Research Questions, Methods, and Literature

Malene Sjørslev Søholm

Research questions

Main objective: Exploring informative relations in time series data

- Evaluate current similarity measures for time series data and corresponding representations. This should lead to the adoption of one or more appropriate representations and similarity measures to be used in subsequent work.
- Identify novel and informative relations between time series, e.g. anti-correlation, cliques of related time-series, and aggregated time-series.

- Develop indexes and algorithms exploiting relations between time series and evaluate their performance wrt. quality and efficiency.
- Identify additional application domains which may benefit from exploring relations amongst the time-dependent data. One such area could be resource (e.g. water or energy) consumption of appliances, households, or whole regions. Adapt proposed solutions to these domains.

Research methods | Literature

- A promising problem definition is proposed.
- A literature review is conducted, identifying the state-of-the-art approaches and their limitations. These may be limitations wrt. the applicability of the problem definition or the quality of the proposed solutions for solving the problem.
- A novel approach is proposed in the form of an improved problem definition and/or improved algorithm(s) for the problem.
- The solution is evaluated by comparing the approaches empirically with experiments.

[1] Johannes Gehrke, Flip Korn, and Divesh Srivastava. On computing correlated aggregates over continual data streams.

[2] Tomasz Kusmierczyk and Kjetil Nørvåg. Mining correlations on massive bursty time series collections.

[3] T Warren Liao. Clustering of time series data—a survey.

[4] Jarke J Van Wijk and Edward R Van Selow. Cluster and calendar based visualization of time series data.

[5] Michail Vlachos, Kun-Lung Wu, Shyh-Kwei Chen, and Philip S Yu. Correlating burst events on streaming stock market data.

and more...

Group discussion

Research questions

- Too general
- Should actually be *questions*...