# ANDREA CAVALLO

M.Sc. in Computer Engineering and Artificial Intelligence from Politecnico di Torino

## SUMMARY

I am passionate about Machine Learning and Deep Learning and I am seeking to enlarge my knowledge and perform relevant research. I hold a MS Degree in Computer Engineering and I have research experience in Graph Machine Learning, which I dealt with during my Master Thesis.

## CONTACT

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Andrea Cavallo

## SKILLS

***Programming***

- *Advanced*: Python, C++, SQL
- *Basic*: Java, JavaScript, C

***Software & Tools***

- *Advanced*: Pytorch, Numpy, Pandas, MATLAB
- *Basic*: Hadoop, Spark, React, Git

***General topics***

- *Machine Learning and Deep Learning*: Computer Vision, Natural Language Processing, Genetic Algorithms, Reinforcement Learning
- *Computer Science*: Databases (DBMS and Data Warehouses), Operating Systems (Unix/Linux environment and concurrent programming), Computer Networks, Cybersecurity, Embedded Systems

## LANGUAGES

**Italian** (native speaker)
**English** (IELTS 8.0)

## OTHER INTERESTS

- I am a football referee, currently in the category Promozione.
- I love playing football and tennis and I enjoy hiking in the mountains and skiing

## EDUCATION

09/2020 - 10/2022 (expected)
**Politecnico di Torino**, Torino
### Master's - Computer Engineering

- Specific track: Artificial Intelligence and Data Analytics
- Current average: 29.6/30
- Core courses: Machine Learning and Pattern Recognition, Advanced Machine Learning, Deep Natural Language Processing, Computational Intelligence, Data Science and Databases

01/02/2021 - up to present
**Alta Scuola Politecnica**, Torino - Milano
### Excellence Program

- Program involving the top 150 students from Politecnico di Torino and Politecnico di Milano
- Participated to conferences and group activities on innovation, management of change, design and complex decision making
- Realized a Clinical Decision Support System (NEAR) based on Explainable AI NEAR

09/2017 - 09/2020
**Politecnico di Torino**, Torino
### Bachelor's - Electronic Engineering

- Graduated with 110 cum laude/110 (purged average grade for the Final Examination: 29.88/30)
- Member of Percorso Giovani Talenti, an excellence program involving the best 200 students in the university

10/08/2019 - 14/12/2019
**University of Georgia**, Athens, GA, USA
### Exchange Program

- Won a scholarship to finance the program

## WORK EXPERIENCE

01/04/2022 - 30/09/2022
**Huawei Munich Research Center**, Munich
### Research Intern

- Performed research on Node Anomaly Detection and Graph Neural Networks on heterophilous graphs for the Master Thesis

01/10/2021 - 30/06/2022
**Team PoliTOcean**, Torino
### Computer Vision team member

- Implemented computer vision tasks (line detection, object detection) for an ROV to take part in the international Mate ROV Competition

01/04/2020 - 30/06/2021
**Team Icarus PoliTo**, Torino
### Machine Learning team member

- Applied Machine Learning algorithms to model the behavior and the parameters of an aircraft
- Created Machine Learning models to predict rocket's trajectory

15/01/2020 - 29/02/2020
**WeStudents s.r.l.**, Torino
### Data Analyst

- Performed data analysis to improve product design and management
- Applied clustering models to analyze customers behavior and improved registration funnel

## SELECTED RESEARCH PROJECTS

**Graph Neural Networks on heterophilous graphs**

- Defined 2NCS, a new metric to characterize a graph property that affects GNN performance
- Designed and tested GATH and GCNH, two GNN models that achieve competitive results with SOTA on heterophilous graphs

**Graph Machine Learning for Node Anomaly Detection**

- Defined and tested GNN-based architecture with generative component to perform node anomaly detection on graphs

**Explainable AI for cardiac event risk prediction**

- Implemented NEAR, an explainable model to predict the risk of cardiac events
- Predictions are explained by means of SHAP

**Real-time Domain Adaptation in Semantic Segmentation**

- Implemented and trained a semantic segmentation architecture (BiSeNet)
- Implemented domain adaptation (also real-time) to train the network on synthetic data
- Generated pseudo-labels for the target domain implementing the Maximum Probability Threshold method

**Low-resource Machine Translation**

- Performed fine-tuning of a transformers-based Machine Translation model on small datasets for low-resource languages