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Unsupervised Anomaly Detection in Multivariate Time Series Using Public Benchmarks and Synthetic Data from Lorenzetti

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Anomaly detection in multivariate time series is an important problem across various fields such as healthcare, financial services, manufacturing or physics detector monitoring. Accurately identifying the instances when defects occur is essential but challenging, as the types of anomalies are unknown beforehand and reliably labelled data are scarce.
We evaluate unsupervised transformer-based models and benchmark their performance against traditional methods on public data.
Furthermore, to address the lack of reliable labels, we use the Lorenzetti Shower simulator - a general-purpose framework for simulating high-energy calorimeters - where we introduce artificial defects to evaluate the sensitivity of various detection methods.

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