Context-aware Adaptive Personalized Recommendation: A Meta-Hybrid

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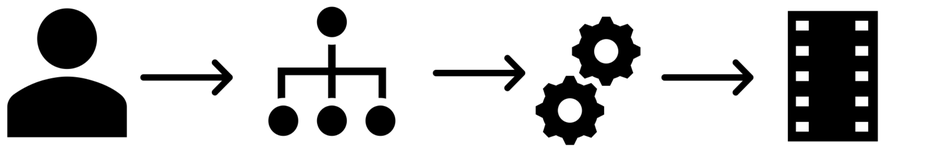
Proposed method



User context model

User context model consists of preference, context and demographic features. We have tried several features, not all of them were useful.

- ✓ genres of movies user has seen
- ✓ variance of the genres
- ✓ histogram of user‘s ratings
- ✓ day of week, month
- ✓ age of user
- ✗ keywords of movies user has seen
- ✗ user‘s occupation, gender

✓ Feature is relevant ✗ Feature was irrelevant

It is possible to choose the optimal **recommendation strategy** based on user **history** and **context**

Prediction

Constructed user context model is used to predict a recommender method which provides the most precise prediction. **Random forest** classifier is used as predictor.

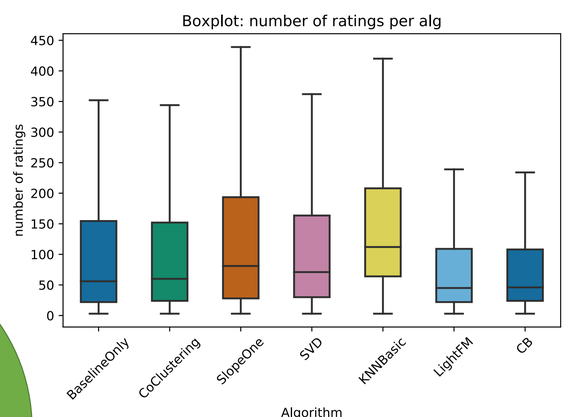
Recommender methods

- Content-based recommender (CB)
- K Nearest Neighbors (KNN)
- Co-Clustering
- Matrix factorization recommender (LightFM)

Recommender methods statistics

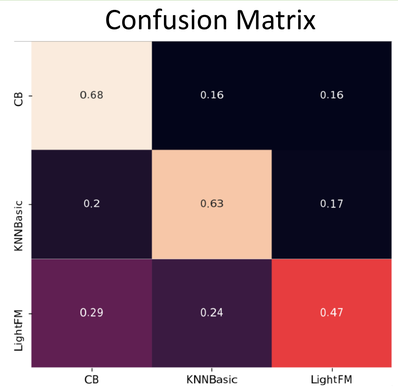
For 77.45 % users, predicted method changes over time

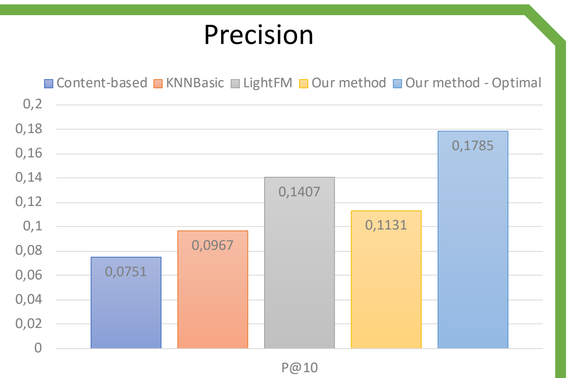
Average difference between precision of the best method and the second one: 7.2 %



Results

- Content-based
- K Nearest Neighbors
- LightFM





- Content-based
- K Nearest Neighbors