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 - November 2022
ABB — *Mannheim, DE*

- Collaborated in the development of a **multi-modal multi-task Transformer** model working with time series and text to forecast process variables and anomalies in industrial processes using PyTorch and MLFlow
- Improved performance of generative adversarial networks (GANs) to generate realistic synthetic multivariate time-series data, i.e. **[Paper]**, and perform counterfactual explanations, i.e. **[Paper]**, using PyTorch

Computer Vision Research Intern — October 2021 - June 2022
Fondazione Bruno Kessler - FBK — *Trento, IT*

- Designed and implemented a novel unsupervised domain adaptation for object detection method which achieves **state-of-the-art performance** on benchmark datasets. Paper accepted at **WACV 2023** main conference
- Implemented and reproduced without source code available **[Paper]** using PyTorch and Weights & Biases **[Code]**

Data Analyst Intern — April 2020 – August 2020
Datatellers — *Bolzano, IT*

- Performed data cleaning and business intelligence analysis on sales data using SQL
- Analysed the behaviour and buying habits of supermarket customers using pandas, geopandas and matplotlib

Publications

ConfMix: Unsupervised Domain Adaptation for Object Detection via Confidence-based Mixing
Giulio Mattolin, *Luca Zanella, Elisa Ricci, Yiming Wang* — *WACV 2023* **[Paper | Code]**

Projects

E-Charging Stations Predictor | *Python, SQL, Google Cloud Platform, Redis, Docker* | **[Code]**

- 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 using SQL
- 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

HPC Parallel Apriori Algorithm | *C++, MPI, OpenMP* | **[Code]**

- 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 algorithms on a HPC cluster and conducted an experimental evaluation of their performance

Technical Skills & Others

Technologies (proficient): Python, C/C++, SQL, R, 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)