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REVIEW GENERATION SYSTEM USING PATTERN MATCHING FOR RESTAURANT

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Abstract : *The Restaurant Review System provides reviews and ratings to any restaurant and suggests restaurants to the user. Here analysis of comments given by various users will be done and a common review will be generated. This generated review will be a simple statement and will help users to take a correct decision while selecting any restaurant. The Online Restaurant Review System also provides Recommendation option. If user wants to recommend his/her favorite restaurant to any other user/friend then he/she can. This system generates a common review related to a restaurant by using Latent-Semantic Analysis (LSA) algorithm as reference. Here we tokenize the statements and match them with the patterns and assign the respective weights. Whenever a user writes a review its value is added to the old generated review and hence time complexity is reduced. User can recommend restaurant to his/her friends by sending an e-mail related to that restaurant. This mail will include factors like name of the restaurant, location of the restaurant, its current rating, etc.*

Keywords*: Information Search,Retrieval Query formulation ,Relevance feedback Search,Selection process.*

1. INTRODUCTION

An increased use of smart phones and the apps prevailing in them has led to development of various apps which are being helpful to the users. The basic concern with such apps is platform dependency. As users can have android or ios operating systems, being compatible with all these different options is tedious. Hence, we thought of creating a web application, which is platform independent. Restaurant finding apps aren't that much in

existence except for Zomato. We studied the app and found out what changes can be done. Zomato focuses on food ordering rather,booking table and not much on review generation. Ratings and also the reviews of different restaurants are taken from user. But perspectives might change from each and every individual, so these ratings aren't accurate.

Users do not get alerts like SMS, or a mail to suggest recommendations. In our application we apply an algorithm which analyses user's review and generates ratings by taking a cumulative study of all the reviews of a restaurant.

Also, even if one is not registered he/she can view the ratings and also the reviews of a particular restaurant. Here we are trying to give a genuine opinion to users regarding a restaurant which will help them in decision making.

2. LITERATURE SURVEY

2.1 WORK RELATED TO REVIEW SYSTEMS

Opinions of the people online are kind of a virtual currency nowadays for businesses who want to market their products, recognize opportunities, and also manage their reputations. In [1] they have developed a movie-rating and a review and summarization system , sentiment-classification accuracy and response time of the system, used to design. Posting online reviews has become a popular way for people to share and express their opinions regarding specific product or a specific service with other users or customers. In [2] system has proposed Random forest method for which makes use of classification by sentiment analysis, movie features are identified by using a novel approach which is Latent Semantic Analysis and approach based on frequency . Recently due to posting of online reviews, review mining done automatically and summarizing has become a trending topic in research. In [3], a multi-knowledge based approach is proposed, it integrates WordNet, analysing using statistical means and knowledge of movies.

2.2 WORK RELATED TO LATENT SEMANTIC ANALYSIS (LSA) ALGORITHM

Paper [4] tells more about LSA. The Latent Semantic Analysis model is a theory for how useful representations may be learned from encountering large samples of language without explicit directions as to how it is structured. LSA gives a way among words the covert association is induced from a wide examination of how each word coexists with every another word in the language. In [5] this literature survey paper describes importance of opinion mining, method of classification for analysis of sentiments which are Naive Bayes, Maximum entropy, SVM(Support Vector Machine), at different levels task of opinion mining, movie reviews summarization based on features.

Customers are often asked by the sellers of the product , to review purchased products . For a product which popular,there can be thousands of reviews . To make an appropriate decision it becomes difficult for a to read for a potential customer . In [6] research aims to mine and also summarize all customer reviews of a product. Only those features of the product are mined on which the customers have given their opinions and also decide which views are positive or negative.

2.3 WORK RELATED TO RECOMMENDATION SYSTEMS

In [7] the system fetches users' personal information and then their preferences of movies are predicted using well-trained support vector machine models. It selects movies which are based on the prediction of support vector machine from the dataset, it clusters the movies and questions are created for the users. To get a generalised idea about the trend of recommender systems [8] analyses the published literature, also the practitioners and researchers are provided with insight and also future direction on recommender systems. Paper [9] is interested in the rating of movies. The data is divided into training and testing set which has 4 fold cross validation. Among various attributes which a movie has , the total number of selected attributes is 8 which is mainly depended on the genres and the words used in the movies. This corresponds to the decision which film rating organizations mostly make use of.

Recommender systems combine one user's ratings of products or services with ratings from other users to answer queries with predictions and suggestions. Hence anonymous recommendations are received to people from people with similar tastes. These highlights the conflict which is present between personalization and privacy in recommender systems. Hence [10] uses a graph-theoretic model to make the benefits from and straddlers also face some risks.

3. PROPOSED SYSTEM

We are aware of many apps like zomato but the problem of platform dependency occurs, hence we decided to create a web app. Naïve users don't get the exact idea of any restaurant from it's rating in numbers, so we thought of analyzing users' reviews and generate a rating helpful for decision making. To view any reviews or newly added restaurants , we have to register on these apps, so here a visitor too can have a look at the ratings and reviews. Hence our system overcomes all the drawbacks which are given above. We basically analyse the reviews posted for different restaurants and give a genuine feedback by providing a line review along with ratings generated by pattern matching technique.

3.1 SYSTEM ARCHITECTURE

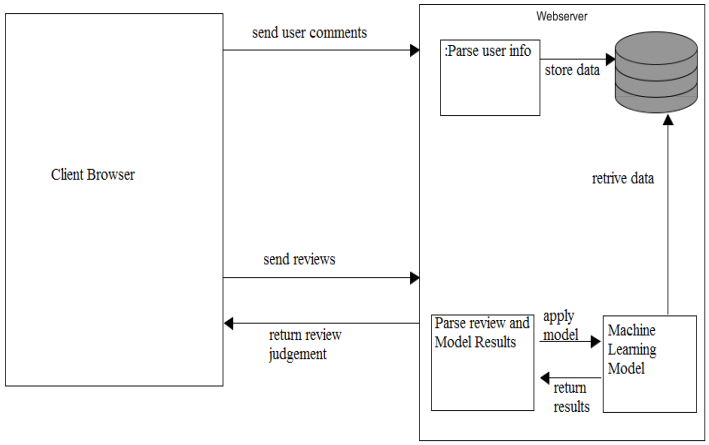

Fig.1 Components of the system

3.1.1 Parse review and Model results: Its used to separate out the various tokens being generated from the review and these tokens are then passed to Machine learning model. Also it gets the results from MLM(final review) and sends to the client browser

3.1.2 Parse user info: It will take input from the user and then store in various tables in database.

3.1.3 Data base: Used to store user details, restaurant info, reviews of restaurants.

3.2 DATABASE DESIGN

- First in user table all the information of user is stored like address, phone number, email address and one ID is allotted to each user, which is used for mapping.
- Second is the restaurant table where restaurants information is present in which name, address, phone number and email of restaurant address is stored and an ID is given to every restaurant in database.
- Third is the table containing all the positive words eg. good, excellent, awesome for the positive review generation.
- Fourth we have table of negative words for negative review generation, e.g. bad, very bad, hopeless, not good etc
- One table is created for matching phrases by using helping words to minimize the time complexity.

- We also have one table where the updated result is stored where pattern matching takes place and final result is generated in star format.

3.3 ALGORTIHM

1. Match u_id and r_id as soon as one writes a review.
2. Fetch comments for a restaurant.
3. Match each line with the statement table and assign respective weights.
4. Tokenize the sentence and match words with +ve and –ve words and assign wts.
5. Take a cumulative count of all the weights and generate a final star rating and a 1 line review statement.

4. CONCLUSION

The aim of our system is to generate cumulative review from the submitted reviews (in simple English language). The system is capable of generating review from inputs of multiple users at any particular time. It generates review by analyzing comments. Word-to-word analysis and patterns are matched for generation of review. Number ratings are also considered for analysis. Hence, the user can take faster decision whether to visit that particular restaurant or not.

5. FUTURE SCOPE

The online restaurant review system is used to generate a cumulative review based on the submitted reviews. This reviewing system can be used extensively in various fields namely:

1. In terms of algorithm usage: In an e-commerce site for generating list of products according to the rating,In mobile reviewing websites. Also it can be used in educational sector too, to generate reviews of various colleges, universities, coaching classes, which can help students to make decision while taking admission.
2. In terms of application: Online ordering according to ratings of particular dishes , GPS system to give directions from user location to restaurant, real time feed from the particular restaurants about their new dishes, notifications directly sent to user about various offers by restaurants, sentiment based conclusion can also be generated to get a genuine outlook on the review. We can link to Paytm to pay quickly for the orders online.

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