

Curriculum Vitae – Fall 2022

Family name: Badalotti
Given name: Davide
Gender: Male
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Qualifications

PhD (4 years) - Computer science and Statistics – From 2022 – Università Bocconi
Master's Degree (2 years) – Data Science – From 2019 to 2022 – Università degli Studi di Milano Bicocca
Bachelor's Degree (3 years) – Physics – From 2016 to 2019 – Università degli Studi di Milano

Research Interests

Geometric Machine Learning, Active Learning, Statistical properties of neural networks

Publications

- Alchieri, L., Badalotti, D., Bonardi, P. et al. An introduction to quantum machine learning: from quantum logic to quantum deep learning. *Quantum Mach. Intell.* 3, 28 (2021).
- Martin del Campo Barraza, S., Lindskog, W., Badalotti, D., Liew, O., & Toyser, A. (2021). Active Learning Framework for Time-Series Classification of Vibration and Industrial Process Data. *Annual Conference of the PHM Society*, 13(1).

Working papers

Feature-based active learning for time-series data using image encodings; Davide Badalotti, Sergio Martin-del-Campo Barraza;

Abstract:

Active learning has emerged as an iterative supervised approach to classification that enables cost and time reductions during the labeling process in situations where only a small quantity of labels is present (or none at all).

When dealing with time series data, the literature on active learning focuses on the construction of a probabilistic model on the instances of the dataset.

In this work, we propose an alternative framework for the task of active learning with time series data, based on time-series-to-image encoding and automated feature extraction processes.

We present and evaluate a total of 11 possible image encodings, together with 4 possible feature extraction methods and 2 active learning strategies.

The most effective and solid combinations are then highlighted.

The tests are conducted on a total of 2 use cases, where accuracy and AUC w.r.t. the percentage of labelled data are evaluated.

We conclude that this framework for active learning with time series data might constitute a viable alternative to other existing techniques tackling the same problem.

Work Experience

- February 2021 – June 2021. *Data Science internship @ Viking Analytics (Gothenburg, SE).*
- September 2021 – September 2022. *Data Scientist @ Humanitas Research Hospital (Milan, IT)*

Language Skills

Italian – Native Speaker
English – C1 level

IT Skills

Programming Languages: Python, R, C++, CUDA, Julia

Other Languages: Bash, Latex, Mathematica

Databases: SQL, MongoDB, Neo4j

Cloud: Microsoft Azure, AWS, Google Cloud Platform

Softwares and OSs: Git, Docker, GNU/Linux, BSD, Windows, MacOS, Microsoft Office

Other Activities

- Semi-professional basketball player. (2016 to 2019).
- Volunteer for Manos Amigas Guatemala as handyman and entertainer in San Andres Itzapa. (August 2016)
- Volunteer for Auser during first and second COVID-19 lockdown, providing assistance for fragile and elderly people. (March 2020 - December 2020).
- Private math and physics tutor for high school students since 2017.
- Member of the Free Software Foundation (and of the Church of Emacs).