



Data Analytics  
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# Thesis

## Unsupervised Real-Time Time-Series Anomaly Detection

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## **Abstract**

Anomaly detection is a crucial task for machine learning due to wide-spread usage and type. In particular, it is worth noting that most data arising in industrial setups are of a streaming nature, thus restricting the range of standard anomaly detection tools. This thesis will identify the potential approaches to learn the identification of abnormal behavior from large-scale streaming data. An empirical comparison of state-of-the-art methods will to be extended by a novel technical contribution. In this thesis, the focus is particularly on streaming time-series Anomaly Detection which changes in nature with time and novel contribution will especially try to target this dynamic nature of time-series.

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# 1 Introduction

## 1.1 Motivation

## 1.2 Objective

## 2 Related Work

### 3 Unsupervised Anomaly detection with recency



## 4 Experiments

## 4.1 Data

### 4.1.1 Numenta Anomaly Benchmark (NAb)

## 5 Execution and Results

## 6 Discussion

## 7 Experiment Infrastructure

## 7.1 Experiment Management using MLflow

## 7.2 Parallel execution using Docker

## 8 References

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- [2] L. Kaiser, A. N. Gomez, N. Shazeer, A. Vaswani, N. Parmar, L. Jones, and J. Uszkoreit, “One model to learn them all,” *CoRR*, vol. abs/1706.05137, 2017. [Online]. Available: <http://arxiv.org/abs/1706.05137>