Marc'Antonio Lopez

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Summary

Computer Engineer specialized in **Artificial Intelligence**, focusing on **Generative AI** and **Machine Learning**. Proven track record in architecting and fine-tuning **Large Language Models (LLMs)** and **Deep NLP** systems utilizing **Python**, **PyTorch**, and **Hugging Face**. Currently advancing research in **RAG** and **Transformers** architectures while pursuing a Master's in AI & Data Analytics at Polytechnic University of Turin. Dedicated to engineering innovative, high-performance intelligent solutions that redefine Human-Computer Interaction.

Technical Skills

Programming Languages: Python, Java, C, JavaScript, Rust

Generative AI: Large Language Models (LLMs), GPT, BERT, Llama, Qwen, Transformers, Hugging Face, LangChain, RAG, Prompt Engineering, Fine-Tuning, PEFT, LoRA, Quantization

AI and Machine Learning: Deep Learning, Neural Networks, Reinforcement Learning, Robot Learning, Attention Mechanisms, Deep NLP, Computer Vision

ML Frameworks & Libraries: PyTorch, Keras, Scikit-learn, NumPy, Pandas, Matplotlib

Databases & Big Data: MySQL, SQLite, ExtendedSQL, PySpark, Hadoop

Tools: Git, Docker

Projects

DYLEM-GRID 2025
Personal Project *Python, PyTorch, LSTM, Transformers*

- Architected two different deep learning models, a Bidirectional LSTM networks with Attention mechanisms and an encoder-only Transformers for robust gesture recognition
- Engineered and validated the models on the DYLEM-GRID dataset (400 samples), optimizing for high-dimensional feature extraction
- Achieved SOTA classification accuracy in recognizing complex dynamic hand patterns
- Project available at: **GitHub**

Recurrent Neural Networks for Dynamic Gesture Recognition 2024
Thesis Project *Python, Keras, NumPy, Pandas*

- Designed a real-time Bidirectional RNN system capable of interpreting complex time-series data for dynamic human gesture classification
- Optimized model latency to enable seamless Human-Computer Interaction (HCI) suitable for healthcare and virtual environments
- Conducted comparative analysis of various recurrent architectures to maximize temporal dependency capture

Telegram Face Detection 2024
Computer Vision Application *Python, OpenCV, Flet, python-telegram-bot*

- Engineered a low-latency computer vision bot integrating OpenCV with asynchronous Telegram API communication
- Developed a responsive cross-platform GUI using Flet to manage detection parameters and real-time alerts
- Project available at: **GitHub**

Experience

HR Member October 2024 – Present
Mu Nu Chapter of IEEE-Eta Kappa Nu *Turin, Italy*
- Orchestrate recruitment campaigns and engagement strategies for the prestigious electrical and computer engineering honor society
- Facilitate technical workshops and networking events, promoting IEEE professional standards within the university ecosystem

Research Trainee in Artificial Intelligence February 2024 – June 2024
University of Enna "Kore" *Enna, Italy*
- Spearheaded research on dynamic gesture recognition, developing pipelines for processing Leap Motion sensor data
- Performed advanced statistical analysis on time-series datasets to identify key features for RNN model training
- Played a key role in the data acquisition and annotation process that led to the publication of the DYLEM-GRID dataset

Education

Polytechnic University of Turin Turin, Italy
M.Sc. in Artificial Intelligence and Data Analytics *September 2024 – July 2026*
Current Average: 28.9/30

Key Completed Courses: Data Science (30 cum laude), Computer Architectures (30), Web Applications I (30), Software Engineering (29), Big Data Processing and Analytics (28)

Advanced Coursework (In Progress): Deep Natural Language Processing, Large Language Models, Robot Learning, Advanced Machine Learning

University of Enna "Kore" Enna, Italy
B.Sc. in Computer Engineering, 110/110 cum laude *October 2021 – July 2024*
- Thesis: Recurrent Neural Networks for Dynamic Gesture Recognition

Certifications

IEEE Membership 2025
IEEE *Graduate Student Member*
- Active member of the world's largest technical professional organization dedicated to advancing technology.

Cambridge English C1 Advanced 2024
Cambridge Assessment English *CEFR Level C1*
- Certified advanced proficiency in technical and professional English communication

Publications

DYLEM-GRID: Dynamic Leap Motion Gesture Recognition Indexed Dataset February 2025
Kaggle *Dataset Publication*
- Published a comprehensive dataset of 400 dynamic gestures collected from 100 participants via Leap Motion Controller
- Provided Raw, Cleaned, and Statistical data versions with granular hand-finger trajectory annotations for ML research
- Available at: **Kaggle DYLEM-GRID**

Home Automation System April 2024
SUAI *Research Publication*
- Integrated multi-sensor arrays into a smart home ecosystem utilizing Matlab/Simulink/Truetime and Zigbee protocols
- Published in SUAI Bulletin of the UNESCO Chair "Distance Education in Engineering"
- Available at: **ESPC-2024 Bulletin**

Additional Information

Languages: Italian (Native), English (Advanced - Cambridge C1)

Availability: Open to travel and relocation

Driving License: Full driving license