

Prediction of User Behavior in a Web Application of the Bank

Goals

- Discover unusual behavior
- Discover important segments of customers
- Predict future behavior of visitor
- Change visitor behavior

Results

87%

success rate in predicting user next segment based on his previous actions and characteristics

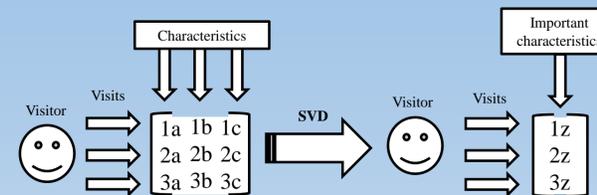
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Method

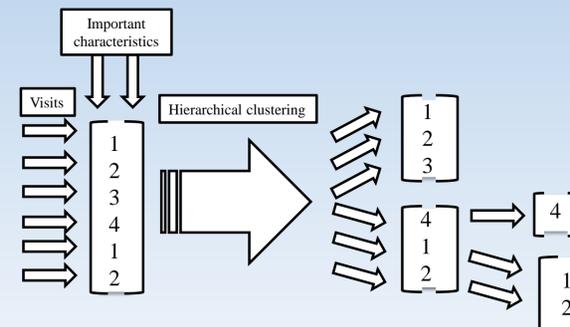
1. Reduction of dimensions

- Web application has many visits
- Every visit has its own characteristics
- Data matrix has up to millions rows x millions columns
- The best results are with the 30 final dimensions



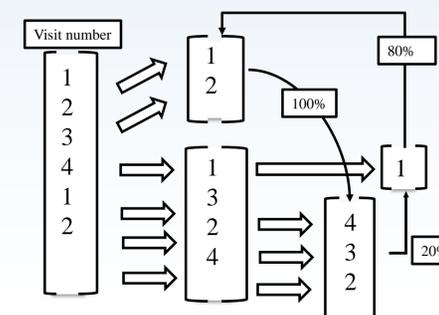
2. Hierarchical clustering

- Group similar users together
- There is need to change sizes of the segments
- We used BIRCH algorithm because of the tree structure of the final clusters and good results
- Similar visits are in the same cluster



3. Prediction

- Clusters representation in time
- Markov hidden chain algorithm
- Model represents how and when users change characteristic or behavior



Process

Data gathering by analytical scripts

Data cleaning and preparing for machine learning algorithms

Dimensionality reduction using Singular Value Decomposition

Hierarchical clustering using BIRCH

Representation of sequence of actions

Final data manipulation and visualization

Further information and work

- Enrich data source with more data
- Implement UX and UI
- Automatize process
- Evaluation of Information value of the metrics