

Gabriele Onorato

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Education

- Northeastern University**, PhD in Computer Engineering Sept 2026 – Current
- **Research:** Interpretability and robustness in Machine Learning.
 - **Advisor:** Prof. Francesco Restuccia, [Mentis Laboratory](#), Institute for Intelligent Networked Systems.
- La Sapienza University of Rome**, MS in AI & Robotics Oct 2024 – July 2026
- **Major:** Artificial Intelligence.
 - **GPA:** 29.14/30.
 - **Final grade:** 110 cum Laude.
 - **Thesis:** Distilling Concepts from Vision Foundation Models.
 - **Advisor:** Prof. Fabrizio Silvestri.
 - **Summer School:** Participated at [CMMRS 2025](#), (Cornell, Max Planck, UMaryland College Park Predoctoral Research School).
Attended [Trieste Next Research Festival 2025](#).
- La Sapienza University of Rome**, BS in Computer & Control Engineering Sept 2021 – Oct 2024
- **Major:** Computer Science.
 - **GPA:** 29.19/30.
 - **Final grade:** 110 cum Laude.
 - **Thesis:** Bayesian Optimization for Hyperparameters Tuning in Neural Networks. ([Repo Link](#), [Arxiv](#)).
 - **Advisor:** Prof. Giampaolo Liuzzi.

Experience

- Research Assistant**, La Sapienza University of Rome, Italy Feb 2026 – Aug 2026
- Worked on Machine Unlearning.
 - RSTLess Lab, Prof. Fabrizio Silvestri.
- Teaching Assistant**, La Sapienza University of Rome, Italy Sept 2025 – Feb 2026
- Hired as a TA in the course of "*Foundations of Internet and Communication Technologies*" (A.Y. 2025/2026), my job was to assist students and make practical lectures.
 - Second year bachelor (~300 students), Prof. Francesca Cuomo.
- Predoectional Research Fellow**, La Sapienza University of Rome, Italy Jul 2025 – Feb 2026
- Worked on efficient Industrial Anomaly Detection models using ViT and robust approaches.
 - [ALCOR Lab](#), Prof. Irene Amerini.
- NLP Engineer Intern**, [Babelscape](#), Italy Jul 2025 – Sept 2025
- Parallel Data Preprocessing using [Cineca Leonardo](#) for the next generation Minerva LLM.
 - Data Extraction for [Minerva LLM](#).
- Teaching Assistant**, La Sapienza University of Rome, Italy June 2025 – Sept 2025
- Hired as a TA in the course of "*Laboratory of Computer Engineering*" (A.Y. 2024/2025), my job was to assist students and review final projects.
 - Third year bachelor (~250 students), Prof. Roberto Navigli.
- External Research Collaborator**, [Deix](#), Italy July 2024 – August 2024
- Collaborated to fine-tuning an LLM chain to generate Linear Integer Programming problems from natural language descriptions.
 - [Article](#).

- Elected representative for both the Faculty of Information Engineering, Computer Science and Statistics (~8000 students), and the Computer Engineering Degree Programs (~1500 students), acting as liaison between students and academic staff.
- Member of the Teaching Quality Committee, contributing to the evaluation and improvement of academic programs.

Publications

PLACE: Patch-Level Agnostic Concept Extraction, Advances in Neural Information Processing Systems (NeurIPS 2026, Main Proceedings) Dec 2026

Gabriele Onorato, Fabrizio Silvestri, Nathaniel D. Bastian, Francesco Restuccia.

[PDF](#) [OpenReview](#) [Project Page](#)

Heterogeneous Sheaf Neural Networks, NeurIPS 2026 Workshop on Symmetry and Geometry in Neural Representations (NeurReps, Proceedings Track, PMLR) Dec 2026

Luke Braithwaite, Alessio Borgi, **Gabriele Onorato**, Kristjan Tarantelli, Francesco Restuccia, Fabrizio Silvestri, Pietro Liò.

[Arxiv](#) [OpenReview](#) [Code](#)

A Metacognitive Framework for Test-Time Adaptation: Taxonomy and Research Challenges, AAAI Fall Symposium on Artificial Metacognition (METACOG 2026) Nov 2026

Dario Loi, **Gabriele Onorato**, Antonella Coviello, Shahriar Rifat, Nathaniel D. Bastian, Francesco Restuccia.

Top 3 Paper Award. [PDF](#) [Code](#)

A Metacognitive Perspective on Anomaly Detection with Vision Foundation Models, AAAI Fall Symposium on Artificial Metacognition (METACOG 2026) Nov 2026

Matteo Galiazzo, **Gabriele Onorato**, Dario Loi, Nathaniel D. Bastian, Francesco Restuccia.

[PDF](#) [Code](#)

Caps-ViT: A Synthetic-Free Capsule Vision Transformer for Reconstruction Based Anomaly Detection and Localization, Image and Vision Computing, Elsevier Feb 2026

Gabriele Onorato, Kristjan Tarantelli, Alberto Guida, Claudio Schiavella, Irene Amerini.

Vol. 176, 106204. [DOI:10.1016/j.imavis.2026.106204](https://doi.org/10.1016/j.imavis.2026.106204)

Preprints

OmniSheaf: Unifying Sheaf Hypergraph Networks via Efficient Universal Approximators Sept 2026

Gabriele Onorato, Nathaniel D. Bastian, Francesco Restuccia.

Submitted to ICLR 2027. [PDF](#)

The Credal Information Bottleneck Sept 2026

Dario Loi, **Gabriele Onorato**, Nicolò Bonacorsi, Francesca Meneghello, Francesco Restuccia.

Submitted to ICLR 2027. [PDF](#)

RareCount: Interpretable Out-of-Distribution Detection in Sparse Concept Space Aug 2026

Antonella Coviello, **Gabriele Onorato**, Nathaniel D. Bastian, Francesco Restuccia.

Submitted to CVPR 2027. [PDF](#)

Implicit Sheaf Operators for Effective and Efficient Cellular Sheaf Learning July 2026

Gabriele Onorato, Dario Loi, Cristian Apostol, Nathaniel D. Bastian, Francesco Restuccia.

Submitted to AAAI 2027 (Round 2). [PDF](#)

Bayesian Optimization for Hyperparameters Tuning in Neural Networks Oct 2024

Gabriele Onorato, Giampaolo Liuzzi.

To be submitted to TMLR. [Arxiv](#) [Code](#)

Invited Talks

Metamorphosis and the Digital, Bibliotheca Hertziana, Max Planck Society

Oct 2025

Federico Mari, Alessandro Augelli, Simone Cama, Elena Martini, **Gabriele Onorato**, Alessia Silvi.

Invited speaker for ICONOS 2.0: digital methodologies for the dialogue between texts and images. [Link](#) [Draft](#)

Service

Reviewer: NeurIPS 2026, AAAI 2027, INFOCOM 2027, ICASSP 2027.

Technologies

Languages: Python, MATLAB, Java, C/C++, Assembly IA32, SQL, HTML, CSS, Javascript, PHP.

Technologies: PostgreSQL, Windows, MacOS, Ubuntu, Docker, Git, VirtualBox, PyTorch.

Others

Spoken Languages: Italian (Native), English (C1 IELTS Academic 7.5).

Hobbies: Chess, Cards, Padel, Tennis, Travel, TV Series & Movies, Videogames, Finance, Politics.

Volunteering: Electoral Polling Station President.