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Deep Learning for Recommender Systems

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ABSTRACT

Collaborative filtering (CF) is one of the most widely employed approaches in Recommender systems (RS). This approach tries to find some latent features for users and items to predict user rates from these features. Early CF methods used matrix factorization to learn users and items latent features. However, these methods face cold start and sparsity problem. Recent methods usually employ side information along with rating matrix to learn users and items latent features. On the other hand, deep learning models show great potential for learning effective representations in the recent years. Due to this capability of deep learning, we use this approach to learn proper representation for items. In particular, we propose a hybrid method utilizes deep learning alongside matrix factorization which creates a two-way interaction between latent features learnt from matrix factorization and extracted features from the content of the items with deep leaning methods and simultaneously optimize the parameters of these models. Experiments on real-world datasets show that the proposed method outperforms state-of-the-art RS methods.

Keywords: Recommender System, Deep Learning, Collaborative Filtering.