Giovanni Colombo

giovancombo aigiovancombo giovannicolombo.social@gmail.com +39 366 480 6282

Education

Master's Degree in Artificial Intelligence Florence, Italy, Sep 2021 - Apr 2025
Università degli Studi di Firenze • **Final mark:** 110/110
Thesis: *Classification of Flying Objects with Event cloud-based Methods*

Bachelor's Degree in Telecommunication Engineering Brescia, Italy, Sep 2015 - Feb 2021
Università degli Studi di Brescia • **Final mark:** 92/110
Thesis: *COVID-19 Detection through Vocal Analysis*

Projects

Structured Information Extraction from Text with OpenAI API
Developed an AI system to extract structured JSON data from text using LLMs from OpenAI and the Responses/Chat Completions APIs. Gained experience in Prompt Engineering and structured output implementation using Pydantic. *(Python, PyTorch, Pydantic, OpenAI API)*

Protein Secondary Structure Prediction with Transformers
Developed a Transformer architecture for predicting protein Secondary Structure from Primary Structure, utilizing the CullPDB dataset. Relative Embeddings and other features and training techniques were employed and evaluated. *(Python, PyTorch)*

Autonomous Platoon Control with Reinforcement Learning
Developed a simplified automotive environment and implementation of Deep Q-Learning and PPO algorithms to gain practical experience in applied Deep Reinforcement Learning. *(Python, PyTorch)*

CRATE: studying White-Box Transformers
Reproduced and validated part of the results achieved by a novel Transformer based architecture characterized by its use of exclusively mathematically interpretable operations. Performances evaluated on Image Classification, Image Completion via MAE, Self-Supervised Learning, and Pre-Training of Language Models. *(Python, PyTorch)*

Parallel Computing with OpenMP and CUDA
Developed two C++ programs to explore fundamental concepts of Parallel Computing, such as speedup and efficiency, using the OpenMP and CUDA frameworks. A simplified Image Renderer and a Histogram Equalizer were implemented. *(C++, OpenMP, CUDA)*

Publications

EV-Flying: an Event-based Dataset for In-The-Wild Recognition of Flying Objects Jun 2025
Magrini, G., Becattini, F., Colombo, G., Pala, P. (DOI: https://doi.org/10.48550/arXiv.2506.04048)
Presented at the CVPR 2025 Workshop on Event-Based Vision

Extracurricular

Freelance Photographer and Filmmaker
Since 2021, specialized in sports, and photojournalism. Clarity of thought and quick problem-solving are vital as mainly operating in highly dynamic and uncontrolled environments under constant high pressure. Working with clients with specific needs and deadlines improves my communication and time optimization skills.