Time and sequence awareness in similarity metrics for recommendation

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Abstract-

Modeling the temporal context efficiently and effectively is essential to provide useful recommendations to users. In this work, we focus on improving neighborhood-based approaches where we integrate three different mechanisms to exploit temporal information. We first present an improved version of a similarity metric between users using a temporal decay function, then, we propose an adaptation of the Longest Common Subsequence algorithm to be used as a time-aware similarity metric, and we also redefine the neighborhood-based recommenders to be interpreted as ranking fusion techniques where the neighbor interaction sequence can be exploited by considering the last common interaction between the neighbor and the user.
**We demonstrate the effectiveness of these approaches by comparing them with other state-of-the-art Matrix Factorization, Markov Chains under two realistic time-aware evaluation methodologies (per user and community-based). We use several **

Index Terms- Recommender systems; Time-aware; Sequence; Neighborhood; Collaborative filtering

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Citation:
Sánchez, P.; Bellogín, A. "Time and sequence awareness in similarity metrics for recommendation", Information Processing & Management, vol.57, no.3, pp.102228-1-102228-21, May, 2020.