



Luca Domeniconi

AI Researcher graduated in Artificial Intelligence at the University of Bologna

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Education

- M.Sc. University of Bologna**, Artificial Intelligence Bologna, Italy
Sept 2023 – Mar 2026
- Thesis: *Using Sparse Features to Characterize and Mitigate Concept-Dependent Modality Gap in Vision-Language Models*
 - Grade: 110/110 with honors
- B.Sc. University of Bologna**, Computer Engineering Bologna, Italy
Sept 2020 – Oct 2023
- Grade: 109/110

Publications

- How to Evaluate and Refine your CAM** [Publication Repository](#)
Luca Domeniconi, Alessandra Stramiglio, Michele Lombardi, Samuele Salti
 (ICPR 2026)

Experience

- EPFL**, Research Intern (Master's Thesis) Lausanne, Switzerland
Oct 2025 – Mar 2026
6 months
 Conducted research on interpretability and vision-language models for my Master's thesis project in [MINTS Lab](#), under the supervision of Prof. Andrea Cavallaro.
- Studied the semantical structure of the modality gap inside CLIP's embedding space
 - Proposed to use Sparse Autoencoders to better characterize the modality gap
- Belluzzi Fioravanti High School**, Computer Science Teacher Bologna, Italy
Jan 2024 – Feb 2024
2 months
 Taught students about computer architecture and networking using sockets
- Gruppo Finmatica**, Software Engineer Intern Bologna, Italy
Mar 2023 – June 2023
4 months
 Deployment of a web based collaborative document editor and development of a React Native prototype for barcode scanning to assist warehouse personnel in inventory management
- Private Tutor* Rimini, Italy
2019 – 2025
6 years
 Private computer science and mathematics lessons for undergraduate and high school students

Achievements

- 1st Place at EPFL LauzHack 2024, BMS Challenge** Lausanne, Switzerland
 Developed an explainable time-series forecasting model using Gaussian Processes and Shapley values to predict pharmaceutical demand, ranking 1st out of 12 teams in the Bristol Myers Squibb 24-hour hackathon challenge.
- 1st Place at Tablut AI Agent Challenge** University of Bologna
 Designed and developed an AI player for the asymmetric board game Tablut using adversarial search and heuristic evaluation, ranking 1st out of 10 agents.

Selected Projects

- ICD Multimodal Diagnosis** [Project Repository](#)
 Implemented a Tree-constrained multimodal ICD-9 generation pipeline from chest X-rays and clinical text using custom made VLMs
- Semantic Segmentation of Unexpected Objects on Roads** [Project Repository](#)
 Implemented an open-world semantic segmentation model using a pre-trained DINOv3 plus metric learning to segment known classes while detecting anomalous regions.

Constraint Programming for Multiple Couriers Optimization

Modelled the Capacitated Vehicle Routing Problem using CP, SAT, SMT, and MILP (MiniZinc, OR-Tools, Z3, Gurobi)

[Project Repository](#) ↗

Shelves Product Detection

Instance detection of products on shelves using only classical computer vision techniques with OpenCV

[Project Repository](#) ↗

Skills

Research Interests: Explainability, Attribution Methods, Vision-Language Models

Computer Vision: Python, OpenCV, PyTorch

Machine Learning: Keras, numpy, pandas, scikit-learn, Matplotlib

Web and Mobile Development: JavaScript, NodeJS, React, React Native, Android Native

Programming Languages and Tools: Java, C, C#, \LaTeX, SQL, MATLAB, Minizinc, Unity 3D, Docker, Blender