Explorative pattern search techniques for massive time-series graphs

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Previous interaction pattern search techniques for time-series graphs

- Relaxed selection techniques for querying time-series graphs [1]
- Interactive pattern search in time series [2]
Problem and Motivation

- Given a large new set of data that you've never seen before
- Graph won't fit on a screen
- Statistical measure only scratches the surface

Our goal is to visually explore large set of data using interactive techniques.
Design Concepts

● Time-series Data Detail View
  ○ Simple drag-select interaction
  ○ Pattern annotation and querying

● Histogram for displaying search results
  ○ based on matching %
  ○ adjustable bin to configure match threshold
    ■ select and drag

● Overview timeline
  ○ tilted axis for cleaner, direct mapping between the overview timeline and the detail view
  ○ Visualization of annotated patterns and search results that shows labels and distances them.
Interaction Description: Selection

1. Select a region

2. Selected region displayed

3. Pop-up menu: select START SEARCH
Interaction Description: Annotation

1. histogram of search results displayed

1. average of “green binned” shapes overlayed with original query

1. all search results displayed onto the overview timeline

2. a search result is selected

3. Create tags

3. Or, enter notes

Tags: Type A
Plan for coming weeks

- Detailed view and Overview navigation
- Highlight/query interaction
- Histogram showing query results
- Implement annotation tools
- Compare between query and match region (data analysis)
- Annotation search
- Informal user testing
References
