Utrecht University and IAV GmbH

PSEUDo: Interactive Pattern Search in Multivariate Time Series with Locality-Sensitive Hashing and Relevance Feedback

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1. Problem

How to query very high-dimensional time series efficiently concerning user’s subjective similarity notion?

2. Contribution

Efficient and understandable relevance-feedback for locality-sensitive hashing based multivariate time series retrieval.

3. Pipeline

1. Sliding windows and normalization (2);
2. User defines a query (1);
3. Initial search with LSH (1)(2) → (4);
4. Sampling predictions (4)→(5);
5. Relevance feedback by user (5);
6. Updating LSH model and predictions (5)→(3);
7. Iterating 4 – 6 until satisfactory result.

4. UI Design

(a) Choose tracks to query
(b) Main view
   (b1) Mini-map
   (b2) Track plots, will be updated for very high-dimensional time series
(c) Current query
(d) Relevance feedback
   (d1) Feedback to predictions
   (d2) Feedback to classifiers
   (d3) Review feedback to predictions
(e) Result
   (e1) Result statistics
   (e2) State management