

Leo D'AMATO

Ph.D. Candidate | AI

@ leo.damato@outlook.it [in linkedin.com/in/leodamato](https://www.linkedin.com/in/leodamato)
<https://damat-le.github.io/> github.com/damat-le



I am currently a PhD student at the ISTC-CNR, the Institute for Cognitive Sciences and Technologies of the National Research Council of Italy. My scholarship belongs to the first cycle of the Italian National PhD Program in Artificial Intelligence and I do research at the intersection between AI and Neuroscience. Besides this, I also work on industrial projects in the fields of railway traffic management and structural health monitoring. Prior to my PhD, I worked with language models to create a smart fake news alert system for one of Italy's largest oil companies.

PUBLICATIONS

- 2024 D'Amato L, Lancia G L, Pezzulo G. **The geometry of efficient codes : how rate-distortion trade-offs distort the latent representations of generative models.** Preprint : <https://arxiv.org/abs/2406.07269>
- 2024 Pezzulo G, D'Amato L, Mannella F, Priorelli M, Van De Maele T, Stoianov IP, Friston K. **Neural representation in active inference : Using generative models to interact with—and understand—the lived world.** Annals of the New York Academy of Sciences. <https://doi.org/10.1111/nyas.15118>.
- 2024 D'Amato L, Pellegrini P, Trianni V. **A coordination algorithm for decentralised railway traffic management.** In preparation.
- 2024 D'Amato L, Naldini F, Tibaldo V, Trianni V, Pellegrini P. **Towards self-organizing railway traffic management : concept and framework.** Journal of Rail Transport Planning & Management. <https://doi.org/10.1016/j.jrtpm.2023.100427>.
- 2024 Melchiorre J, D'Amato L, Agostini F, Rizzo A. **Acoustic Emission Onset Time Detection for Structural Monitoring with U-Net Neural Network Architecture.** Developments in the Built Environment. <https://doi.org/10.1016/j.dibe.2024.100449>.
- 2024 Melchiorre J, D'Amato L, Agostini F, Manuella A. **Deep-Learning-Based Onset Time Precision in Acoustic Emission Non-Destructive Testing.** 2024 IEEE International Workshop on Metrology for Living Environment (MetroLivEnv). <https://ieeexplore.ieee.org/abstract/document/10615695>.
- 2023 Melchiorre J, Agostini F, D'Amato L, Rosso M M. **Onset Time Detection of Acoustic Emission Signals for Structural Monitoring with Deep Learning.** In press.
- 2023 D'Amato L, Naldini F, Tibaldo V, Trianni V, Pellegrini P. **Designing self-organizing railway traffic management.** 10th International Conference on Railway Operations Modelling and Analysis (RailBelgrade2023). TOP10 Best Paper Award.

PROJECTS

SIMPLEGRID

2022 - TODAY

github.com/damat-le/gym-simplegrid

SimpleGrid is a simple grid environment for Gymnasium. It is easy to use and customise and it is intended to offer an environment for quickly testing and prototyping different RL algorithms.

[Gymnasium](#) [Reinforcement Learning](#) [Python](#)

PROFESSIONAL EXPERIENCE

Feb 2022 - Today Milano, Italy	Lecturer Talent Garden Innovation School I give the lectures of the Statistics module of the Business Data Analysis Master organized by Talent Garden Innovation School. Statistics Gretl
Apr 2021 - Oct 2021 Cagliari, Italy	Data Scientist Linkalab s.r.l. I was in charge of developing and applying natural language processing techniques to automatically monitor, in real time, the reputation of one of our customers on social networks. <ul style="list-style-type: none"> > Social listening > Data cleaning and analysis > Sentiment and emotion analysis, text classification, clustering > Anomaly detection and smart alerting in case of reputational crisis Python Pandas Sprinklr Hugging Face AWS
Feb 2021 - Mar 2021 Pescara, Italy	Data Scientist Fater s.p.a. I was in charge of developing an algorithm to efficiently plan promotional activities of Fater's products. The project was particularly challenging because of the underlying complex promotion's dynamics, the huge amount of data involved and their heterogeneous nature. <ul style="list-style-type: none"> > Retrieve data from multiple heterogeneous sources > Process and organize very-low-quality data > Design of custom algorithms to detect and evaluate past promotional activities Python Pandas Matplotlib Statistics

EDUCATION

Ph.D. 2021 - Today Rome, Italy	Italian National Research Council (CNR) Artificial Intelligence <i>Italian National Ph.D. Program in Artificial Intelligence</i> My research can be framed in the context of representation learning in both animals and artificial agents. On one hand, I analyse the distortions induced by a biased dataset or a supplemental task on the latent representations of generative models when encoding capacity constraints are in force. On the other hand, I work with neural and behavioural data from rodents navigating specifically designed mazes to study how the connectivity of the external environment is represented in the brain.
Master's degree 2018 - 2020 France	Université Côte d'Azur and University of L'Aquila Mathematics (LM-40) <i>MathMods double master's degree program</i> Thesis Title : Mean Field Games on finite state space Supervisor : François Delarue Graduation Date : 2020-09-22 Final Degree Mark : 110/110 cum laude
Erasmus 2019 Germany	Universität Hamburg Erasmus Traineeship <i>MathMods double master's degree program</i>

Bachelor's degree	University of L'Aquila
2015 - 2018	Mathematics (L-35)
Italy	Thesis Title : Random Walk and Heat Equation
	Supervisor : Anna De Masi
	Graduation Date : 2018-07-21
	Final Degree Mark : 110/110 cum laude

OTHER TRAINING COURSES

Jun 2023
Grosseto, Italy

ACDL2023 : 6th Advanced Course on Data Science & Machine Learning
<https://acdl2023.icas.cc/>

Full-immersion five-day Course on cutting-edge advances in Data Science and Deep Learning with lectures delivered by world-renowned experts.

LANGUAGE CERTIFICATIONS

Gen 2020

French Language : Cours universitaire de langue française, Université Côte d'Azur

Aug 2019

German Language : German language and culture for foreigners (level A1), Universität Hamburg

Aug 2018

English Language : TOEFL PBT, Wayne State University (Detroit, Michigan, USA)