

# Improvement of collaborative filtering using rating normalization

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**Abstract** With the advent of the Internet, the types and amount of information one can access have increased dramatically. In today's overwhelming information environment, recommendation systems that quickly analyze large amounts of available information and help users find items of interest are increasingly needed. This paper proposes an improvement of an existing preference prediction algorithm to increase the accuracy of recommendation systems. In a recommendation system, prediction of items preferred by users is based on their ratings. However, individual users with the same degree of satisfaction to an item may give different ratings to the item. We intend to make more precise preference prediction by perceiving differences in users' rating dispositions. The proposed method consists of two processes of perceiving users' rating dispositions with clustering and of performing rating normalization according to such rating dispositions. The experimental results show that our method yields higher performance than ordinary collaborative filtering approach.

**Keywords** Recommendation system · Preference prediction · Collaborative filtering · Rating normalization

## 1 Introduction

Recent development of the internet technologies, micro blogs, and mobile media has drastically increased the quantity of information users may gain access to. The number of pages

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