Chapter 7
Big Data Mining Using Collaborative Filtering

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ABSTRACT

Today every big company, like Google, Flipkart, Yahoo, Amazon etc., is dealing with the Big Data. This big data can be used to predict the recommendation for the user on the basis of their past behavior. Recommendation systems are used to provide the recommendation to the users. The author presents an overview of various types of recommendation systems and how these systems give recommendation by using various approaches of Collaborative Filtering. Various research works that employ collaborative filtering for recommendations systems are reviewed and classified by the authors. Finally, this chapter focuses on the framework of recommendation system of big data along with the detailed survey on the use of the Big Data mining in collaborative filtering.

INTRODUCTION

Nowadays maintaining and dealing with huge data is the main concern of the industries, government, academia, research, science etc. Data can be in structured or in unstructured format. Each company will try to access their huge volume of data with high velocity. But traditional processing tools are not capable to deal with large amount of data. The solution of this problem is Big Data. Big Data can be defined as the huge volume of data which can be structured or unstructured and it cannot be processed on the traditional databases. Major users of Big Data are Amazon, YouTube, Facebook, Twitter, Flipkart etc.

In this chapter, main concern of the author is to provide a Big Data mining through which recommendation can be made according to the user preferences. Since Big Data is very big. So, choosing data according to their choice from the Big Data is the very tedious task for the consumer. The solution of this problem is the Recommendation Systems. Recommendation systems, recommends the products or data that fits to the user choice. There are various techniques are used by many researchers for recommendation system named as Collaborative Filtering Systems, Content Based Filtering System, Hydrid Filtering and Item based Filtering.

The organization of chapter is as follows: chapter starts with the introduction to Recommendation System along with the associated technologies. Then author will discuss the Recommendation system based on the Collaborative filtering systems and its classification. Afterward section contains the description of user based and item based collaborative filtering. Next section gives the introduction of Big Data Mining along with various characteristics i.e. V's of big data. After that author explains the framework of the recommendation system by using Big data. Subsequently, describes the implications of our work to research domain. Finally, the author concludes the research work and highlights some future enhancements.

Research Methodology

Handling of data is the basic and most important aspect in every field like industry, research, academics etc. Several approaches have been proposed to handling and maintaining the huge data but the management is still tedious. The continuous and rigours efforts of industry as well as researchers in the filed of huge data tempted the author to come across for new emerging techniques for organizing the large volume of data. The most efficient and up coming technique, to the best of author knowledge, for handling, maintaining and organizing the data is Big Data. Big Data is used to handle the complex and huge data. Big Data mining is the other aspect which is handling in this chapter. Recommendations system are used for Big Data mining, which can be classified as collaborative filtering, content based filtering and hybrid filtering. The relevant material was found in various journals and conferences. The database of various journals and conferences has been searched regarding the literature of Big Data.

1. Inderscience Journals.
2. ACM publications.
3. Big Data Journals.
4. KDD.
5. IEEE publication.
6. IGI Global Publication.

The research roadmap leading to the study of various recommendation systems for Big Data Mining as shown in Figure 1. The research roadmap shows the path followed by author that led them to carry out the wide study and literature review.

Recommendation Systems

In today's world everyone is experienced the recommendation system on the internet. When we log in to the YouTube, Amazon, Flipkart etc. the list of recommendations is provided to us based on our previously searched items. Recommendation systems are the systems that predict the user responses on the basis of their past behavior.

Let's say author is made a website to recommend books. By using the past history of the user who have visited the particular website or surf and purchase the books, author can group those users based on their behavior.

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