

# Silverio Manganaro

COMPUTER SCIENTIST · AI AND ROBOTICS ENGINEER

16/07/1998 - Turin, Italy

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## Summary

AI Engineer at NOVA Reply and MSc graduate in Artificial Intelligence and Robotics from Sapienza University of Rome, holding a Bachelor's degree in Computer Science. I design and build applied AI systems (agentic LLM workflows, RAG pipelines and reinforcement-learning platforms) with a strong focus on robust, reproducible engineering. Beyond my long-standing passion for Computer Vision, Reinforcement Learning, Brain-Computer Interfaces and Space Exploration, what matters most to me today is impact: I want my work to be genuinely useful to other people, in their professional or their everyday lives. Even in a small way. Particularly drawn to roles that encourage continuous learning and push technological boundaries while keeping people at the centre. Lover of photography, woodcrafting and long-distance trails, especially when shared with friends. Lately, I've also developed a serious obsession with rock climbing and snowboarding.

## Experiences

### NOVA Reply

Turin, Italy

AI ENGINEER

Nov. 2025 - Present

- Built a **system-wide troubleshooting** workflow over **Kubernetes** and **OpenStack** telemetry: agentic root-cause analysis orchestrated with **LangGraph**, augmented with **RAG** on a **Redis** vector store.
- Developed an agentic workflow to analyze **ROS bag** data from a robotic simulation platform (LangGraph agents + tools, with RAG over a Redis vector store).
- For a **PPO** reinforcement-learning agent optimizing mobile-network (4G/5G) energy under QoS constraints, engineered the data & integration layer: a **Kafka**-fed **FastAPI** preprocessing microservice with geo-spatial QoS aggregation, plus **VIavi** and **O-RAN** integration.

### Delft University of Technology

Delft, Netherlands

GUEST RESEARCHER

Aug. 2024 - Jan. 2025

- Focus on Machine Learning techniques for **Epilepsy Diagnosis from electroencephalograms**.
- In collaboration with the **Erasmus Medical Center**.
- Performance analysis of a variety of techniques and architectures (XGBoost, AutoEncoders, WGANs, Transformers)

## Projects Highlights

### Pin-Point Autonomous Lunar Landing

Public on GitHub

REINFORCEMENT LEARNING - TEAMWORK

December 2023 - January 2024

- We developed an **Asynchronous** version of the **Soft Actor-Critic** algorithm to tackle autonomous precision landing
- Efficient and stable training was achieved through a **reward-based prioritization scheme** for replay buffer sampling
- Evaluation was conducted both in 2D and 3D physics-based Lunar environments, leveraging the **PyBullet** and **Gymnasium** frameworks

### Structure from Motion

Public on GitHub

PROBABILISTIC ROBOTICS

March 2023 - November 2023

- Solution to the **Global Transition Problem** by blocking global camera orientations
- Landmark triangulation and registration using a **Least Squares** approach
- Refinement of final positions and orientations by applying **Bundle Adjustment**

### Autonomous Humanoid Navigation in Multi-Floor Environments

Public on GitHub

AUTONOMOUS AND MOBILE ROBOTICS - TEAMWORK

Jan. 2023 - April 2023

- We tackled navigation in complex and uneven multi-level terrains by extending the concept of **Surface Map**
- We developed an **RRT-based offline footprint planner** that considers the feasibility and cost of each step
- Results were evaluated on **CoppeliaSim** leveraging an **Intrinsically Stable MPC**-based gait generator

## Education

### Sapienza University of Rome

Rome, Italy

MSC IN ARTIFICIAL INTELLIGENCE AND ROBOTICS

Jan. 2022 - Oct. 2025

- **Relevant topics in AI:** Deep Learning, Computer Vision, Reinforcement Learning, Natural Language Processing
- **Relevant topics in Robotics:** Autonomous and Mobile Robotics, Probabilistic Robotics
- **Extras:** Neuroengineering, Practical Network Defense

- **Relevant topics:** Computer Graphics, Information Security, Human-Computer Interaction, Software Engineering, Databases, Operating Systems, Algorithms and Data Structures, Computer Networks, Blockchain Technologies
- **Thesis:** Event Log Extraction for Process Mining from Distributed Ledgers of the Algorand Platform, Advisor: Claudio di Ciccio

## Skills

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|-----------------------------|------------------------------------------------------------------------------------|
| <b>Languages</b>            | Italian (Native), English (B2)                                                     |
| <b>Programming</b>          | Python, C++, Javascript                                                            |
| <b>AI &amp; LLM</b>         | PyTorch, LangGraph, LangChain, RAG, Agentic AI, Redis Vector Store, Weights&Biases |
| <b>Infrastructure</b>       | Kafka, FastAPI, Docker, Kubernetes, OpenTelemetry, Git                             |
| <b>Robotics &amp; Tools</b> | ROS, Coppeliasim, MATLAB, Blender, LaTeX, HTML/CSS                                 |