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Restaurant Table Reservation using Graphical Representation

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Abstract - *Restaurant table reservation system has been cultivated in our culture to easily select the restaurant and to save time in people's day to day lives. Yet there are many flaws in the system which emerges as obstacles in people's experience in dining in restaurants which is also harmful for the restaurant owners. The current reservation system either heavily relies on telephonic reservations or the online reservation which struggles to provide key benefits/functionalities to the customers. Currently, customers face problem of waiting in long queues despite of the fact they reserved the table at the restaurant. This occurs due to the informal and inefficient way of reserving the table through telephonic means. Even if the restaurant provides an online reservation system, there are chances that customer may face dissatisfaction of not getting the table of their own preference. Another aspect which acts as a hurdle for the customers is that while there are abundant reviews and ratings provided for a particular restaurant online, they have to go through all the reviews and ratings extensively as well as understand the sentiments in the reviews which wastes a huge amount of their time. The proposed system strives to combat such difficulties faced by the customer as to reduce/avoid the waiting time before the customer arrives at the place, the liberty of the customer to choose a preferred table at the restaurant and providing an efficient overall restaurant rating and review analysis.*

Key Words: Restaurant Reservation, Table Reservation, Web Application, Graphical Representation, Enhanced Rating Algorithm, Naïve Bayes classifier Algorithm, Sentiment Analysis.

1. INTRODUCTION

The dining table has always been a crucial element in any social convention since time immemorial. To maximize restaurant owners' table turnover and reduce waiting time for customers there is a need for a reliable and efficient restaurant table reservation system. Current system still involves restaurant table reservation through telephones and even the online table reservation is not that efficient which would satisfy all the needs and expectations of customers. People have to rely on verbal confirmations on the telephones and the overall description of the restaurant is not gained when customers use telephones to reserve tables. While some restaurants believe that telephonic reservations help them to maintain a connection with their customers but there are many facilities and functionalities that are not provided to the customers through telephones. When it comes to online reservation, customers are able to reserve a table but they are not able to select their seat of preference due to lack of graphical layout representation of the restaurant.

Another major drawback in the current system is that customers have to face long waiting time before dining in a restaurant because of large crowd and long queues that can lead customers with major dissatisfaction and may lead them to leave the restaurant that can be detrimental to the restaurant revenues. So, prior reservation of tables becomes a necessity under such circumstances. Another aspect considered by the customers while selecting a restaurant for dining is reading reviews and ratings prior to reserving a table. Reading all the reviews and ratings and interpreting the sentiments behind them, checking the recency of the reviews can become very tiresome and time consuming. Our system intends to solve the problem of waiting time by providing solutions by implementing effective scheduling techniques and also calculating the overall restaurant rating and analyzing the reviews by applying natural language processing and sentimental analysis to all the reviews and ratings. Customer seating behaviour is a contributing factor in restaurant's financial outcome and therefore providing a graphical layout representation of the restaurant will help the customers to select their seats in a restaurant according to their preference.

2. LITERATURE REVIEW

Customers find it convenient to make restaurant reservations online, but they also sometimes like the personal touch of telephone reservations [1]. Online reservations can increase convenience by giving customers information about reservation availability and by allowing them to make their reservation at any time and from anywhere [1]. Telephone reservation procedures vary by restaurant and by restaurant employee [2]. The online users also thought that

websites gave more information about a restaurant than what they learned by calling on the telephone [1].

It has been seen in the surveys that customers' satisfaction increases when the seats are allocated according to their personal preference in a restaurant [2]. Reservation decisions of many users majorly rely on online sources. It consists of two major components: ratings and reviews. Rating is the numerical assessment whereas reviews are textual assessment of the quality of the restaurant. Usually, when the ratings hit around 3.5 out of 5, then it is considered to be an above average restaurant [4]. This factor is crucial among customers who put more emphasis on selecting a restaurant by reading its ratings before visiting. Largely, there are two types of customers, who analyze the overall rating, while others check the sentiment of the reviews [4]. This is very time consuming and traditional calculation methods fail to cover few of the major features like final rating, reviewer's behaviour and sentiment coverage of the review [4].

3. PROPOSED SYSTEM

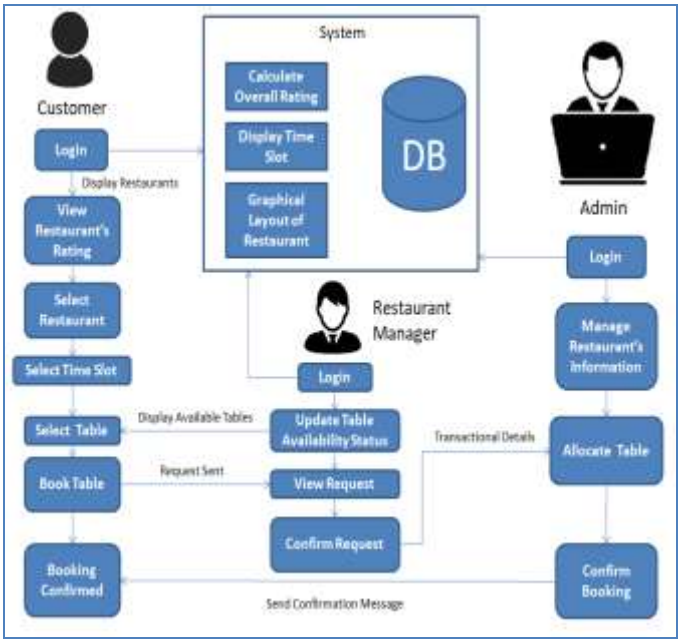

Fig.1. System architecture

Above figure shows the System Architecture of the system. The admin will first input the restaurant details to the system. The admin will have the control and access to all the information in the system such as restaurant manager's login details, seat availability status, reservation details as well as the details of the customers logged in. The restaurant manager is asked for his login details and he will provide the seat availability status to the system. The customer is then asked for his login details on the login page and afterwards he/she is able to select the restaurant. The user can then check the availability of the table, as per the user requirements, user will select the table and then confirm the seat. The confirmation message sent to the user. Reservation details are then sent to the restaurant manager after the customer has reserved the table.

Advantages of the proposed system

- Once the restaurant is equipped with the graphical system, graphical system helps analyzing the working of based data gathered on monthly basis and maximizes profit.
- Waiting time of the customers is greatly reduced/avoided using this system.
- Accurate rating and review analysis is provided to the customers for them to select a restaurant wisely.
- Customer experience is enhanced using this system.

4. FLOW CHART

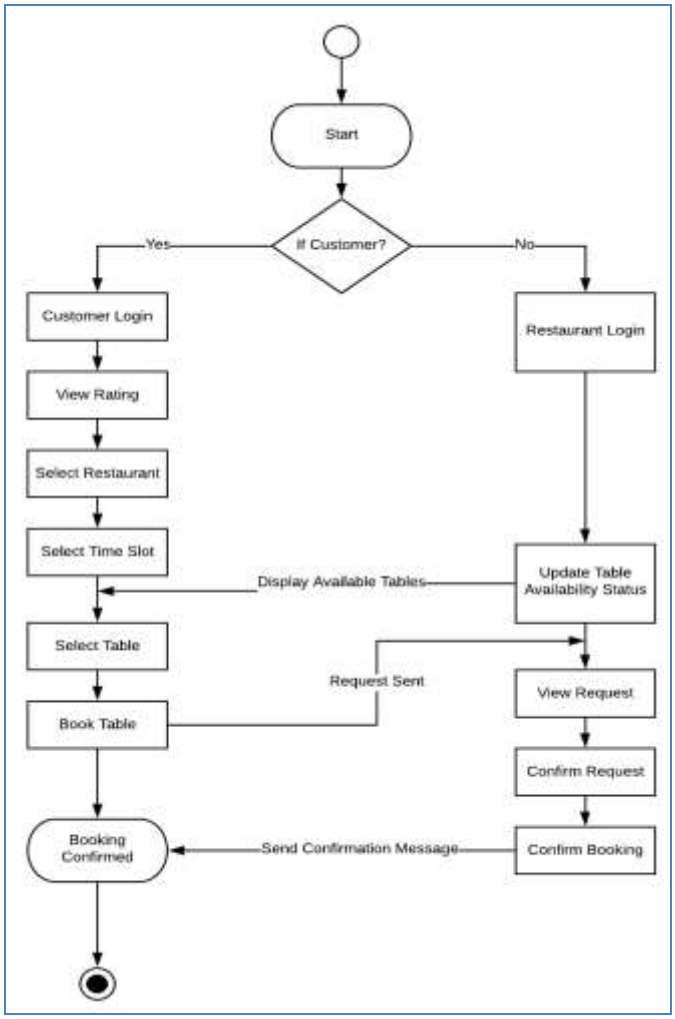

Fig.2. Flow Chart

5. CONCLUSION

When it comes to restaurant table reservation, it has been observed that efficient and time saving service by the restaurant in reserving the tables for their customers plays a crucial role in customer experience of the restaurant and overall financial outcome. This project has evaluated various ways to improve the already existing restaurant table reservation system by striving to achieve goals like providing functionalities like graphical layout representation of the restaurant tables in a way that customers can easily choose the table of their own preference. Another drawback that customers face like dissatisfaction because of waiting time in restaurant before visiting is taken into consideration and efforts have been put to eliminate it by using time-series prediction algorithms. Lastly, it has been observed that customers face difficulty in selecting a restaurant wisely despite the fact that abundant reviews and ratings of most restaurants are provided online because they need to go through all the ratings and understand the sentiment of each review in order to finalize a restaurant for dining. The new system provides an overall rating of any restaurant by using natural language processing and sentimental analysis of the reviews which will not only save the customer's time but also provide a hassle free way to select a restaurant wisely.

Future Scope

Further improvements can be done in the system in future such as pre-ordering the food right from the app prior to visiting the restaurant to save even more time. Smart ordering can also be implemented in the system. For example, the waiters in the restaurant can directly send the orders to the kitchen instead of noting the orders in a notebook. Once the order is ready, it can be served to you by any of the other waiters since all the required information about your order is already available to the whole staff on their devices.

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