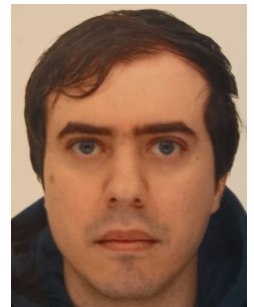


# Alessandro Ristori

M.Sc. IN ARTIFICIAL INTELLIGENCE

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## About me

I graduated from the University of Pisa with a Master's degree in Computer Science, following the Artificial Intelligence curriculum. Interested in exploring the ever-expanding world of Machine Learning, mainly Natural Language Processing and Machine Translation, but I do not disdain testing my skills in other domains. Looking mainly for jobs related to Machine Learning and Data Scientist positions.

## Education

### University of Pisa

M.Sc. IN COMPUTER SCIENCE - AI CURRICULUM

Pisa, Italy

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

B.Sc. IN COMPUTER SCIENCE

Florence, Italy

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

HIGH SCHOOL

Scandicci, Italy

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 regulations.
- **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

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

## Languages

<b>Italian</b>	Native proficiency
<b>English</b>	Professional working proficiency
<b>Spanish</b>	Limited working proficiency

## Referees

### Prof. Davide Bacciu

DEPARTMENT OF COMPUTER SCIENCE

University of Pisa

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