Alessandro **Ristori**

M.Sc. in Artificial Intelligence

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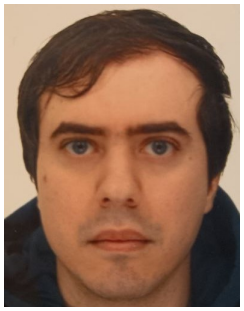

About me

I have a Master's degree in Computer Science from the University of Pisa, specializing in Artificial Intelligence. I'm interested in exploring the ever-expanding world of Machine Learning, mainly Natural Language Processing and Machine Translation, but not averse to testing my skills in other domains. Looking mainly for jobs 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 task involved working with two non-autoregressive models, namely CMLM and GLAT, and evaluating their performance in a multilingual scenario.The objective was to assess how well they address the issue of catastrophic forgetting while employing the continual strategy of experience replay.

University of Florence

Florence, Italy

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

- **Final mark:** 110/110.
- **Thesis:** *Genetic Algorithms and their Applications*.
  The behaviour of genetic algorithms was analyzed and their advantages and disadvantages were also evaluated. The algorithms were first applied to a simple case of function maximization and then utilised 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

Project repository

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.The main contribution was the calculation of damage and stats, as well as the definition of rules for the rule-based bot.
- **Technical skills:** Python, Git.

Computational Mathematics for Learning and Data Analysis

Project repository

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

- A linear least squares problem with an ill-conditioned matrix was solved using L-BFGS, Thin QR factorization, Conjugate Gradient and Gradient Descent.
- **Technical skills:** MATLAB.

Computational Health Laboratory

Project repository

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

- A protein-to-protein graph was constructed starting from a single protein that is primarily responsible for a disease. The correlation with all other proteins in the network was then determined.
- **Technical skills:** Python (pandas, seaborn), Jupyter Notebook, Git.

Computational Models for Complex Systems

Project repository

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

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

Parallel and Distributed Systems: Paradigms and Models

Project repository

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

- A custom implementation of the KNN algorithm was parallelized by using both the standard library of C++ and the FastFlow library. The performance of both implementations was then compared.
- **technical skills:** C++, Python, Linux.

Smart Applications

Project repository

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

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

Data Mining

Project repository

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

- Worked on a dataset of more than 100k tennis matches. Initially the dataset was cleaned by removing missing or incorrect data. Subsequently, the performance of all players were analyzed in order to classify them into different categories. Finally, the results were presented in a human-readable format.
- **Technical skills:** Python (pandas, seaborn, numpy, scikit), Jupyter Notebook, Git.

Human Language Technologies

Project repository

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

- Compared various Neural Machine Translation models to evaluate their performance while modifying their decoder.
- **Technical skills:** Python (Tensorflow), Jupyter Notebook, Git.

Mobile and Cyber-Physical Systems

Project repository

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

- Developed a Telegram bot in order to provide users with updates on selected rooms' data. The purpose of this was to inform shop owners if their refrigerator cells were experiencing issues and to determine if these rooms were compliant with HACCP regulations.
- **Technical skills:** Python, MongoDB, Java, Git

Machine Learning

Project repository

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

- Built a basic library that handles the creation of layers for a neural network, as well as executing 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

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