

Giulio Mattolin

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EDUCATION

University of Trento

Trento, IT

Master of Science in Data Science

2020 – Present

- Current Average Grade: 29/30
- Relevant Coursework: Machine Learning, Deep Learning, Statistical Learning, High Performance Computing, Big Data Technologies, Data Mining, Data Visualization, Customer and Business Analytics, AI for Finance

University of Trento

Trento, IT

Bachelor of Science in Computer Science

2017 – 2020

- Final Graduation Grade: 103/110
- Relevant Coursework: Data Structures and Algorithms, C/C++ and Java Programming, Web Applications, Databases, Probability and Statistics, Networks and Security, Calculus, Linear Algebra, Physics

EXPERIENCE

Machine Learning Engineer Intern

July 2022 - Present

ABB

Mannheim, DE

- Collaborated in the development of a **multimodal Transformer** architecture working with time series and text to forecast anomalies and classify failures in industrial processes using PyTorch
- Improved the implementation of the paper [Generating Sparse Counterfactual Explanations For Multivariate Time Series](#) to perform more stable trainings and integrate different datasets and models

Research Scientist Intern

October 2021 - June 2022

Fondazione Bruno Kessler - FBK

Trento, IT

- Designed and implemented a novel unsupervised domain adaptation method which achieves **state-of-the-art performance** on YOLOv5 object detection model. Paper submitted to **WACV 2023**, advised by Elisa Ricci
- Implemented and reproduced without source code available the paper [Attention-based Domain Adaptation for Single Stage Detectors](#) using PyTorch [G](#)

Data Analyst Intern

April 2020 – August 2020

Datatellers

Bolzano, IT

- Analysed the behaviour and buying habits of supermarket customers by performing Market Basket Analysis, identifying profitable zones and examining their movements using pandas, geopandas and matplotlib

PROJECTS

HPC Parallel Apriori Algorithm | C++, MPI, OpenMP, [G](#)

December 2021 - February 2022

- Implemented from scratch a parallel Apriori algorithm executable on HPC clusters with **100% scaling efficiency**
- Developed 4 versions: serial, with MPI, with OpenMP and with both MPI and OpenMP
- Tested the results on a HPC cluster and conducted an experimental evaluation of the performances

Image Search Engine | Python, TensorFlow, Weights & Biases, [G](#)

May 2021 - June 2021

- Developed an algorithm which extends the identity verification task to places/buildings by matching images in a set with similar ones in a much larger set achieving a **top-1 accuracy of 80%**
- Collected training images by web scraping and trained a ResNet50 model applying image augmentation
- Extracted features from images using the trained model and ranked them by similarity

E-Charging Stations Predictor | Python, Google Cloud Platform, Redis, Docker, [G](#)

April 2021 - July 2021

- Designed and built a Big Data system which predicts the usage and the status of e-charging stations and plugs in the Italian region of Trentino Alto Adige with an **accuracy of 97%**
- Collected and preprocessed **30 million records** of data from different APIs and stored it in Google Cloud Storage
- Integrated, processed and enriched data in Google BigQuery
- Built a random forest model to predict the usage and the status of e-charging stations using scikit-learn
- Implemented a web application using Flask in conjunction with Redis and deployed the solution with Docker

TECHNICAL SKILLS & OTHERS

Technologies (proficient): Python, C/C++, R, SQL, HTML/CSS, PyTorch, scikit-learn, PostgreSQL, Git, Docker

Technologies (prior experience): Java, JavaScript, TensorFlow, Node.js, MongoDB, Google Cloud Platform

Languages: English (fluent), Italian (mother tongue)