector search and FastAPI for dynamic query handling and stats visualization.
- *Link to project*

GradRag LLM   **New York, NY, USA**
Python, Qdrant DB, Embeddings   *November 2024 - Present*
- A Retrieval-Augmented Generation (RAG) application for PhD aspirants to search professors/tutors using embeddings and vector-based similarity
- Implemented and compared multiple NLP models, including TF-IDF, BERT, and SBERT, for optimized search accuracy.

Improving State Space Models for Computer Vision   **New York, NY, USA**

Python, PyTorch, ML Optimization   *September 2024 - December 2024*
- Enhanced state-space models for computer vision tasks by experimenting with optimization techniques for Vision Mamba and MambaVision architectures
- Introduced efficient pruning techniques, attention mechanisms, and convolutional adjustments, improving accuracy, generalization, and computational efficiency.

Hedge Fund alpha: Clustering stocks for portfolio enhancement using a novel approach   **New York, NY, USA**
Python, Data Mining, Data Analysis, Clustering   *September 2024 - December 2024*
- Implemented a predictive model to classify sector-based stock clusters, leveraging alternative data sources
- Analyzed interdependencies within S&P 500 indices and 13-F filings, using a new proposed technique, to inform strategic portfolio decisions, outperforming the S&P 500 (10.22% vs 6.5%)

Mentorship: Mentor in Software Engineering   **Remote**
Python, C++, Docker, Kubernetes   *2022 - 2022*
- Co-mentored alongside an NVIDIA Autonomous Car Machine Learning Infrastructure Engineer, helping students build and deploy microservice applications.

PUBLICATIONS

- **On the Measurement of io_uring Performance: a Strategy and Experience in the Envoy Service Mesh -**
  https://doi.org/10.19153/cleiej.27.2.3
- **A Measurement Strategy for io_uring Performance in the Envoy Service Mesh -**
  https://doi.org/10.1109/CLEI60451.2023.10346093