Report: Recommender System

Modelling of ratings and reviews using latent factors for recommendations

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# Motivation of the Work

The recommendations are the need for the large ecommerce website to provide valuable purchase suggestions to its users. Nearly all the recommender systems suffer from the data sparsity or cold start problems [1]. Also, most of the recommender systems use ratings to construct the ‘rating matrix’ and use Matrix Factorization [2], [3] techniques to provide recommendations on the basis of user-user, item-item, and user-item interactions. And most of the explicit feedback from the users might have bias in terms of the influences of the outside world, obviously that is not in our control. The intangible internals such as mood changes and events happening in life can also influence the taste on clothing. Therefore, a need for gathering much information arises, several studies have shown that the use of cross-domain features of the user data have been found helpful in recommendation [4], [5].

Generally, the effectiveness of recommender systems is measured in terms of prediction accuracy on user preferences. Traditional recommender systems are designed to capture users’ long term interests, which is under the assumption that users’ preferences do not change over a period of time.

# Framework / Flow of Work

# Final Algorithm

Algorithm of improving the accuracy.

# Implementation

# Results

# Experimental Setup

We have used scikit-learn [6].

# Discussion

# References

[1] G. Adomavicius and A. Tuzhilin, “Toward the next generation of recommender systems: A survey of the state-of-the-art and possible extensions,” *IEEE Trans. Knowl. Data Eng.*, vol. 17, no. 6, pp. 734–749, 2005.

[2] Y. Koren, R. Bell, and C. Volinsky, “Matrix factorization techniques for recommender systems,” *Computer (Long. Beach. Calif).*, vol. 42, no. 8, pp. 30–37, 2009.

[3] S. A. P. Parambath, “Matrix Factorization Methods for Recommender Systems,” p. 44, 2013.

[4] I. Cantador, I. Fernández-Tobías, S. Berkovsky, and P. Cremonesi, “Cross-domain recommender systems,” *Recomm. Syst. Handbook, Second Ed.*, no. iii, pp. 919–959, 2015.

[5] R. Pagano, M. Quadrana, M. Elahi, and P. Cremonesi, “Toward Active Learning in Cross-domain Recommender Systems,” 2017.

[6] F. Pedregosa *et al.*, “Scikit-learn: Machine Learning in Python,” *J. Mach. Learn. Res.*, vol. 12, pp. 2825–2830, 2012.