



Research Article

BOOK RECOMMENDATION SYSTEM USING DATA MINING ALGORITHMS AND CLOUD COMPUTING TECHNIQUES

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ABSTRACT

With the use of technology life has become a lot easier. Online shopping and social networking sites are playing an important role in routine life. Over 3.5 billion people use internet for various purposes. Recommendation systems are widely used to recommend products to the users that are most proper. The book recommendation system is a platform which recommends books of the reader's interest. Data mining is the technique to extract knowledge from raw data facts. In this age of cloud computing the data is stored in web based cloud storage services which provides immense amount of flexibility to users, also it can be accessed whenever we need them. This paper presents a book recommendation system using combined features of data mining techniques like Apriori algorithm and association rule mining and Cloud computing.

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INTRODUCTION

With the use of technology in real life situation of book recommendation system is built which recommends the readers which book he or she should read after a particular book at the same time books according to the genre or category are recommended. This recommendation takes place on the basis of past experiences whether past readers interest is taken in account to recommend the user. The study observe that large amount of data is available in different sectors and can be useful for different purposes. This complete data have no sense and is useless for industry until it is converted into meaningful facts. Data mining is a technique used to extract knowledge from raw facts your previous transactions. The major goal of data mining is to perform analysis and knowledge extraction process using different knowledge extraction techniques. Cloud computing is the new utility that provides the sharing phenomena of upgraded resources which physically do not exist. Cloud computing is the rising technique used to share resources and information among ends.

Frequent item set based recommendation using apriori algorithm. The key idea behind the recommendation is that any item set that occur frequently together must have each item occur at least as frequently.[1] Recommendation System using Apriori Algorithm This paper represents a new recommendation technique using Apriori algorithm. The main goal is to detect association rules.[2]

Research of an Improved Apriori Algorithm. This paper proposes an improved algorithm of association rules, which is the classical Apriori algorithm.[3]

Open Source Solution for Cloud Computing Platform Using OpenStack OpenStack is an cloud computing technologists producing the open standard cloud computing operating system for both public and private clouds.[4]

Survey paper on Recommendation System using Data Mining Techniques Recommender systems that incorporate data mining techniques make their recommendations using knowledge learned from the actions and the attributes of users.[5] Association Rule Mining Finds frequent patterns, correlations and associations among sets of items.[6]

Problem Statement

In this fast growing world with with the upcoming technologies it becomes very difficult to buy a particular product. We always ask for suggestions for request recommendation from our family or friends. Many of the time we do not have anyone to ask things about according to our time convenience. Recommendation systems play an important role where we can suggest a recommend items to a particular user.

METHODOLOGY

The project is entirely based on the concepts of Data Mining Algorithms and Cloud Computing Techniques.

Data Mining

Data mining is that the process of discovering meaning- ful

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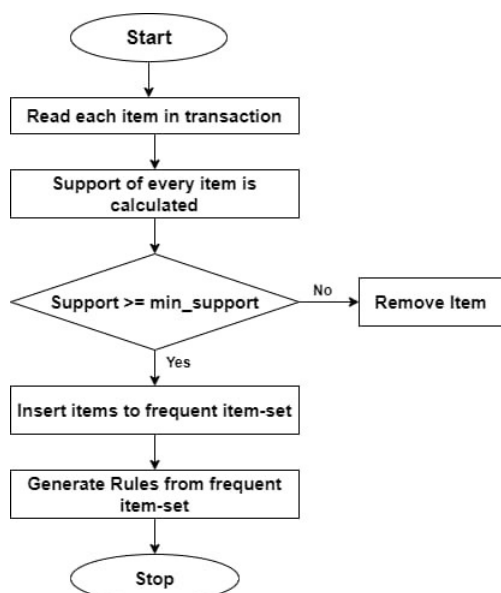
new correlations, patterns and trends by sifting through large amounts of information stored in repositories, using pattern recognition technologies also as statistical and mathematical techniques [Gartner Group, Larose, pp.xi, 2005]. Data in digital form are available everywhere, like on the Internet. Usually the statistical approach is employed. Data Mining is an extension of traditional data analysis and statistical approaches therein it incorporates analytical techniques drawn from a spread of disciplines. Data mining covers the complete process of knowledge analysis, including data cleaning and preparation and visualization of the results, and the way to provide predictions in real-time in order that specific goals are met. The term data mining is a broad spectrum of mathematical modeling techniques and software tools that are used to find patterns in data and use these to build models. In this context of recommending applications, the term is used to describe the collection of analysis techniques used to infer recommendation rules or build recommendation models from large data sets.

Association rule mining

Association rule learning is a rule-based method for locating interesting relations between variables in large databases. It is intended to spot strong rules discovered in databases using some measures of interestingness. Association rule mining is a data mining technique. From a transaction list the items which occur together frequently are found. The algorithms which is used most popularly for association rule mining is Apriori algorithm.

Apriori Algorithm

The Apriori Algorithm influential algorithm for mining frequent item sets for Boolean association rules. Apriori algorithm, a classic algorithm, is helpful in mining frequent itemsets and relevant association rules. Usually, you use this algorithm on a database containing an large number of transactions. One such example is that the items customers buy in a supermarket. Apriori uses "bottom up" approach. Apriori mainly used for database containing transactions A minimum support threshold is applied that finds out all frequent item sets in a particular database.



Apriori Algorithm

A minimum confidence constraint is applied to those frequent itemsets so as to make rules. Minimum-Support could be a parameter supplied to the Apriori algorithm so as to prune candidate rules by specifying a minimum lower bound for the Support measure of resulting association rules. Each rule produced by the algorithm has its own Support and Confidence measures.

Cloud Computing

Cloud computing is one of the fastest growing technology; it's the technology for the subsequent generation. This technology has changed the face of traditional computing technologies. This technology offers many benefits to the field of IT enterprises, although it's to beat many challenges to satisfy its maturity level. For businesses making the transition to the cloud, security plays an important role making robust cloud security imperative. Cloud computing allows organizations to control at scale, reduce technology costs and use agile systems that give them the competitive edge. Cloud security offers all the functionality of traditional IT security, and allows businesses to harness the various advantages of cloud computing while remaining secure and also make sure that data privacy and compliance requirements are met.

Cloud Computing Softwares

Cloud computing is that the on-demand availability of system resources, especially data storage and computing power, without direct active management by the user. The term is usually accustomed describe data centers available to several users over the web.

Open Stack

Cloud operating system that controls large pools of compute, storage, networking resources. Managed and Provisioned by APIs with common authentication mechanisms.

Promox

A Complete open-source platform. It is a Software-defined storage and networking functionality on a single platform. It manages high availability clusters and disaster recovery tools with the built-in web management interface.

IMPLEMENTATION AND RESULT

This project helps on use of modern algorithm Apriori for book shop for recommending a book to a customer who wants to buy a book based on the information that is maintained in the transaction database. The result of this compared with other algorithm available for association rule mining.

To create a Desktop application for Book Lovers. This application will be hosted on the cloud. The application will help the Readers as it will recommend books according to their liking's using the Data Mining Rules.

A Book recommendation system for Readers and a Digital Platform for new upcoming Writers to write their content which is stored in the Cloud.

For writer's it uses Cloud Computing Techniques where the Data is stored in the Cloud is secured. They will be able to write or upload their written files or books or novels in the cloud which can be published later or when completed. This will also give a chance to the new writers to showcase their talent.

FLOW OF THE PROJECT

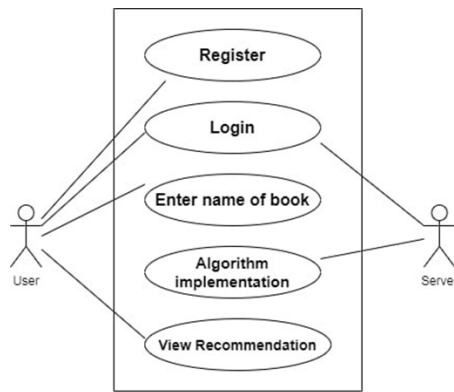


Diagram 1

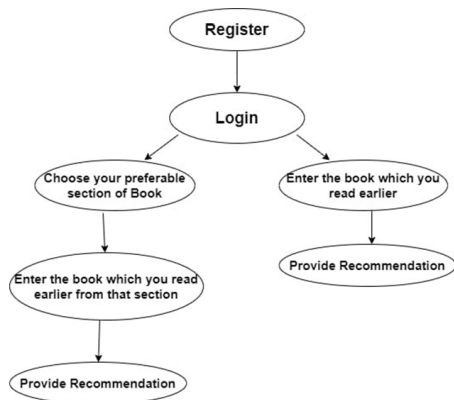


Diagram 2

Figure 1 Overall working of the Project

CONCLUSION AND FUTURE SCOPE

In this paper we have tried to make use of the data mining algorithm useful in the recommendation system by recommending the books to the readers. This paper has attempted to explore the importance and need of Book Recommendation and also tried to purpose solution for the same.

Future work includes the working and testing the result on large amount of data. Many of the writers are ignored or do not get much importance as a proper platform is not available. Also sometimes the data gets forgotten or rejected by others. Making a section for the writers where the writers can upload their own books. Writers data will be securely stored in the Cloud.

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References

1. Ijsetr.org, 2019. [Online]<http://ijsetr.org/wp-content/uploads/2015/05/IJSETR-VOL-4-ISSUE-5-1609-1612.pdf> [Accessed: 03- Sep-2019].
2. [https://www.academia.edu/20051800/Recommendation System using Apriori Algorithm](https://www.academia.edu/20051800/Recommendation_System_using_Apriori_Algorithm). [Accessed: 23- Oct-2019]
3. Ijcece.org, 2019. [Online]. Available: <http://www.ijcece.org/papers/128-B047.pdf>. [Accessed: 23- Oct- 2019]
4. [https://www.researchgate.net/publication/263581733 Open Source Solution for Cloud Computing Platform Using Open-Stack/link/0c96053b4be8a8d6f1000000/download](https://www.researchgate.net/publication/263581733_Open_Source_Solution_for_Cloud_Computing_Platform_Using_Open-Stack/link/0c96053b4be8a8d6f1000000/download). [Accessed: 23- Oct- 2019]
5. [https://www.researchgate.net/publication/323918941 An Implementation of Software Routing for Building a Private Cloud /link/5ab2c9a2a6fdcc1bc0c1ea4f/download](https://www.researchgate.net/publication/323918941_An_Implementation_of_Software_Routing_for_Building_a_Private_Cloud/link/5ab2c9a2a6fdcc1bc0c1ea4f/download). [Accessed: 23- Oct- 2019]
6. Anon, (2020). [online] [https://www.researchgate.net/publication/303535990 Survey Paper on Recommendation System using Data Mining Techniques/link/59a56dceaca272cf43d9d372/download](https://www.researchgate.net/publication/303535990_Survey_Paper_on_Recommendation_System_using_Data_Mining_Techniques/link/59a56dceaca272cf43d9d372/download) [Accessed 13 Feb. 2020]
7. Pdfs.semanticscholar.org. (2020). [online] Available at: <https://pdfs.semanticscholar.org/b527/dc6e3553dafa3169e4eb3ab7a> [Accessed 13 Feb. 2020].