

Web Mining

Digital Assignment

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Topic: Recommender systems and collaborative filtering

SL. No.	Paper title and Year	Method	Advantage and Limitation
1	<p>Time-Aware Music Recommender Systems: Modeling the Evolution of Implicit User Preferences and User Listening Habits in A Collaborative Filtering Approach</p> <p>by Diego Sánchez-Moreno , Yong Zheng and María N. Moreno-García (31st July 2020)</p>	<p>The approach consists of guessing the rating that a user would assign to an item from the remarks of other users who have likewise choice of songs.</p> <p>Singular Value Decomposition is also used to make accurate predictions</p>	<p>Has taken into account the listening habits and the constant mood change and change in the listening patterns of the user with respect to time. Captures the temporal data of when a song is played and gives recommendations accordingly.</p> <p>Does not cater to randomness and different user using an account. For example, if someone has to play a song for someone else then accuracy of recommendations is lowered</p>
2	<p>Recommender Systems and Collaborative Filtering</p> <p>by Fernando Ortega and Ángel González-Prieto (11th October 2020)</p>	<p>The paper has compared the various techniques used in designing recommender systems and collaborative filtering. It has written about the Recommendation Models, Neural Recommender Systems, as well as, Real World Recommender Systems and discussed its pros</p>	<p>In this technique based comparison research paper, the authors have wonderfully explained the various techniques, methodologies used in recommender systems(RS) and collaborative filtering(CF) from a theoretical point of view which can support other researchers.</p>

		and cons in a brief and contextual manner.	However, there is a lack of example projects and code based work. Some more techniques which have been developed could be used instead.
3	<p>Personalized Standard Deviations Improve the Baseline Estimation of Collaborative Filtering Recommendation</p> <p>by Zhenhua Tan ,Liangliang He, Danke Wu ,Qiuyun Chang and Bin Zhang (10th July 2020)</p>	<p>The paper uses a more rational baseline estimation model from both local and global derivations to improve the predictive accuracy.</p> <p>They have also improved the SVD equation by using SDP and created SDV++ whose performances are boosted than the previous version of the algorithms.</p>	<p>This paper has pointed out the flaws of classical baseline estimation and showed using real-time datasets that the user data can be classified into four different categories. The paper has proposed a unified baseline estimation model based on the standard deviation's proportion to increase the influence and correctness of classical baseline estimation</p> <p>The real-time dataset used are only belonging to movie ratings and hence a cross domain implementation would be required. This paper only deals with movie rating related recommenders.</p>
4	<p>Deep Matrix Factorization Approach for Collaborative Filtering Recommender Systems</p> <p>by Raúl Lara-Cabrera ,Ángel González-Prieto and Fernando Ortega (17th July 2020)</p>	<p>DeepMF is the proposed model which is described in this paper. It's a collaborative filtering method infused with deep learning and matrix factorization technique. DeepMF performs successive refinements of the matrix factorization model with a layered architecture that uses gained information in a layer as input for the next subsequent layers.</p>	<p>A more advanced and better collaborative filtering model has been designed by combining the Deep Learning paradigm of Machine Learning with Matrix Factorization technique which gives a much higher accuracy in predicting and making recommendations for the user. The quality of model training and experimental results show that these predictions and recommendations are overcoming the shortcomings of baseline technique.</p> <p>There is a scope of future developments of this algorithm. Also, deep learning paradigm makes the algorithm very heavy and hence other algorithms can be preferred to perform on small datasets.</p>

5	<p>Enabling “Untact” Culture via Online Product Recommendations: An Optimized Graph-CNN based Approach</p> <p>by Wafa Shafqat and Yung-Cheol Byun</p> <p>(6th August 2020)</p>	<p>This recommendation system uses graph convolutional neural network or GCN to recommend products by viewing their previous choices. This model uses a session-based data analysis which is used to generate graphs and patterns with which they can predict and recommend products accordingly.</p>	<p>Improved the recommendation and prediction system for online shopping platforms. Has noted the vast change of orders from users from the time covid 19 has struck. The algorithm they have developed has used real time session to adapt to the various sudden shifts in the patterns and tendencies of user’s choices.</p> <p>It is extremely capable to deliver accurate recommendations for sudden changes in user choice but not that accurate when there is gradual slow change of user choice.</p>
6	<p>An improved hybrid collaborative filtering algorithm based on tags and time factor</p> <p>by Chunxia Zhang, Ming Yang, Jing Lv, Wanqi Yang</p>	<p>An improved hybrid collaborative filtering algorithm based on tags and a time factor (TT-HybridCF), which fully utilizes tag information that characterizes users and items. This algorithm utilizes both tag and rating information to calculate the similarity between users or items. In addition, we introduce a time weighting factor to measure user interest, which changes overtime</p>	<p>They have improved the traditional collaborative filtering algorithm and have created a hybrid algorithm which captures the changes in the user interest much better than the traditional filtering technique. It also overcomes the changes of interest of the user with time. It has a promising prediction accuracy.</p> <p>The prediction accuracy of this model is quite good and can be used in real-time but has been beaten by the deep learning infused collaborative filtering models.</p>