



Keyword-Aware Recommendation System for Posted Work using Collaborative Filtering

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Abstract: This paper provides recommendations to a hirer based on certain keywords stored in the database by workers. The proposed system makes use of collaborative filtering, in which certain keywords are used by the hirer to get a list of preferences that can be used by the hirer to hire the best workers based on their skill set. Traditional recommended systems used same ratings for different users while the proposed system is able to give different ratings to different users. The proposed system is far effective than the other techniques as shown in the results.

Keywords: Recommendation System; Keyword Aware; Similarity computation.

1. INTRODUCTION

Big data can be termed as large data sets. Since big data contains huge data it is difficult to process data using traditional recommended systems and it faced many challenges in many phases. For developing new approaches for service recommender systems a lot of analysis is being done in the world. In this era users rely heavily on recommendation system and hence are in search of a good recommender system to search for his product.

Recommendation systems are mainly used to filter the required information from a large set. Recommended systems can be broadly classified as Collaborative filtering & knowledge based recommendation System. In 1, KASR is implemented in Hadoop platform on a Map Reduce framework. There is a method called keyword-based service recommendation method, KBSR. The preferences of users are got from keywords in KBSR. Recommendations are generated using Collaborative Filtering algorithm as proposed in 2. A new method of personalized recommendation system is proposed in 3. KASR is implemented in a distributed platform, Hadoop in 4. Apart from getting the recommendation list the user was able to get a detailed overview of the location at a particular time as proposed in 5. A study of the various recommended systems is done in 6. Apart from that, a new method of E-learning recommendation system is proposed. A current service recommended system deploys single numerical rating 7. In 8, the authors propose a recommendation system using Bayesian-inference. They have experimentally proven that their recommendation system is far better than the trust-based recommendations. Travel packages recommendation system is used in 9, where the recommendations are given based on user's interests and constraints.

2. SURVEY OF RECOMMENDED SYSTEMS

Recommendation systems are of three types-Collaborative, Content-based and Hybrid recommendation approaches.

2.1. Collaborative Filtering

Information pertaining to users' activities and behaviours are collected and taking this information into account it predicts what users will like.

2.2. Content-Based Filtering

This algorithm recommends certain items to the users based on the items which they liked in the past. The items that are considered as best are recommended to the user by comparing the items which users liked in the past with the current items.

2.3. Hybrid Approach

It combines the above mentioned two methods. Experimental results have shown that hybrid method is better than other approaches.

3. PROPOSED SYSTEM

In this system KASR is used for providing a personalized rating for a posted work. User's preferences are indicated by Keywords. Keywords used in the paper are cost-index, Location and the Skill set. Based on these keywords a Collaborative filtering is carried out to give recommendations to the user. The steps involved in KASR are illustrated in Fig.1.

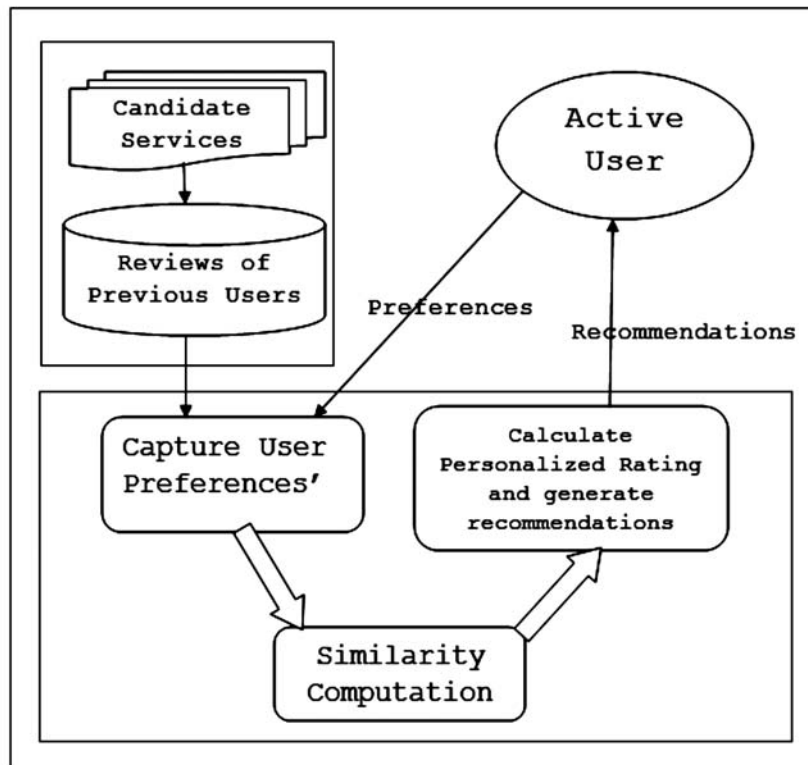


Figure 1: Keyword-aware Service Recommendation Systems

The first and foremost step is to capture the preferences of the worker. The preference of the worker can be denoted as PPK. The hirer will give their preferences from a set of keywords, viz. Pin-code, Skill-set and cost-index. This is denoted as APK.

The next step is to make a comparison between the preferences of the hirer, with the preferences of worker. Before similarity computation, filtering takes place. For similarity computation we use the keywords-location, cost index & preference of skill set. For location-pin codes are taken as the keywords. Compare the pin-code of hirer with all other entries that are already posted in the database by the workers. For cost-index-low, medium, high indicate the keywords. Compare the cost index of hirer with previous entries. For skill set-construction, electric works, plumbing etc. are used as keywords.

Jaccard coefficient's method as shown in equation 1 is used in this paper to compare the similarity of sample sets. The similarity is described as follows:

$$\text{sim}(\text{APK}, \text{PPK}) = \text{Jaccard}(\text{APK}, \text{PPK}) = \frac{|\text{APK} \cap \text{PPK}|}{|\text{APK} \cup \text{PPK}|} \quad (1)$$

Another level of filtering is carried out after the similarity is calculated. The service with the highest rating will be given to the hirer. The personalized rating pr is calculated as shown in equation 2 and 3.

$$pr = \bar{r} + k \sum_{\text{PPK}_j \in R} \text{sim}(\text{APK}, \text{PPK}_j) \times (r_j - \bar{r}) \quad (2)$$

$$k = \frac{1}{\sum_{\text{PPK}_j \in R} \text{sim}(\text{APK}, \text{PPK}_j)} \quad (3)$$

4. RESULTS

Signup

Name jackson
Mobile No 8086502005
Password •••••
Confirm Password •••••

Sign up

Login

 Sign Up

Figure 2: Registering a user (worker)

This system provides three keywords-skills set, pin code and cost index. The first step is the registration process as shown in Fig 2, in which a user can register by providing their mobile number and password. He should register either as a worker or a hirer.

In Fig 3, the workers select his skill from the skills that are provided which include construction, interior design, and carpentry and so on.

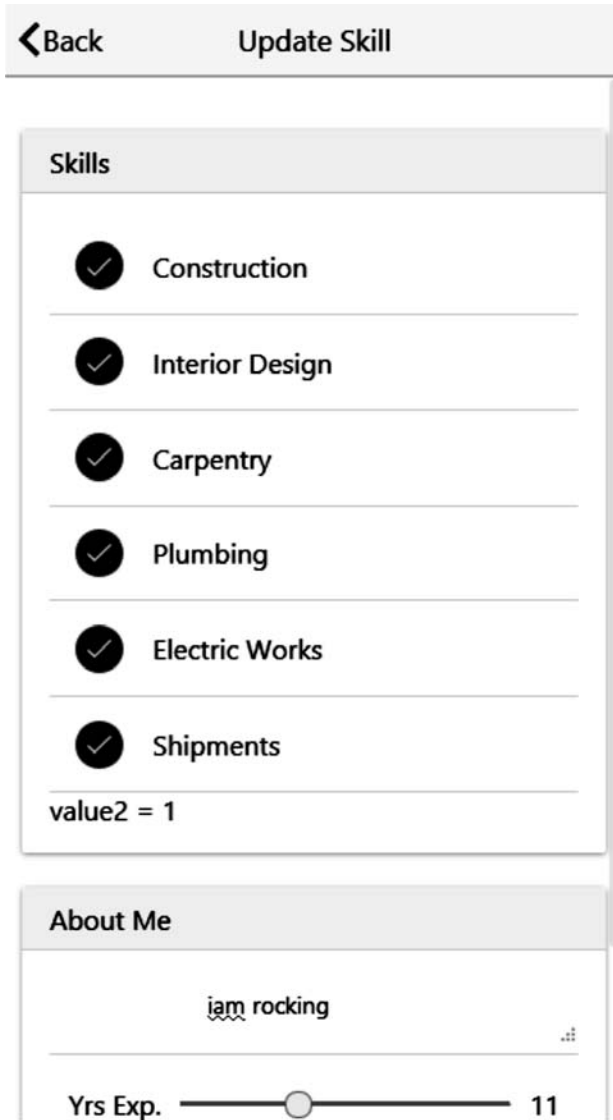


Figure 3: User entering his skill set

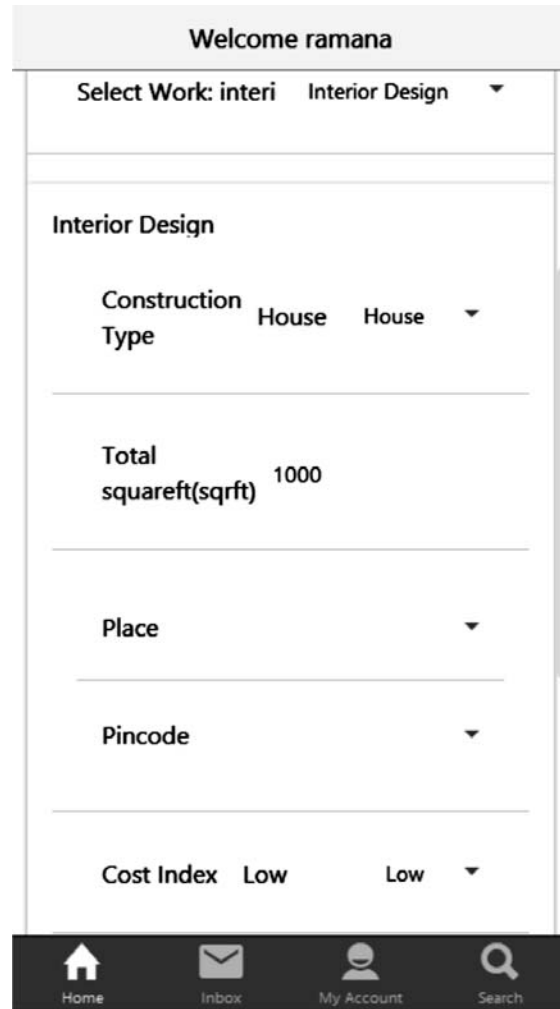


Figure 4: User enters the location and cost index

The user is supposed to enter the pin-code and cost- index which are considered as the keywords in our system. These details will be stored in the database for further processing. This is shown in Fig 4.

The hirer will get a list of recommendations based on the skill the worker has posted. For that, hirer should give their preferences and look for a match in the database as shown in Fig 5.

The next step is to calculate personalized rating based on the keywords. The preference of the hirer is compared using Jaccard coefficients method using the keywords- Pin-code, Skill set and cost index and the personalized rating is displayed. The final result is shown in Fig 6.

WorkDescription

Marty McFly
November 05, 1955

Skills required:Construction
Floors:Two
Work site Pincode is:695004
Cost Index:High
Square Feet:1000
Attached Bathroom:YES
Kitchen:YES

Skills required:interior Design
buildingtype:Flat
Work site Pincode is:789999
Cost Index:Medium
Budget amount:1000004
Square Feet:10004

Footer

Figure 5: Hirer entering his preferences

← Back
Kasr

Name:ravi
PersonalRating:3

Name:222
PersonalRating:1

Name:three
PersonalRating:5

Name:four
PersonalRating:4

Name:five
PersonalRating:3

Name:ajith
PersonalRating:2.16666666666667

Name:binoy
PersonalRating:3.33333333333333

Figure 6: Result after similarity computation

5. CONCLUSION

This system provides a recommendation system for a posted work. The KASR system provides keywords that indicate preference of users. The three keywords- location, skill set and cost index are used to retrieve the preferences from the database. Recommendations are given to the user by making use of Collaborative filtering algorithms. The hirer gives his/her preferences from keyword-list and then the similarity between hirer and worker who have similar tastes are calculated using similarity computation method. Based on the similarity computation, personalized rating is computed and provided to the hirer.

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