Temporal Data Warehousing, OLAP, and Mining
An Application in Medicine
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Thesis Objectives

- Mining of Approximate Temporal Functional Dependencies with a temporal grouping based on sliding windows. “Usually, the patient’s severity and the pathology determine the main therapy in a time window of 30 days.”
- Displaying and visually analysing Temporal Association Rules through a new visualization solution.
- Interval based reasoning for Temporal Operations and Aggregation by combining temporal dimensions from standard OLAP analysis on cubes.
- Discovering of Granular Temporal Trends in data warehouses by exploiting the hierarchical structure of dimensions in order to find trends of possibly aggregated data. “Display for each drug, the positive trends in days for each quarter of 2013.”
- Mining of Temporal Association Rules applied to interval-based temporal clinical data. “If a beta blocking agent is administered, usually nausea follows within 3 days.”
- Interval based reasoning for Temporal Operations and Aggregation by combining temporal dimensions from standard OLAP analysis on cubes.

Results

Medical Data

Adverse Reactions
Terminologies
Reports
Drugs
Analyst

Every poster needs a word cloud

References

- C. Combi, A. Sabaini. Extraction, Analysis, and Visualization of Temporal Association Rules from Interval-Based Clinical Data. AIME 2013, Murcia, Spain. Springer 2013

Take Home Message

Time dimensions should be used not only for keeping track of changes, but also to enhance users’ capabilities for performing more in-depth analysis.