

## **Review of the temporal recommendation system with matrix factorization**

### **ABSTRACT**

The temporal recommendation system (TRS) is designed for providing users with an accurate prediction based on the history of their behaviour during a precise time. Most TRS approaches use matrix factorization and collaborative filtering, which are primarily based on the distribution of the user preferences. Recently, TRS has gained significant attention because it improves the accuracy of prediction. This is because since the temporal drift in the user preferences is observed, users' preferences within the short term and long term can be utilized to predict the best item to be recommended. Several existing review papers have focused on the general problems of the recommendation system (RS) and similarity measures, and they refer to recent improvements based on three recommendation strategies which are user rating, tagging and trust values. However, there is a lack of recent review papers of TRS with rating score strategy, especially in terms of learning factorization features of temporal terms. This paper fills this gap and highlights the issues and challenges for both general and temporal RS techniques. The prediction approaches based on collaborative filtering technique are reviewed depending on the behaviour of users and items. The challenges and approaches of temporal-based RS are discussed. This review includes the matrix factorization approaches that are integrated with such temporal factors as long-term preferences, short-term preferences, decay, and drift. The outcome of this review prioritizes guidance to focus on matrix factorization, temporal terms and drifting of users' preferences.

**Keywords:** Recommendation system; Collaborative filtering; Matrix factorization; Temporal