Food Recommendation System Using Machine Learning

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***Abstract*- Traditional Recommender Systems recommend items on the basis of a single criterion whereas rates of hotel food take many different criteria for each item. Although rating system of food recommender Systems have a promising accuracy, approaches used by them require many previous users to first rate items with respect to criteria. This paper presents a rating Criteria Recommendation System for food Recommendations to choose the best suited hotel in a city according to a users' preference and other user's ratings. In order to determine the food rating of a hotel from previous users uses various Natural Language Processing approaches on a hotel of food review corpus and builds a user-item-feature database. At time of hotel leaving the user give rating for next recommendation, if both user give same rating to one hotel food then and if next time one user can rate to other hotel that hotel will recommend to other user.**

***Index terms*- Recommender Systems, Rate Criteria Analysis, Food Recommenders**

1. INTRODUCTION

In order to make good decisions in any situation, it is typically necessary to possess a certain sufficient amount of information. Technologies enable us to easily obtain more information, especially on the Internet. In the Travel amp; Hospitality Industry since the number of choices available has exponentially increased in the recent years, most of the users try and search for best suited hotels for best food. Finding a best food in hotel which suits ones requirements in terms of price, quality, location and others is a daunting and complex task. One of the frequently used approaches is to search for hotels which have a good overall "star rating" on websites. Compare the price manually with your budget and then rate user for that particular hotel food. Food Recommendation Systems play a major role by filtering the places which suit the user interests and requirements. Typical Food Recommender Systems fill the form from user and ask the rate values for the hotel food they experienced and average all results to compute the "overall" rating for a hotel which the engine uses to find the popular amp; well recommended hotel food in a city. Websites also ask users to get rates for hotels food. Recent rating approaches allow users to specify their rate in a higher dimension. Use this rating for finding recommendations. for a long integral time makes the loop slow to recover from disturbances to the drum level. If the drum level is low, and more feed water is added to increase it, the drum level tends to decrease first before increasing. This is because the cooler feed water causes some of the steam in the evaporator to condense, causing the volume of water/steam to decrease, and hence the drop in drum level. Conventional feedback control has difficulty in coping with this inverse response. A control loop using high controller gain and derivative action may work well in other level applications.

2. LITERATURE REVIEW

Koji Takuma, Junya Isoroku Yamamoto, Sayaka Kamei and Satoshi Fujita [1]:—In searching for a building, it's com-mon to access a listing of hotels matching a question that is organized in an exceedingly dropping order of the common analysis price. Since such a listing doesn't replicate the preference of users, for several inexperienced users, it takes too long to see a building. During this paper, we tend to specialize in the analysis values given by contributors whose preferences area unit kind of like the user's preference. Such analysis values could also be additional extremely credible for the user. We tend to propose a technique to extract the preference of review contributors from a set of reviews. The extracted preferences area unit used for the building recommendation in such how that the analysis price given by a contributor to own preference kind of like

the user is given larger weight. The results of questionnaire-based evaluations indicates that our projected methodology will suggest hotels that matches the user preference.

Yu-ningXiong, Li, xiaoGeng: [2] Online hotel reservation makes travel easier, But a large number of online hotel information also makes people become unable to follow. Online hotel reservation websites need try to gain exposure to customers' eyes and recommend a personalized hotel list. Nowadays, Personalized Intelligent Hotel Recommendation Systems have been researched widely, but rarely in online hotel reservation. The paper summarizes representative online hotel reservation websites' personalized recommendation system situation, such as qunar, kuxun, ctrip and elong etc. personalized recommendation have poor performance. This research firstly extracts Hotel Characteristic factor , attempts to analyze customers' browsing and purchasing behaviors and secondly constructs a personalized online hotel marketing recommendation system polymerization model for Multi-level customer ,at last presents an achieve Matlab procedure implementing the core arithmetic of the personalized recommendation.

Chuanlin Huang, Yanqing Cui, Guojun Sheng[3]

The Internet brings a lot of information to people. While satisfying people's demand for information, it also brings the problem of information overload. Recommendation systems show great potential in solving information overload and personalized needs. This paper studies the recommendation system and hotel recommendation problem for the specific recommendation object of the hotel. By analyzing the current situation and difficult problems of hotel recommendation, this paper proposes a hotel recommendation method combining AHP analytic hierarchy process and collaborative filtering algorithm. This method can quantify the weight of the main factors affecting customer selection, and predict the degree of preference of another customer for a hotel through the rating of similar customer groups, so as to select hotels that are more in line with customer preferences for recommendation.

William Wei Song, Chenlu Lin, Anders Forsman, Anders Avdic, Leif Åkerblom[4]

The most widely used method in recommendation systems is collaborative filtering, of which, a critical step is to analyze a user's preferences and make recommendations of products or services based on similarity analysis with other users' ratings. However, collaborative filtering is less usable for recommendation facing the “cold start” problem, i.e. few comments being given to products or services. To tackle this problem, we propose an improved method that combines collaborative filtering and data classification. We use hotel recommendation data to test the proposed method. The accuracy of the recommendation is determined by the rankings. Evaluations regarding the accuracies of Top-3 and Top-10 recommendation lists using the 10-fold cross-validation method and ROC curves are conducted. The results show that the Top-3 hotel recommendation list proposed by the combined method has the superiority of the recommendation performance than the Top-10 list under the cold start condition in most of the times.

3. PROBLEM DEFINITION

Our goal is to develop a specialized rate based recommender system for hotels by not only considering different parameters but also applying rate mining of users. Mining rates into structures data takes time hence an online approach would extract certain features from the reviews which will be used later. Our paper presents a method to first mine the rate review online and based on their separate ratings for different aspects/dimensions of food can be calculated and later recommended to a user. The paper also provides a probable solution for the rating problem in the hotel food domain. User domain has different issues when recommending hotels to users which are not there in classical Recommendation Engine. Collaborative filtering have been successfully used in the past for general domains but the differentially of the user domain has not been taken into account. Hence, the rating which we have from users as well as the history of user which can user required to create learning based or collaborative filtering techniques might be available. Apart from the limited availability of data, another important aspect is the context of the customer.

4. PROPOSED WORK

The single problem can be solved by different solutions. This considers the performance parameters

for each approach. Thus considers the efficiency issues

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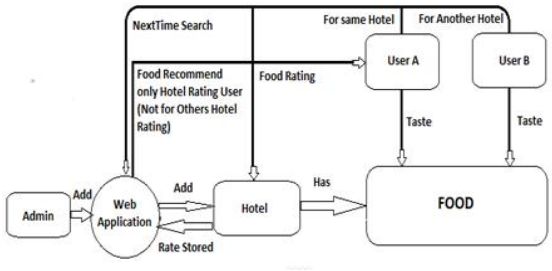

Fig.1. Architecture Block Diagram

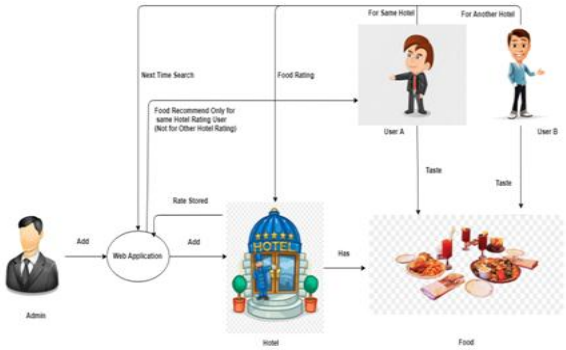

Fig.2. Architecture Diagram

The most widely used method in Food recommendation systems is collaborative filtering, of which, a critical step is to analyze a user's preferences and make recommendations of food users' ratings. We propose an improved method that combines collaborative filtering. We use hotel food recommendation data to test the proposed method. The accuracy of the recommendation is determined by the rankings. Since hotel websites collect a large amount of user ratings, it is interesting to investigate the hotel food rating data and make use of it to generate targeted food recommendations for users. Meanwhile, the hotel food rating data not only contains the overall ratings, but also consists of other criteria ratings. We propose an approach which combines collaborative filtering with data classification technology to generate recommendations. The main idea of the approach is to find a new user a group in which previous similar users' preferences are available and recommend hotels according to similar users' preferences. In proposed system as,

Admin:

Admin can login and accept approval of Hotel, only admin can view user and hotel list.

Hotel:

Hotel wants to register itself on system. Then hotel will log in on system. hotel can add menu rate and form for food. Hotel will view the notification and add information detail with offer.

User:

In web application user also want to register itself then only user will be able to log in. On web application user will search the menu and filter the location. User can see recommended hotel list by friends or normal user. Registered user also rate the particular hotel. If user A & user B giving same rating to someone hotel then next time if user B give rating to other hotel then that time recommend the hotel to only user A.

4. Mathematical Model: Let S is the system;

S = {I, O, F, DD, NDD, Success, Failure}

I = Input to the system

I = {username, password, approval of hotel, add menu, add rate, add form, add hotel info with offer, filter location, rate hotel food}

O = Output of the system

O = {login, view user list, view hotel list, view menu, view hotel detail with offer, view recommended hotel list}

F = Fusion in system

F = {adminreg(), adminlogin(), registrationhotel(), addSystem(),

addHotel(), updateHotel(), DeleteHotel(), addMenu(), viewMenu(),
viewNotification(), infoOfHotel(), addRate(), addForm(), registerUser(),
searchMenu(), filterLocation(), viewRecommendedHotel(),
giveHotelRate()}
DD = Deterministic data
DD = {image}
NDD = Non Deterministic data
NDD = {I, O}

5. CONCLUSION

The system recommends buildings foods supported preferences of users once a user selects a hotel. so as to suggest the hotels food this identifies the user's preference transition and makes recommendation supported them. Supported user preference the system recommends food. The most operate of recommender system predicts user's preference from the rating data, filters some things from huge data, and suggests candidate things for user. The system makes recommendation to a user supported a building that a user selects on the system.

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