

CURRICULUM VITAE | JUNE 2026

Lorenzo Marinelli

MSc Computer Science Student | Applied AI & Scientific Computing

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PROFILE

Computer Science MSc student at Sapienza University of Rome working across applied AI, scientific data, and research-oriented software. I build reproducible experiments and interactive technical tools spanning graph machine learning, bioinformatics, computer vision, time series, reinforcement learning, and language-model-guided workflows.

Education

MSc Computer Science

2025-Present

Sapienza University of Rome

Bachelor's Degree in Applied Computer Science & Artificial Intelligence

2022-2025

Sapienza University of Rome | **Final grade: 110 cum laude**

Scientific High School Diploma

2017-2022

Liceo Scientifico A. Romita | **Final grade: 100 e lode**

Technical Profile

Programming & data: Python, NumPy, pandas, Matplotlib, scikit-learn, notebooks, SQL**Deep learning:** PyTorch, PyTorch Lightning, PyTorch Geometric, torchvision, model evaluation**Vision & graphs:** OpenCV, NetworkX, Gephi, anomaly localization, graph analysis**Engineering:** Git, Docker, HTML/CSS, JavaScript, OpenAPI, lightweight web/API development**Research workflow:** Reproducible runs, visual diagnostics, documented experiments, compact demos

Current Focus & Availability

- Open to internships, thesis work, research prototypes, and open-source collaboration.
- Primary interests: deep learning, graph ML, bioinformatics, data analysis, and ML security.
- Working style: start from the question and data, then choose models and evaluate limitations clearly.

Selected Project Experience

Bachelor's Thesis - GNN Protein Interaction Prediction

Bioinformatics | Graph ML | Link prediction | ProtT5 embeddings

- Built a graph-neural-network workflow to rank likely missing protein-protein interactions, combining protein sequence information with known interaction topology and a NOTCH2 case study.
- Used TAGConv, TransformerConv, and GINConv encoding with a pair decoder; evaluated ranking quality under a 1:10 positive-negative skew.
- Results: AUROC 0.96, AUPRC 0.89, Precision@500 1.00, about 81% recall at threshold 0.5; documented topology bias and scalability limits.

THESIS RESULTS AUROC 0.96 | AUPRC 0.89 | P@500 1.00 | Recall ~81%

RL-Nav v1 - Oracle-Guided RL for Partial-Observation Navigation

Reinforcement learning | LLM guidance | Recurrent control | PyBullet

- Designed the interface and constrained structured outputs for an LLM oracle guiding navigation in a stochastic, partially observed environment with a hidden goal.
- Reached 62% held-out success and identified robust execution as the principal bottleneck.

UAV Anomaly Detection & Localization

Computer vision | AE/VAE | Heatmaps | Connected components

- Developed a modular proposal pipeline for high-resolution aerial imagery: reconstruct the expected scene, score residual anomalies, threshold and clean masks, then extract boxes and crops.
- Focused on interpretable anomaly maps and lightweight candidate generation before downstream classification.

Lorenz Attractor Forecasting

LSTM | Time series | Chaotic systems | Numerical simulation

- Compared coordinate, derivative-aware, and residual-style recurrent forecasting approaches on a chaotic dynamical system.
- Used recursive rollouts to study drift, stability, and error accumulation beyond short-horizon metrics.

Additional Projects

EU Elections 2019 Data Analysis: Cleaned public data, checked hypotheses, and produced reproducible visual and narrative analysis.

Synthetic Dataset Generation in Blender: Generated labeled, domain-randomized renders for YOLO-style object-detection training.

Small Web / API Projects: Built lightweight apps and API integrations using OpenAPI, SQL, HTML, CSS, and JavaScript; includes WasaText, Mood Tracker, and this portfolio.

Interactive Technical Portfolio

Built fourteen browser-native explainers, simulations, and utilities that turn technical concepts into inspectable interactions.

- **Graph & machine learning:** Graph Signal Diffusion; GNN Message Passing Toy; Clustering Lab; MLP Decision Boundary Lab; Anomaly Node Game
- **Signals, vision & generative models:** Fourier Transform Playground; Signal Filter Playground; Convolution Kernel Playground; Computer Vision Mini Lab; Diffusion Model Denoising Toy
- **Scientific & creative computing:** Gravity Assist Sandbox; Circle of Fifths Network; Image Color Editor
- **Browser utility:** Local File Converter using browser-native tools and FFmpeg.wasm

www.lmarinelli.eu/playground/

Research Practice

- Connect coursework, thesis work, and personal projects through readable notes, demos, and practical evaluation.
- Turn domain problems and messy datasets into reproducible analyses, visual summaries, and documented experiments.
- Maintain a learning log; current reference work includes an NVIDIA DLI course on adversarial machine learning and model security.

Broader Interests

Statistics, psychology, physics, biology, and philosophy; writing music, classical guitar, 3D modeling, drawing, photography, films, television series, and video games.

Portfolio & Contact

Project details, thesis artifacts, presentations, and interactive demos are available online.

- [Portfolio](#)
- [GitHub](#)
- [LinkedIn](#)
- [Bachelor's thesis PDF](#)
- [Thesis slides](#)
- [RL-Nav presentation](#)