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## **Benchmark of Time Series Database Systems**

MSc Thesis:

### Work overview:

With the emergence of the Internet of Things (IoT), time series data has become ubiquitous in a range of domains such as Astronomy, Climate, Energy, Environment, Finance, Medicine, Neuro-science, and Traffic. To efficiently store and analyze time series data, Time Series Database Systems (TSDB) have been proposed in multiple domains including storage for Internet of things (IoT) devices. Unfortunately, little is known about their relative performance, as existing comparisons are limited to either a theoretical comparison or a small subset of systems. There is an urgent need to provide an overview of the existing TSDBs, which highlights their main contributions.

The aim of this thesis is to analyze the current state-of-the-art TSDBs, discuss the limitations of these systems and empirically evaluate them. Similarly to [1], we propose to analyze systems designed for storing numerous time series persistently, allowing the system to support aggregate analysis of multiple data streams over time. Also, we propose to evaluate the scalability of TSDB systems.

### Work tasks:

1. Familiarize yourself with Time Series Database Systems (TSDB).
2. Implement a benchmark to empirically evaluate the scalability of the most prominent TSDBs.
3. Write a thesis that describes the evaluation results.
4. Presentation of 20 minutes.

### Literature:

1. Jensen, S.K., Pedersen, T.B., and Thomsen, C. *Time Series Management Systems: A Survey*, in TKDE, 2017.
2. Jensen, S.K., Pedersen, T.B., and Thomsen, C. *ModelarDB: Modular Model-Based Time*

*Series Management with Spark and Cassandra*, in VLDB, 2019.

3. TimescaleDB: <https://www.timescale.com>
4. InfluxDB: <https://www.influxdata.com>
5. OpenTSDB: <http://opentsdb.net>
6. MonetDB: <https://www.monetdb.org>
7. Tableau: <https://www.tableau.com/solutions/time-series-analysis>

Starting date of thesis: 01/01/2020

Ending date of thesis:

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