Complete Event Trend Detection in High-Rate Event Streams
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Motivation

Financial Fraud Detection

CET: Circular check kite

Financial Fraud Detection

States-of-Art

- Limited expressive power since neither Kleene closure nor skip-till-any-match are supported [1,2,3]
- Delayed system responsiveness due to re-computation of common sub-trends [1,2,3,4]

Goal & Challenges

- Our goal is CET detection that is
  - Expressive yet efficient
  - Real-time yet lightweight
  - Optimal yet feasible

CET Graph Construction

CET graph compactly encodes all CETs
Base-line CET detection has exponential time & space complexity

CET Graph Partitioning

Cost monotonicity enables pruning of unbalanced nodes, infeasible levels, and inefficient branches to efficiently find an optimal graph partitioning plan

Conclusions

We are the first to solve CPU vs memory trade-off of Kleene closure computation
- CET graph compactly encodes all CETs and defines the spectrum of CET detection algorithms
- Hybrid CET detection algorithm utilizes available memory to speed-up CET detection
- Graph partitioning algorithm prunes large portions of search and returns an optimally-partitioned CET graph

References