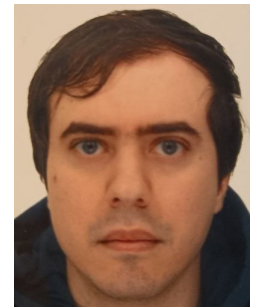# Alessandro **Ristori**

M.Sc. Student in Artificial Intelligence

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About me

A Computer Science student at University of Pisa following the Artificial Intelligence curriculum. Interested in exploring the ever-expanding world of machine learning, mainly NLP and Machine Translation, but I do not disdain testing my skills in other domains. Looking mostly for positions related to Machine Learning and Data Scientist positions.

Education

University of Pisa
Pisa, Italy

M.Sc. in Computer Science - AI curriculum
Sep. 2020 - Dec. 2023

- **Final mark:** 110/110 *cum Laude*.
- **Thesis:** *Continual Learning for Non-Autoregressive Neural Machine Translation*.
  The setting consisted in dealing with two non-autoregressive models (CMLM and GLAT) and analyzing their performances in a multilingual scenario. I observed how well they fare against the issue of catastrophic forgetting while employing the continual strategy of experience replay.
- **Courses:** Artificial Intelligence Fundamentals, Information Retrieval, Machine Learning, Computational Mathematics for Learning and Data Analysis, Human Language Technologies, Parallel and Distributed Systems: Paradigms and Models, Intelligent Systems for Pattern Recognition, Mobile and Cyber-Physical Systems, Smart Applications, Data Mining, Computational Health Laboratory, Computational Models for Complex Systems.

University of Florence
Florence, Italy

B.Sc. in Computer Science
Sep. 2016 - Feb. 2020

- **Final mark:** 110/110.
- **Thesis:** *Genetic Algorithms and their Applications*.
  I studied the behaviour of genetic algorithms while also analyzing their pros and cons, I first applied them to a simple case (function maximization), then I utilized them in a path-finding context.

ISISTL Russell-Newton
Scandicci, Italy

High School
Sep. 2011 - Jul. 2016

- **Final mark:** 100/100 *cum Laude*.
- Took part in the first edition of *Progetto TRIO* (an intership that spans over an entire school-year) during my fourth year.

University Projects

Artificial Intelligence Fundamentals

Employment of rule-based and minimax strategies for a Pokémon battle bot
Oct. 2022 - Jan. 2023

- Built a Pokémon battle bot that can be challenged via an online simulator. My main contribution was the damage and stats calculation, while also defining the rules for the rule-based bot.
- **Technical skills:** Python, Git.

Computational Mathematics for Learning and Data Analysis

Application of various optimization algorithms to a linear least squares problem
Jun. 2022 - Sep. 2022

- Applied L-BFGS, Thin QR factorization, Conjugate Gradient and Gradient Descent to solve a linear least squares problem with an ill-conditioned matrix.
- **Technical skills:** MATLAB.

Computational Health Laboratory

Pathway analysis of disease's proteins
Apr. 2022 - May 2022

- Built a protein-to-protein graph starting from a single protein that is the main responsible for a disease and found the correlation with all the other proteins in the network.
- **Technical skills:** Python (pandas, seaborn), Jupyter Notebook, Git.

Computational Models for Complex Systems

Simulation of highway traffic via cellular automata
May 2022 - May 2022

- Simulated the flow of highway traffic in different scenarios using the paradigm of cellular automata.
- **Technical skills:** Java, Git.

Parallel and Distributed Systems: Paradigms and Models

Parallelization of a custom KNN algorithm   *Jan. 2022 - Feb. 2022*

- I used the standard library of C++ and the FastFlow library to parallelize a custom implementation of the KNN algorithm and, then, I compared the performance of both implementations.
- **technical skills:** C++, Python, Linux.

Smart Applications

Object recognition for an autonomous driving car   *Nov. 2021 - Jan. 2022*

- Took part in a team of eight people that was tasked in developing an object recognition model for both the stereocamera and lidar of an autonomous driving vehicle.
- **Technical skills:** Python (pandas, YOLOv3), Git.

Data Mining

Analysis and study of tennis matches data   *Sep. 2021 - Jan. 2022*

- I worked on a dataset of more than 100k matches: first of all I had to clean it from missing or wrong data. Then, I gathered info on all the players and classified them into different categories by analyzing their performance. Finally, I displayed the results in a human-readable way.
- **Technical skills:** Python (pandas, seaborn, numpy, scikit), Jupyter Notebook, Git.

Human Language Technologies

Comparison of different NMT models   *Sep. 2021 - Dec. 2021*

- Compared different Neural Machine Translation models in order to attest their performances while changing their decoder.
- **Technical skills:** Python (Tensorflow), Jupyter Notebook, Git.

Mobile and Cyber-Physical Systems

Telegram bot for monitoring room temperature   *Mar. 2021 - Jun. 2021*

- Developed a Telegram bot that updates the user with data from some chosen rooms. This was done in order to let a shop owner know if its refrigerator cells are having an issue and to assess if such rooms are complying with the HACCP regulamentations.
- **Technical skills:** Python, MongoDB, Java, Git

Machine Learning

Development of a neural network from scratch   *Nov. 2020 - Jan. 2021*

- Built a simple library that deals with the construction of a neural network's layers while also implementing the forward and backward passes.
- **Technical skills:** Python (numpy), Git.

Skills

Main Interests	Artificial Intelligence, Machine Learning, Natural Language Processing, Neural Machine Translation.
Programming	Python (Pytorch, TensorFlow, Pandas, NumPy, Transformers etc.), Java, MATLAB, LaTeX.
Miscellaneous	Linux, Microsoft Office, Git.
Soft Skills	Teamwork, Keen interest to explore new fields, Self-organization, Openness to criticism for improvement.

Languages

Italian	Native proficiency
English	Professional working proficiency
Spanish	Limited working proficiency

Referees

Prof. Davide Bacciu

Department of Computer Science

University of Pisa

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