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DATA ANALYSIS WITH CLUSTERED BASED USING HADOOP

Atul Bagde, Nikita Khodankar, Pranjal Yedame, Dipmala Likhare, Asst. Prof. Prachi Bhure,

CE Department Nuva College of Engineering & Technology, Nagpur

atulbagde177@gmail.com, nikitapkhodankar@gmail.com , saralyedme@gmail.com, renukalikhare0503@gmail.com, pbhure22@gmail.com

Abstract:

Large collection of data sets includes different types such as structured, unstructured and semi- structured data. This data is categories as “Big Data” due to its absolute volume, variety and velocity. Traditional data management, warehousing and analysis system fall short of tools to analyze this data. Big data exceeds the processing capability of traditional database to capture, manage, and process the voluminous amount of data. Due to its specific nature of Big Data, in this paper we first introduce the big data is stored in distributed file system architectures. Hadoop and HDFS by Apache is widely used for storing and managing Big Data and the data processing is done by the Map Reduced system. To process or analyse this huge amount of data or extracting meaningful information is a challenging task.

Keywords- Big Data, HDFS, Map Reduced, Cluster.

I. INTRODUCTION

The amount of data in the world has been increasing exponentially. This data in petabytes of amount is called “big data”. Big data is an evolving term that describes any voluminous amount of structured, semi-structured and unstructured data that has the potential to be mined for information. Although big data doesn't refer to any specific quantity, the term is often used when speaking about petabytes and exabytes of data. Analysis of such a large amount of data is a challenge for IT companies. So, the solution is to provide more manageable software. Big data also brings new opportunities and challenges in IT companies, Ecommerce and academia. There are many alternative recommendation services but effectively recommending services are need of time. These are the valuable tools to help users deal with services overload. Examples of such practical applications are existing customer records to predict trends, social media logs, CDs, EBooks, webpages, gadgets, video and music streaming or even food.

For example, large retailer might have huge amounts of data, tens of millions of customers and millions of distinct catalog items. Many applications require the results set to be returned in realtime, in no more than half a second, while still producing high-quality recommendations. New customers typically have extremely limited information, based on only a few purchasesor product ratings. Older customers can have a glut of information, based on thousands of purchases

and ratings. Customer data is volatile: Each interaction provides valuable customer data, and the algorithm must respond immediately to new information. So, an efficient service recommendation system is needed.

In most existing service recommender systems, such as hotel reservation systems and restaurant guides, the ratings of services and the service recommendation lists presented to users are the

same. They have not considered users' different preferences, without meeting users' personalized requirements. Most existing service recommender systems are only based on a single numerical rating to represent a service's utility as a whole. In fact, evaluating a service through multiple criteria and taking into account of user feedback can help to make more effective recommendations for the users. Existing Approaches solve the scalability problem by dividing dataset. But their method doesn't have favorable scalability and efficiency if the amount of data grows.

Motivated by these observations, In paper we have addressed these challenges through the following contributions:

(1) A keyword aware service recommendation method named KASR, is proposed in this paper which is based on user-based Collaborative Filtering (CF) algorithm.

(2) Keywords extracted from reviews of previous users are used to indicate their preferences. For efficiency and scalability we implement it on distributed computing platform Hadoop.

Hadoop uses MapReduce programming as a computing framework. Most recommendation algorithms start by finding a set of customers whose purchased and rated items overlap the user's purchased and rated items. The algorithm aggregates items from these similar customers, eliminates items the user has already purchased or rated, and recommends the remaining items to the user. Two popular versions of these algorithms are collaborative

filtering and cluster models. Other algorithms including search-based methods and item-to- item collaborative filtering focus on finding similar items, not similar customers. For each of the user's purchased and rated items, the algorithm attempts to find similar items. It then aggregates the similar items and recommends them.

II. AIM AND OBJECTIVE

The main aim is to build Semantic Similarity Based Rank Boosting Approach on Hadoop using Map Reduce for Big data applications.

Motivation behind this project is that with the success of the Web 2.0, more and more companies capture large-scale information about their customers, providers, and operations. The rapid growth of the number of customers, services and other online information yields service recommender systems in "Big Data" environment, which poses critical challenges for service recommender systems. Moreover, in most existing service recommender systems, such as hotel reservation systems and restaurant guides, the ratings of services and the service recommendation lists presented to users are the same. They have not considered users' different preferences, without meeting users' personalized requirements.

Objective:

- To Present a personalized Service recommendation list and recommending the most appropriate services to the users effectively

- Semantic similarity based approach is used for finding keywords which are having similar meaning for more accuracy
- Distinguish the positive and negative preferences of the users from their reviews

  to make predictions more accurate.

III. PROPOSED WORK

Service recommendation method, for user's personalized requirements, is proposed in this paper, which is based on a user-based Collaborative Filtering algorithm. In KASR, keywords extracted from reviews of previous users are used to indicate their preferences. Moreover, we implement it on HadoopMapReduce as its computing framework. In KASR, keywords are used to indicate both of users' preferences and the quality of candidate services. A user-based CF algorithm is adopted to generate appropriate recommendations. KASR aims at calculating a personalized rating of each candidate service for a user, and then presenting a personalized service recommendation list and recommending the most appropriate services to him/her. Moreover, to improve the scalability and efficiency of our recommendation method in, we implement it by splitting the proposed algorithm into multiple Map Reduce phases.

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1. Big Data and Environment:

Huge Collection of data is retrieved from open source datasets that are publicly available from major Travel Recommendation Applications. Big Data Schemas were analyzed and a Working Rule of the Schema is determined. The CSV(Comma separated values) files were

read and manipulated using Java API that itself developed by us which is developer friendly ,light weighted and easily modifiable.

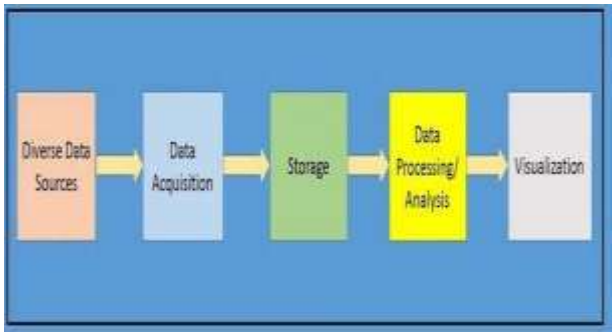
2. Batching and Preprocess:

The Traditional View of Service Recommender Systems that shows Top-K Results are displayed with Paginations with which a user can navigate Back and Forth of the Result sets. All Services Ratings and Reviews of Each Hotels are listed. Parts of Speech Tagger and Chucker Process are done on each and every review of all hotels for all countries in a Parallel and Distributed Manner as Batch jobs. The Master Job is Split up into 'n' no of small Batch jobs based on the slave machines Connected with the Master. POS Tagger tags each words of a review with its tags and the Clunker Process will take POS tagged output as input for Groping the Words based on meaning of the Review.

3. Digging in Big Data & Service Recommender Application:

The CSV Files in distributed Systems are invoked through Web Service Running in the Server Machine of the Host Process through a Web Service Client Process in the Recommendation System. The data that Retrieved to the Recommendation Systems are provided with a clean GUI and can be queried on Demand. Each and Every process on the Recommendation Application invokes Web Service which uses light weighted traversal of data using XML. The Users can Review each hotel and can post comments also. The Reviews gets updated to the CSV

Files as it get retrieved. A User can scan or schedule a Travel highlighting his requirements in a detailed way that shows the Preference Keywords Set of the Active User. A Domain Thesaurus is built depending on the Keyword Candidate List and Candidate Services List. The Domain Thesaurus can be Updated Regularly to get accurate Results of the Recommendation System.



IV. MAPREDUCE AND HADOOP PROJECT FLOW

1. The user logins into the system.

2. Admin Panel

User sets the number of clusters, so for simulation on to the computer,

If users set the 4 number of clusters, so data will be divided into 4 part and will be transfer two 4 client machines.

3. User uploads the dataset.

Then by applying algorithm, the file gets spitted to four clusters, i.e. folders.

The mapper function makes the key value pairs and gives to the Reducer.

The Reducer will take those key value pairs, processes it, aggregate the data to get the combine results

The mapping will be present on separate cluster, that, on which cluster what type of data

is available on which cluster The user search for the particular data, analyses the mappings and asks the particular to get the data.

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