Gianmarco Santoro

Data Scientist - AI | Mechanical Engineer - Automation

Seeking challenges to delve deeper into **Computer Vision**, **Robotics**, and related areas

+39 334 2044197 | gianmarcosantoro23@gmail.com | Linkedin | GitHub | **Portfolio at gianmarco-san.github.io**

DeepFake Detection | Computer Vision - Machine Learning Engineer

MICC (UniFi) | Florence, Italy | Dec 2023 - Apr 2024

Implemented **Out-of-Distribution (OOD) Detection** on *FaceForensics++* dataset. A 3-step method:

- Extracted Self-Attention heatmaps via **Vision Transformer**, pre-trained on face recognition.
- Exploited heatmaps: trained a **Convolutional Autoencoder** on real ones.
- OOD detection, tested real vs fake images reconstruction error: achieved a **60% AUC-ROC across five forgery** types.

Data Science & Statistical Learning | II Level Master

UniFi & IMT for Advanced Studies | Feb 2023 - Apr 2024 | 110/110 cum laude

Some topics: **Optimization**, GIS, **DL**, **NLP**, Graph Theory. A few **projects**:

- **Machine Learning** pipeline: **Grid Search** on linear regression degree.
- **Deep Learning**: images **classification** via **CNNs** models (PyTorch), achieving an accuracy of 70.4% on the test set.
- Economics: **salary prediction** on features like “education” via **CART** and other models.

Smart Center | IT & System Integration engineer

Daikin Applied Europe SpA | Rome, Italy | Jun 2021 - Sep 2022

Worked on cloud-based HVAC monitoring, system integration, and services:

- **Automated PLC** mapping and alarm selection via **Python features**, reducing manual configuration time by 95%.
- Developed a real-time sensor-to-cloud **temperature control system** for efficiency, well-being, and avoiding manual configuration.
- **Services**, such as periodic reports via web API.

Wireless Charging System | Operations Research Scientist

Enermove Srl | Turin, Italy | Apr 2020 - Mar 2021

Developed a **predictive optimization framework** for **electric vehicles dynamic wireless charging system**, balancing energy efficiency and economic constraints. Optimized **placement strategy mathematical model** via genetic algorithms.

Chip Extrusion Recycling | Manufacturing Engineer

Institut für Umformtechnik und Leichtbau | Dortmund, Germany | Feb - Sep 2018

Experimented with the **aluminum recycling process** by direct extrusion of mixed waste alloys (**DoE**). Compared profile **properties** to simulated (**FEM**), assessed **industrial feasibility** to identify process bottlenecks, as logistic issues.

Mechanical Engineering | M.Sc. & B.Sc.

M.Sc. @ PoliTo & B.Sc. @ UniBo | Until Apr 2021 | 104/110

Specialized in **automation**. Some extra projects:

- **Designed** a two-stage **reduction gearbox** for general applications.
- **Thermal design** of a hot air boiler and home **heating system**.
- Built a **numerical model** for air-hot fumes metal flue **heat exchange**.
- Automation and **mechatronics** labs: PLC, PID controls, pneumatics, mechanisms.

SKILLS **Languages:** • **Italian:** C2 - Mother tongue • **English:** C1 - Professional • **German:** A2 - Basic

AI & SW: Python, PyTorch, OpenCV, NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn, GIT-GitHub/Lab, R, Matlab & Simulink
Web, Tools, Industrial: HTML, CSS, Jupyter/Colab, MS-Office (Excel), G-Suite, Notion, Canva, AutoCAD, SolidWorks
Basic: Bash, C, JS, PLC Siemens-Clim., TCP/IP, SSH, mRemoteNG, Modbus, qModMaster, CATIA, HyperMesh/Ext., MSC-Adams/Apex