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
- Worked with GANs frameworks 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 YOLOv5 object detection model. Paper accepted at **WACV 2023**
- Implemented and reproduced [**Paper**] without source code available using PyTorch [**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

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 results on a HPC cluster and conducted an experimental evaluation of the performances

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

TECHNICAL SKILLS & OTHERS

Technologies (proficient): Python, C/C++, PyTorch, SQL, R, HTML/CSS, scikit-learn, PostgreSQL, Git, Docker
Technologies (prior experience): Java, JavaScript, TensorFlow, Node.js, MongoDB, Google Cloud Platform
Languages: English (fluent), Italian (mother tongue)