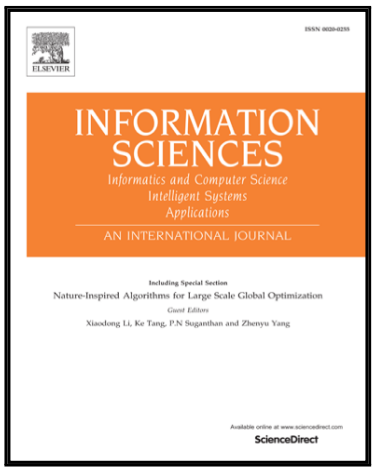


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# Collaborative Filtering based on Subsequence Matching: A New Approach

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**Abstract**

Neighbourhood-based techniques, although very popular in recommendation systems, show different performance results depending on the specific parameters being used; besides the neighbourhood size, a critical component of these recommenders is the similarity metric. Therefore, by considering more information associated to the users – such as taking into account the ordering of the items as they were consumed or the whole interaction pattern between users and items – it should be possible to define more complete, and better performing, similarity metrics for collaborative filtering. In this paper we propose a technique to compare users – also extendable to items –, working with them as sequences instead of vectors, hence enabling a new perspective to analyse the user behaviour by finding other users who have similar sequential patterns instead of focusing only on similar ratings in the items. We also compare our approach with other well-known techniques, showing comparable or better performance in terms of rating prediction, ranking evaluation, and novelty and diversity metrics. According to the results obtained, we believe there is still a lot of room for improvement, due to its generality and the good performance obtained by this technique.

*Keywords:* Collaborative Filtering, User Similarity, Longest Common Subsequence, Interaction pattern

## 1. Introduction

With the exponential growth of the population that have access to the Internet in the last years, the recommender systems need to adapt and innovate in the way

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