Personalized Recommendation Algorithm Based on Product Reviews

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ABSTRACT

Under the background of leap-forward development for the internet, e-commerce has played an important role in people’s daily life, but huge data sizes have also brought problems, such as information overload which can be solved by using a recommendation system effectively. However, with the development of the e-commerce, the amount of the product catalogs and users becomes larger, which causes lower performance of the traditional recommendation system. This article comes up with a personalized recommendation algorithm based on the data mining of product reviews to optimize the performance of the new recommendation system. Features of the product were extracted, for which the users’ sentiment polarity was analyzed. This article develops a recommendation system based on the user’s preference model and the product features to get the recommendation result. Experimental results show that a personalized recommendation has significantly improved the accuracy and recall rate when compared with a traditional recommendation algorithm.

KEYWORDS

Feature Extraction, Polarity Analysis, Product Reviews, Recommendation Algorithm, Text Mining

INTRODUCTION

In recent years, E-commerce transaction volume in China has remained a pace of rapid growth. Online retailers have widely used commercial recommendation algorithm to enhance the user’s shopping experience. Traditional recommended systems usually develop models based on product attributes, user attributes and associated historical data between users and merchandise to analyze the potential law in users’ buying behavior, and then use different rules and standards for each user to recommend different types of commodities. However, the explosive growth of the Internet has brought massive amount of information as well as “information overload” and other issues on information retrieval. Personalized recommendation algorithm, which can recommend for each individual user based on the results of historical data generated, has become an effective solution. In this way, not only can improve users’ willingness to consume while browsing the website, e-commerce site can also enhance interaction with the users and optimize the user’s browsing experience. We implemented a personalized recommendation algorithms based on the data mining in product reviews in this...
article including users’ data mining and algorithm design: in the users’ data mining, this article
described the way for commodity attribute extraction and users’ sentimental mode analysis as well as
optimization in all functions; in algorithm design, this article compared the performance differences in
a variety of traditional algorithms, optimized collaborative filtering algorithm and used combination
recommendation mode to obtain more excellent recommendation results.

RELATE WORK

In personalized recommendation algorithm, there are three more prevailing, they are based on the
content, collaborative filtering and combinations. Content-based recommendation algorithm is mainly
faced with a lack of some abstract feature extraction capacity, cold start and was unable to discover
new points of interest and other issues. Collaborative filtering can discover new points of interest,
but also to deal with some non-regular items, but collaborative filtering is also facing the problem
of cold start, sparsity, identity issues and scalability issues.

Using a combination of recommendation algorithm can effectively avoid the impact of some
of the defects of single algorithm recommendation result is too large. Recommended combination
algorithm has been extensively studied. Rojsattarat and Soonthornphisaj (2003) resolved based on
the content and composition recommendation algorithm collaborative filtering basic framework, and
use the recommended algorithm based on the contents of SVM optimized combination properties
recommendation algorithm. Liu, Lai and Lee (2009) proposed hybrid algorithm based on association
rules and collaborative filtering can solve simple use of collaborative filtering algorithm cannot
demand changes for users to make rapid and effective response of the drawbacks of this method
based KNN-CF’s strategy to block the user to purchase goods sequential data prediction algorithm
applied to improve the performance of the recommendation system. Of course, apart from the several
recommendation algorithms, there are many other recommendation algorithms in practice there are
more widely used. Kim and Kim (2003) proposed a recommendation algorithm based on the model,
and to optimize the use of multi-level association rules recommendation algorithms are often faced
with sparse data and to get higher than collaborative filtering algorithm performance. Desrosiers
and Karypis (2011) put forward a recommendation algorithm based on the nearest neighbor, and
put it with the collaborative filtering algorithm was compared, by way of dimensionality reduction
and data relationships graph-based analytical methods to optimize the performance of the system.

Since the study recommendation algorithm in principle has been more mature, so the
recent research on the recommendation algorithm is mainly optimized for various types of user
recommendation system problems made, Liu et al. (2008) using the optimized similarity calculation
model eliminate the impact of overheating of the mainstream commodity recommendation system,
making collaborative filtering recommendation algorithm accuracy rate of up to 25%. Rodriguez et
al. (2010) based collaborative filtering algorithm incomplete preference relations model to solve the
recommendation system cold start problems, and achieved certain results.

Of course, with the expansion of the scale of the online retailer, how to use increasingly large
user data to the recommendation system is another research direction. Kim and Yang (2005) proposed
recommendation algorithm based on user preferences and product attributes clustering made relatively
good experimental results, the idea of the recommendation system can be regarded as the prototype
of the ideas in this article. Jeong (2013) proposed an idea which uses users’ social networking to
recommendation algorithm. The study was to explore the user’s point of interest and apply them to the
recommended system through users’ social network, but the properties of the user’s social network is
more complicated, in practical applications you want to achieve a reasonable use of social networks
more research is needed.
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