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KSRS: Keyword-based Service Recommendation System for Shopping using Map-Reduce on Hadoop for Big Data

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Abstract*— Service recommender systems are important tools for giving appropriate recommendations to users. From many years, the amount of customers, services provided to them and online information is growing rapidly, it motivates for service recommender system. The traditional service recommender systems has limitations of scalability and inefficiency when analyzing or processing such large amount of data. Existing service recommender systems provide the same ratings and rankings of services to different users without considering different preferences of user, so it does not meet users' personalized requirements. In this paper, we propose a Keyword- Based Service Recommendation System KSRS to overcome the limitations of existing systems. This system presenting a personalized service recommendation list and effectively recommending appropriate services to the users. In this system, keywords indicate preferences of users, and a user-based Collaborative Filtering algorithm is used to generate personalized recommendations. To overcome limitations of efficiency and scalability, KSRS is implemented on Hadoop, distributed computing platform using the Map-Reduce parallel computing framework.

***Keywords*— "Recommender system, preference, keyword, big data, Hadoop, Map-Reduce"**

I. INTRODUCTION

From last decades, amount of data is explosively increasing. To analyze such a large amount of data is become challenge for IT industries, because size of such data called Big data is beyond the ability of current technology to manage or analyze. In this paper we are using the application of location based recommendation system for shopping.

In this paper we are providing the solution to this challenge by using manageable software solution instead of using hardware solution. Service recommender system is one of the big data applications. It define as a system that provides personalizes recommendation as a output. With growing numbers of services, recommending the services that users preferred is becomes important research issue. For that service recommendation systems are used to provide appropriate recommendation .Ex. books ,CD's ,and various other products uses recommender systems. In these existing recommender systems, rating of services and recommendation list is same for different users. In this paper we are using the recommender system KSRS for cloths, electronic devices etc. applications to provide nearest shop from current location which satisfies

user's requirements by providing personalized recommendation list effectively. It uses user's different preferences.

Current recommendation methods are classified as content- based, collaborative and hybrid approach. In this paper we are preferring Collaborative filtering approaches that recommends services to the user that users with similar tastes preferred in the past. CF method further classified as user-based and Item-based filtering. Item-based CF provides rating based on rating of similar items by same user. User-based CF provides rating based on rating of same item by similar users. KSRS aims at calculating personalized rating of all services and then provide that recommendation list to user to provide appropriate services to user.

This system uses Cloud computing tool, Hadoop and map-reduce a distributed computing framework to work on large amount of data. These cloud computing tools improves scalability and efficiency of recommender systems.

The ksrs is location based recommendation system for shopping. Here we are collecting the reviews from different websites and using user-based collaborative filtering method we recommend the products available at required location and according to the preference given by user using keyword.

II. LITERATURE SURVEY

Now a day's recommendation system becoming important research area so several research communities contributed their work to it. There are several recommendation systems developed in industries and academics. To implement recommendation system different approaches are used. In [2] Author presents an overview of the field of recommender systems and describes the current generation of recommendation methods that are usually classified into the following three main categories: content-based, collaborative, and hybrid Recommendation approaches. Author also describes various limitations of current recommendation methods and discusses possible extensions that can improve recommendation capabilities and make recommender systems applicable to an even broader range of applications. These extensions include, among others, an improvement of understanding of users and items, incorporation of the contextual information into the recommendation process, support for multi criteria ratings, and a provision of more flexible and less intrusive types of recommendation.[3] represent how Amazon.com use Item-to-item collaborative filtering method to provide services to users.[1] propose user- based collaborative algorithm to provide efficient recommendation in Hotel reservation system.[4] gives that Cloud computing is an extremely successful paradigm of service oriented computing and has revolutionized the way computing infrastructure is abstracted and used.[5] presents collaborative filtering method to gives recommendation based on opinions of other peoples.

Comparing with existing system KSRS uses reviews of previous users to get users preferences and quality of the services which provide appropriate recommendation.

III.SYSTEM DESIGN

A. ARCHITECTURE:

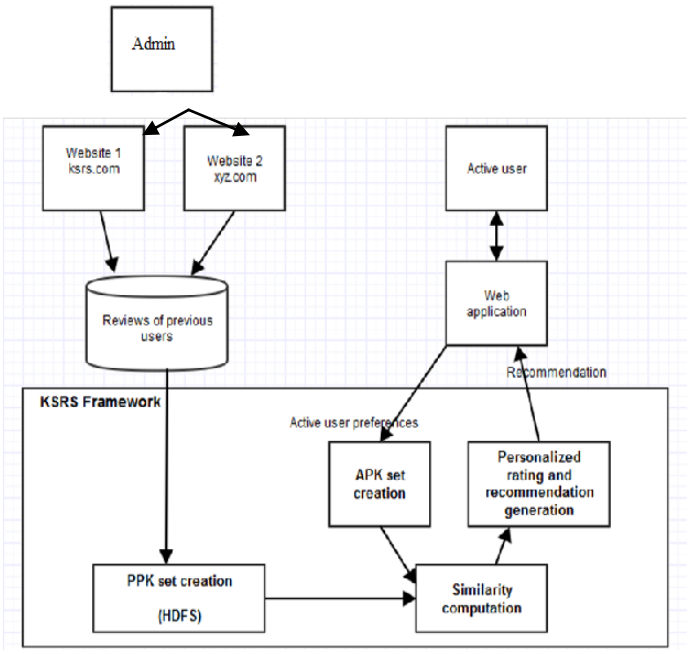

Fig.1 KSRS Architecture

B. **Administration:**

To Provide Recommendation to user using User-Based Collaborative filtering the Reviews of previous users as well as product details for all services available at that shops sites are handled by the admin of that respective sites. Also it handles the user management to check the authorization of users at that site. At output site it handles the keyword candidate list as well as authorization of user.

C. **KSRS framework:**

Loading data into HDFS:

The product details as well as review details from each input site are collected from mysql using sqoop and loaded into the hive.

Data Processing:

Collected data of review details and product details from all sites is merged into two tables review details and product details respectively. Inner join is performed on review details and keyword candidate list with importance degree and reviews are filtered out.

Pre-processing-

At this stage all tags and stop words are removed from the reviews in final table.

Keyword Extraction:

In this phase, each review will be transformed into a corresponding keyword set according to the keyword-candidate list. Similarity Computation: here the similarity between active user preference and previous user preference is find out.

Recommendation generation:

Similarity of the active user and previous users gives further filtering, Once the set of most similar users are found, the personalized ratings of each candidate service for the active user can be calculated. Finally, a personalized service recommendation list will be presented to the users.

D.MATHEMATICAL MODEL

Set Theory
Let,
S = {I,P,R,O}

Where,
S: Service Recommendation system
I: Set of inputs
P: Set of processes
R: Rules or constraints
O: Set of outputs/Final output
1. I = { i1 ,i2 }
Where,
i1: Text query enter by user.
i2: User feedback/review Comments from website
as input to the system.
2. P = { p1, p2, p3, p4, p5, p6, p7,p8,p9 }
Where ,
p1: Data Extraction from Website
P2:Loading the Data into HDFS.
p2:Preprocessing
p4:Identifying the keywords
p5: Formation of PPK using keyword candidate list
p6:Similarity computation

p7 :Calculating the personalized rating for each product from filtered reviews

p8 : Ranking the products with related product to top and present the result to the user.

3. R = { r1, r2 }
Where ,

r1 = the data from different websites must be Refreshed every day.

r2 = the extracted data from Website must be stored into HDFS system

IV. IMPLEMENTATION

To implement KSRS first I have to calculate the similarity between active user preferences and pervious user preferences. For that we are going to filter the related reviews and rank the reviews according to similarity. Calculate the rating. And display result as recommendation of highest match product to lowest match.

ALGORITHM FOR KSRS

1. Select the products P'and reviews R' on the basis of users required location ,and category
2 for each product $P_i \epsilon$ P'
3 for each review $R_J \epsilon$ R'
4 create preference keyword set PPK_j using keyword candidate list
5 add PPK_j into PR
6 end for
7 end for
8 for each product $p_i \epsilon$ P'
9 PR=ϕ, sum=0,r=0
10 for each $PPK_j \epsilon$ PR
11 find sim(APK,PPK_j)
12 if sim(APK, PPK_j)==0
13 Remove PPK_j from PR
14 else
15 sum =sum +1
16 $r=r + r_j$
17 end if
18 end for
19 **ŕ=r/sum**
20 end for
21 display the result with highest match to lowest match

V. CONCLUSION AND FUTURE SCOPE

This paper presents the recommendation system which overcomes the limitations of current recommendation systems such as scalability and efficiency. For that it uses the Hadoop and map-reduce distributed computing framework. It uses User-based collaborative filtering method which uses keyword based approach to provide appropriate rating of services and personalized recommendation list of appropriate services to the users.

A. FUTURE SCOPE

Recommendation system is most useful system to recommend the suitable products to the user. The most important factor of this system is accuracy and scalability. It gives best effect on increasing the accuracy.

Further this work can be enhanced by considering the input keyword having the same meaning or same domain with the keywords in the reviews. Accuracy can be improved in further.

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REFERENCES

[1] Shunmei Meng, Wanchun Dou, Xuyun Zhang, and Jinjun Chen, Senior Member, IEEE, KASR: A Keyword-Aware Service Recommendation Method on Map-Reduce for Big Data Applications ,VOL. 25, NO. 12, DECEMBER 2014.

[2] G. Adomavicius and A. Tuzhilin, "Toward the Next Generation of Recommender Systems: A Survey of the State-of-the-Art and Possible Extensions," IEEE Trans. Knowledge and Data Eng., vol. 17, no. 6, pp. 734-749, June 2005.

[3] G. Linden, B. Smith, and J. York, "Amazon.com Recommendations: Item-to-Item Collaborative Filtering," IEEE Internet Computing, vol. 7, no. 1, pp. 76-80, Jan. 2003.

[4] D. Agrawal, S. Das, and A. El Abbadi, "Big Data and Cloud Computing: New Wine or Just New Bottles?" Proc. VLDB Endowment, vol. 3, no. 1, pp. 1647-1648, 2010.

[5] P. Resnick, N. Iakovou, M. Sushak, P. Bergstrom, and J. Riedl, "GroupLens: An Open Architecture for Collaborative Filtering of Netnews," Proc. ACM Conf. Computer Supported Cooperative Work (CSCW '94), pp. 175-186, 1994.

[6] W. Hill, L. Stead, M. Rosenstein, and G. Furnas, "Recommending and Evaluating Choices in a Virtual Community of Use," Proc. SIGCHI Conf. Human Factors in Computing System (CHI '95), pp. 194-201, 1995.

[7] J. Manyika et al., "Big Data: The Next Frontier for Innovation, Competition, and Productivity," 2011.

[8] F. Chang, J. Dean, S. Ghemawat, and W.C. Hsieh, "Bigtable: A Distributed Storage System for Structured Data," ACM Trans. Computer Systems, vol. 26, no. 2, article 4, 2008.

[9] W. Dou, X. Zhang, J. Liu, and J. Chen, "HireSome-II: Towards Privacy-Aware Cross-Cloud Service Composition for Big Dat a Applications," IEEE Trans. Parallel and Distributed Systems, 2013.

[10] L. Zhang, "Editorial: Big Services Era: Global Trends of Cloud Computing and Big Data," IEEE Trans. Services Computing, vol. 5, no. 4, pp. 467-468, Fourth Quarter, 2012.

[11] P. Castells, M. Fernandez, and D. Vallet, "An Ada ptation of the Vector-Space Model for Ontology- Based Information Retrieval," IEEE Trans. Knowledge and Data Eng., vol. 19, no. 2, pp. 261-272, Feb. 2007.

[12] M. Bjelica, "Towards TV Recommender System Experiments with User Modeling," IEEE Trans. Consumer Electronics, vol. 56, no. 3, pp. 1763-1769, Aug. 2010.

[13] M. Aldua n, F. Alvarez, J. Menendez, and O. Baez, "Recommender System for Sport Videos Based on User Audiovisual Consumption," IEEE Trans. Multimedia, vol. 14, no. 6, pp. 1546-1557, Dec. 2012.

[14] Y. Chen, A. Cheng, and W. Hsu, "Travel Recommendation by Mining People Attributes and Travel Gr oup Types from Community-Contributed Photos," IEEE Trans. Multimedia, vol. 25, no. 6, pp. 1283-1295, Oct. 2013.

[15] X. Yang, Y. Guo, and Y. Liu, "Bayesian-Inference Based Recommendation in Online Social Networks," IEEE Trans. Parallel and Distributed Systems, vol. 24, no. 4, pp. 642-651, Apr. 2013.

[16] R. Burke, "Hybrid Recommender Systems: Survey and Experiments," User Modeling and User-Adapted Interaction, vol. 12, no. 4, pp. 331-370, 2002.J.Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68-73.

