Unlearning Time Series

Thesis proposal

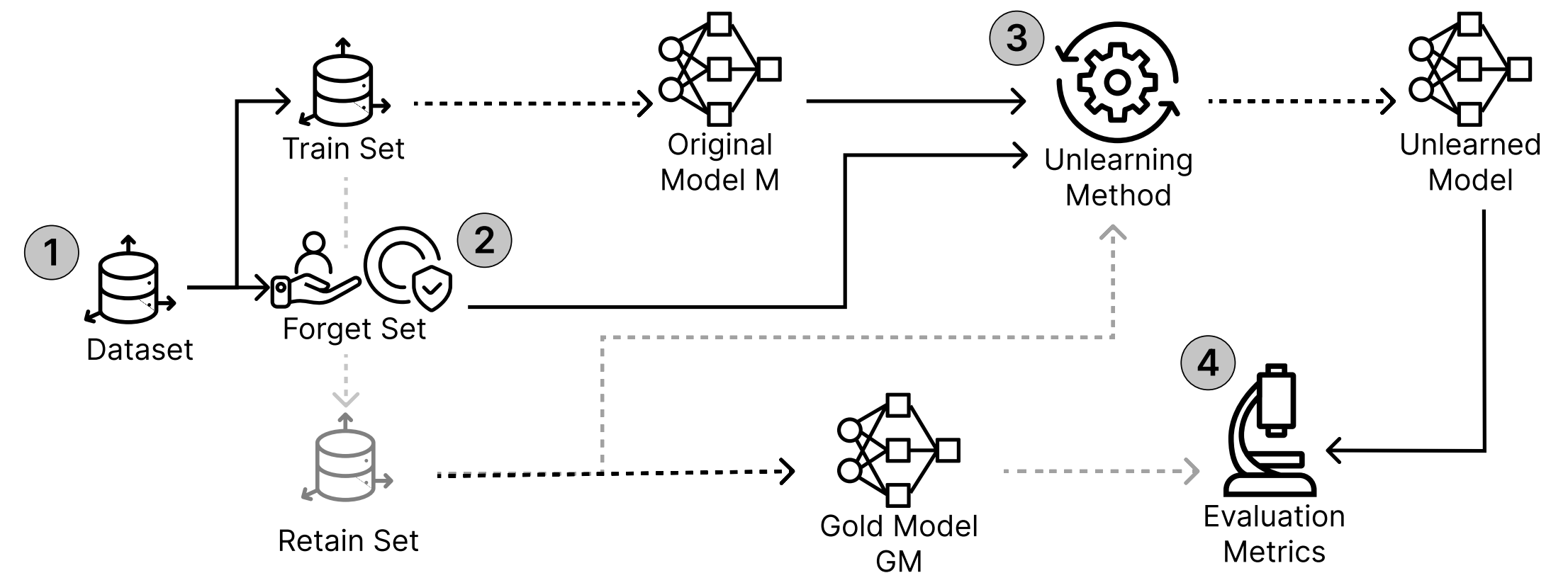giovanni.stilo@univaq.it, andrea.dangelo6@graduate.univaq.it

Machine Unlearning
Basics

- Machine Unlearning is the task of removing undesired data from the training set of a Machine Learning model.

- Read more:

- https://arxiv.org/pdf/2306.03558
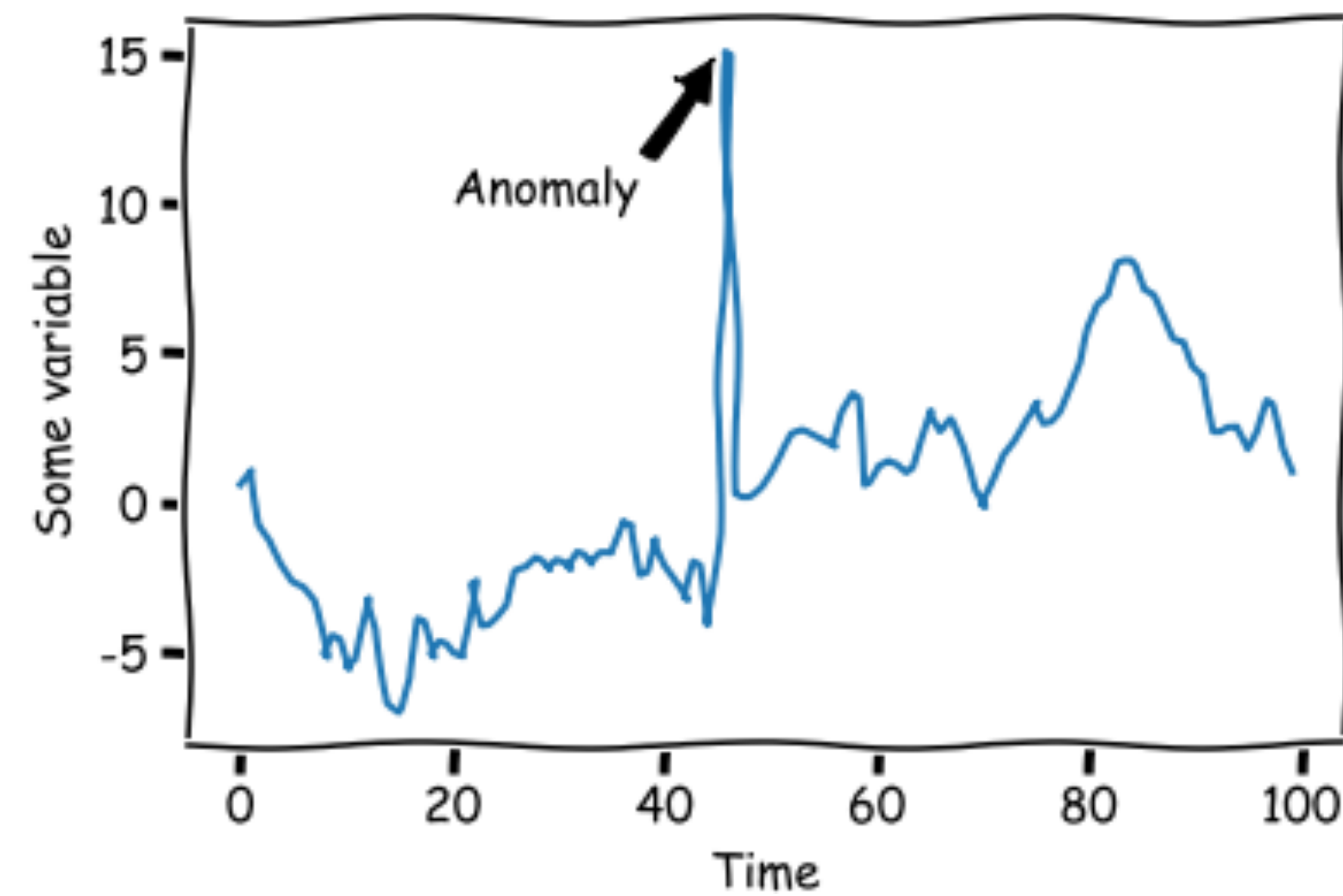
- https://arxiv.org/pdf/2209.02299

The process starts with a dataset (1), which is split into a Train Set and a Forget Set (2). The Train Set is used to train the Original Model (M), while the Forget Set contains samples to be unlearned. An Unlearning Model (3) is applied to remove the influence of the Forget Set, resulting in an Unlearned Model. A Retain Set is used to train a Gold Model (GM) for comparison. Finally, Evaluation Metrics (4) assess the effectiveness of unlearning by comparing the Unlearned Model to the Gold Model.

Time Series
Back to 2020

- During 2020 and 2021, Covid-19 introduced anomalies into many time-series datasets.

- These anomalies are disruptive and would not typically appear in time-series data under normal conditions.

- Can we unlearn segments of a Time Series?

Thesis
Main points

- Study the unlearning literature for time series

- Study the latest models for time series analysis

- Experimentation will involve LSTMs, Transformers, and several time series datasets