

Vehicle Rental System

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Abstract: Application based Vehicle Booking deals with an internet application system designed for booking vehicles as per the wants of the shoppers at their convenience. The vehicle company as all their bookings are now managed via vehicle booking application. The vehicle booking service provided to customers they need to login the app with individual login id/phone number and password. This brings together the vehicle operators/admin and therefore the customers. Admin give the customer satisfaction the utmost priority then give sample options to book vehicle by entering details like their journey date and time, origin, pick-up point, destination and therefore the drop-off point they have to achieve. This admin deals with creating an application regarding vehicle booking and checking the provision of vehicles. The admin of the applying have a stuffed with authority to watch and allocate the driving force. For this application we are going to store some model names, their registration no, available vehicles, rent rate on the idea of per day, each vehicle driver profiles for security purpose and therefore the amount to be deposited accordingly. Machine Learning Concepts are been used for finding nearest locations of vehicles.

Keywords: Vehicle Bookings, Support Vector Machine, Random Forest Algorithm.

I. INTRODUCTION

The outbreak of the COVID-19 pandemic had a large impact on public transport. Mobility was particularly affected, since several governments-imposed restrictions, as lockdown, remote working and closure of shops. Moreover, people tried to reduce their transportation through public transport to reduce risk of contagion. Public transport particularly from the pandemic, since passenger may consider the system as unsafe and a possible source of infection.

This results the private transportation has gained significant importance. In order to minimize contact with others, many people are choosing to travel in their own cars. The usage of public transport, in contrast, has declined significantly worldwide.

Online Vehicle Booking System specializing in Hiring vehicles to customers. It is an online system through which customers can view available vehicles; register the vehicles, view profile and book vehicles. Vehicle booking service is a major transport service provided by the various transport operators in a particular city. Mostly peoples use vehicle service for their daily transportations need. The company must be a registered and fulfils all the requirements and security standards set by the transport department.

Online Vehicle Booking System is a web based platform that allows your customers to book their taxi's and executive taxis all online from the comfort of their own home or office. The platform should offer an administration interface where the taxi company can manage the content, and access all bookings and customer information. More and more Taxi companies are looking for integrated taxi booking systems as it makes life much easier for (1) The traveller - this is highly important and in today's internet age people should be able to book taxis online without having to pick up the phone and (2) the taxi company as all their bookings are now managed via an automated system which means they have an electronic record of future and historic bookings.

A Vehicle Booking/Hiring is a system that can be used temporarily for a period of time with a fee. Hiring a car assists people to get around even when they do not have access to their own personal vehicle or don't own a vehicle at all. The individual who want to hire/rent a car must first contact the vehicle hiring company for the desire vehicle. This can be done online. At this point, this person has to supply some information such as: dates of rental, and type of car. After these details are worked out, the individual renting the car must present a valid Identification Card. Most companies throughout the industry make a profit based of the type of cars. The hiring vehicles are categorized into economy, compact, compact

premium; premium and luxury & customers are free to choose any car of their choice based on their purse and availability of such car at the time of reservation.

II. LITERATURE SURVEY

1. Suraj Yadav, Samrat Pawar, Duhita Raut, Ruchi Rahi, Proposed a system to style and build a information for you-drive Application. This permits admin rents a car and additionally the person can rent his/her car in our application that may be employed by a client. By paying the money throughout such as amount of time. This method will increase customer retention and modify vehicle and workers Management in an economical way. you-drive System Application is predicated on a plan to book car online.
2. Saroj Koul and Rakesh Verma, proposed a system to identify factors chosen by a customer while choosing a car rental services by using Analytical Hierarchy Process (AHP) methodology.
3. Shruti Nogja, Omkar Jamdar, Abhishek Patel, Vikrant Patil, This was an app which tries to help people who are in search of cars near their location. It was build using android platform. The entire project was involve in the development of the app using Android Studio and Firebase
4. Md Imran Khan, Anurag Yadav, Mukesh Kumar Prajapati, portal was developed based on System Development Life Cycle (SDLC) using the waterfall model as a methodology ,the system was designed automatically to send an alert SMS to the customers about the availability of the vehicle reserved.
5. Gaurav Singhal, they designed a website that would help rent trucks, where we could simplify car and staff management. This website was user-friendly, built for visitors and registered users such that users will feel very comfortable working on it, before booking a truck customers have to create a new account or they can simply log in to the system with an existing account, registered users have access to truck booking, booking history, profile updates, sending and viewing testimonials and password reset.
6. Shivani Singh and Yasha Shetty, Builded an application which was User friendly and efficient application to provide the needful services was been build which included every necessary feature for a user to book a ride without any trouble.

III. PROBLEM STATEMENT

The purpose of the assignment is to develop a vehicle rental (CR) application. This is an E-commerce application using machine learning to enable customers to book vehicles over the Internet. The customer can input source and destination details and get the hire price for a vehicle. After obtaining the Price according to selected vehicle, the user can proceed with the vehicle booking by supplying details needed for booking. These details will then be validated and the application will email for the confirmation of the vehicle booked to the customer's chosen email address, number and then update the vehicle booking database accordingly.

IV. PROPOSED SYSTEM APPROACH

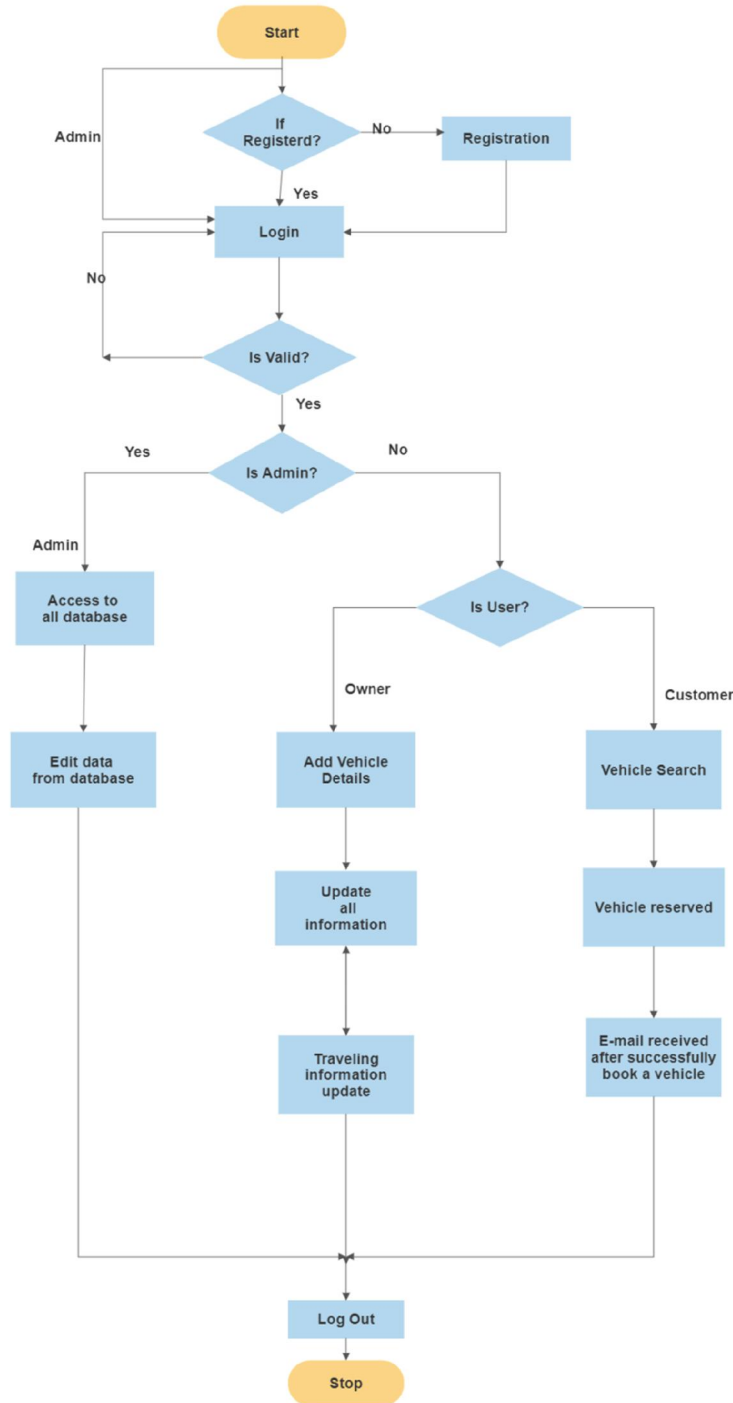
The Vehicle Rental System is designed to provide online vehicle booking/rental facility .In this system the user has to register on the portal or can login to the website by the login credentials. The system can verify if the user is authenticated user with valid details and provides access to the account.

If the user wants to book a vehicle it provides the search facility through which user can find appropriate match according to requirements provided. From the displayed choices user can select the accurate vehicle and book it .After book the vehicle user will be notified or acknowledged through provided mail id. After every booking of vehicle the customer will receive a mail which will display all the details of the vehicle which he has booked on rent through the vehicle rental portal.

If the user wants to provide his vehicle for rent then owner of vehicle can also add his vehicle on the website and give a vehicle for rent according to the required data filled by the customer who is willing to take a vehicle on the rent the portal will match the requirements with the vehicle details provided by the owner of vehicle and the details of vehicle will be displayed to the customer and customer can select according to his choice. Apart from the customer and owner there is another module which is an Admin side where all the entries or registrations made to the portal will be displayed to the admin through which admin will be able to keep eye on every entry taking place and can edit the entries give if he wants to



after every booking of vehicle the customer will receive a mail which will display all the details of the vehicle which he has booked on rent through the vehicle rental portal.



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V. SYSTEM ARCHITECTURE

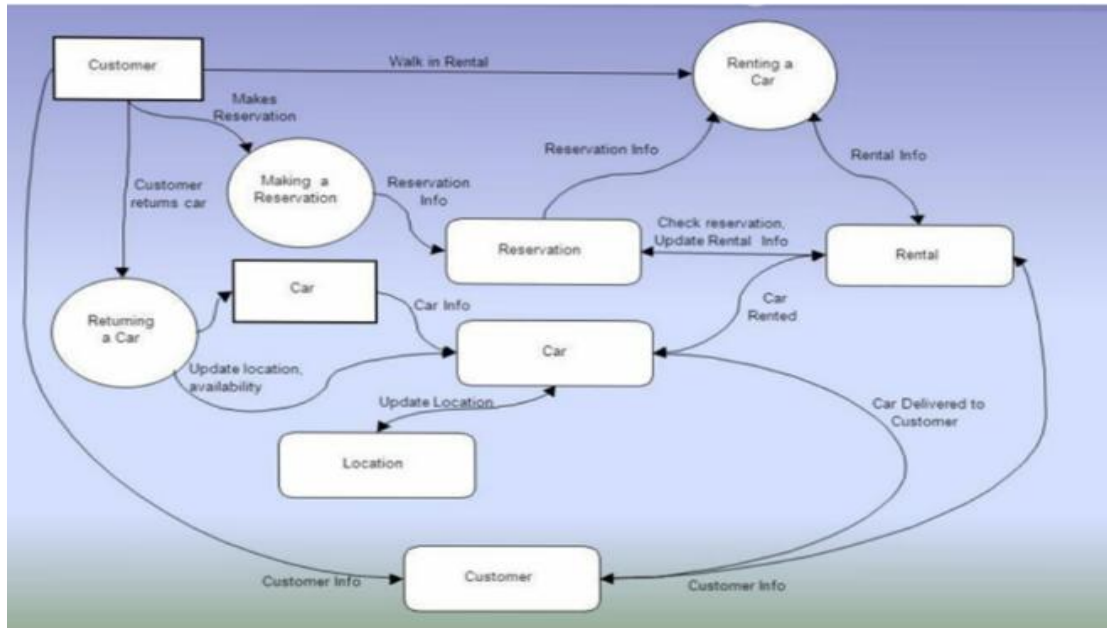


Figure: System Architecture

VI. METHODOLOGY

We here have propose a system for the vehicle booking which includes various features and even machine learning algorithm techniques are also proposed for finding the nearest cab.

- New User - He is required to create new Account.
- New Car - The Owner has to get his car registered in the system with the help of Admin.
- Rates - According to the distance between source and destination the rate are being calculated.
- Search Car - You Can Search Any Vehicle according to Model or type of vehicles Available.
- About - You Can See the Service Providers Contact Detail. (If you have any Query, I will happy to help you).

Random Forest Algorithm: It is a bagging technic. Suppose there is a dataset, and in bagging we have many base learners models and these models are called as decision tree.

Bagging technique: Suppose there are d number of records and m number of columns in the dataset (D), and initially pick up some row sample with replacement and feature sample and give it to decision tree 1 and the decision tree 1 will get trained on the particular dataset (D) and so on and now the decision tree is trained and it is able to give the accuracy and the prediction.

Suppose we are giving one record of test data to the decision tree 1 and the decision tree1 gives the output as 1 and so on with the remaining decision trees and according to bagging we have to aggregate it and for aggregating we use majority vote. If many number of models are having 1 as an output then we will consider 1 as a final output and this is how random forest works.

Decision tree have two properties –

1. Low bias : Means if we are creating the decision tree to its complete depth then it will get properly trained for the training dataset. So the training error is very less.
2. High variance : Means when we get the new test data then the decision trees are prone to give the larger amount of error. If we are creating the decision tree to its complete depth then it leads to overfitting.

So what happens in random forest, as we are using multiple decision tree and each decision tree will have high variance, but when we combine all the decision tree with respect to the majority vote the high variance is converted to low variance (means errors are less).

VII .CONCLUSION

The admin provide the feedback form to the customer can give the feedback in the application after his rides. The customer shall produce repeat business only then if the service availed and used by them creates a certain amount of satisfaction and therefore eventually raising the bar of expectation. The vehicle condition and staff behavior are aspects of a good quality business and, serve as an important metrics for evaluation overall performance of the system. Post the journey, the users are asked to fill in the feedback form. It uses the information technology in an efficient way for providing better passenger services.

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