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DOYO Rental Services

Nora Naik[1], Sagar Naik[2], Siddhant Sinai Lotlikar[3], Liyakat Ameerhamza Dafedar[4], Shivani Prabhu[5], Nikita Desai[6], Sagar Shirodkar[7]

[1, 2]*Assistant Professor, Department of Computer Engineering, Agnel Institute of Technology & Design, Assagao, Goa*
[3, 4, 5, 6, 7]*Student, Department of Computer Engineering, Agnel Institute of Technology & Design, Assagao, Goa*

Abstract: The focus of this project is to design and create a webapp for vehicle rental system in Goa. This enables the owner to rent a vehicle that can be used by a customer in order to discover Goa with the help of famous tourist spots and nearby hotels and restaurants.

This webapp Rental System helps the user to search for available cars and bikes and confirm with the owner directly. The user Interface makes the users feel very easy to work on it. The vehicle details can be added to the system or existed vehicle information can be modified too by owner. The transaction details of the vehicle rental system can be fetched by the owner, when its required. Thus, there is no delay in the availability of any vehicle information.

I. INTRODUCTION

In the modern world people trends to travel more and more places throughout their lifespans. The traveller could be international travel or a it could be in local areas like there countryside etc. Many a times people can't travel with their private vehicle, but if u consider foreign tour it is almost impossible to travel there unless anyone has their private jet. So ultimately, they have to rent vehicles from the local renters for travelling purposes. Most of the time they have to search place for accommodation as normally tour is of more than a day. Ultimately, they have to take house or room on lease, which intern increases the budget of their tour. Many people do these calculations in advance but some don't and then they tend to search for someone who can give them vehicles and rooms on lease at their budget, many a time they have to pay more due to extra charges charged by commission agents. But due to time concern they can't move everywhere in search of the vehicle and room. So lastly, they have to satisfy for whatever they get in their budget. Due to this issues people get frustrated at their tour, many people expand their budgets while some don't get their desired vehicle, which will result in loss of interest in travelling.

The "DOYO (Drive On Your Own)" app will help the tourist to get the vehicles at reasonable price as there is no middle man involved in this process. Even they'll be able to compare the price of the vehicles of different owners and can go to the cheapest one. Basically, the tourist will not have to waste their precious time in searching for the vehicle. Another application of the app is that tourists will be able to get the information about the famous tourist spots, historical places and hotels etc.

The objective of the proposed DOYO is that the users are able to search and reserve their favourite vehicles easily by contacting the owner of the vehicle through the Internet thus improve customer satisfaction level and increasing efficiency by providing better services to their customer. Therefore, the proposed web-based system has the following features: View vehicles with affordable pricing, post suggestions, comments, and complaints. Nearest tourist spots will be displayed to users like hotels, guesthouse, nearby beaches, religious place and restaurants.

II. LITERATURE REVIEW

A. Proposed System

According to the analysis done, one out of every ten people is cheated by commission agents while renting a vehicle. The agents then spoils the mood of the customers and hence some customers don't feel like hiring a vehicle. There are many rentals running their businesses, but very few get business on regular basis. Thus, the investments of some businesses are in danger. However, due to these types of issues, a webapp based system could help both the customers and owners as well. In addition, it could also promote some of the beautiful destinations of Goa along with nearby restaurants and Hotels, which will be recommended based on the content based recommendation and can also be filtered using min finder algorithm. In order to assist the customers, Chatbot will resolve some of their queries.

B. Users of Doyo Rental Services

There are 2 types of users, one is the customer who will book the vehicle and the second is the Owner who will rent out his vehicle to the customer.

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C. Owner

The owner will have to register with the DOYO webapp and he will have to login to get into the Owner's portal. The owner's portal allows the owners to update their profile, add vehicles and modify the details of the vehicles. The owner can also approve the request of the vehicle made by the customer, which makes it user friendly. The owner can upload as many car entries as he wishes to do. The vehicle can be a Car, a scooter or a bike. The owner's portal displays all the booking details along with the details of the customer who rented the particular vehicle. Fig. 1 shows the flow of the owner and customers.

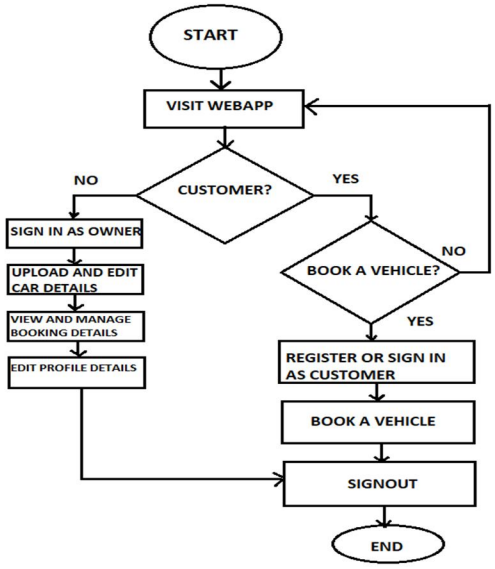


Fig. 1 Class diagram of DOYO Rental Services

D. Customer

The customers can visit the website and find popular places nearby without wasting their time into registering and then logging in back. If at all the customer is interested in booking a vehicle then at that point he needs to register and log in to book the vehicle. When he does so for the first time, he will be welcomed with a welcome coupon which will provide him some discount. The customer can choose from a wide variety of vehicles according to his needs instead of compromising at a small local rental shop with limited vehicles. The algorithms implemented in the proposed system to provide the best user experience are as follows: content-based recommender algorithm to recommend the customer vehicles within his location, min finder algorithm will sort the vehicles based on ratings and prices and coupon redemption algorithm that provides the customer with coupons at every milestone. Lastly the chatbot that will assist the customers with their queries.

E. Methodology

DOYO webapp offers customers to book vehicles at reasonable price and find destinations which are closest to them. In addition, the DOYO webapp also offers owners of vehicle the ability to upload the latest rental vehicle photo and details, keep track of the customer's vehicle reservation and make changes to the existing rental vehicle details. The following are the modules designed for the proposed system.

1) *Login Module:* The purpose of this module is to ensure that authenticated user visits the webapp. It also ensures the it accepts strong passwords which are unique from the user-id.
2) *Search Module:* This module allows users to search the destination and the vehicles in that particular location will be recommended.
3) *Owner Module:* This module will only be accessible to users with registered owner role in the database. This module allows owner to upload rental vehicle photographs and details, keep track of customer vehicle reservations, and also make changes to existing rental vehicle details.

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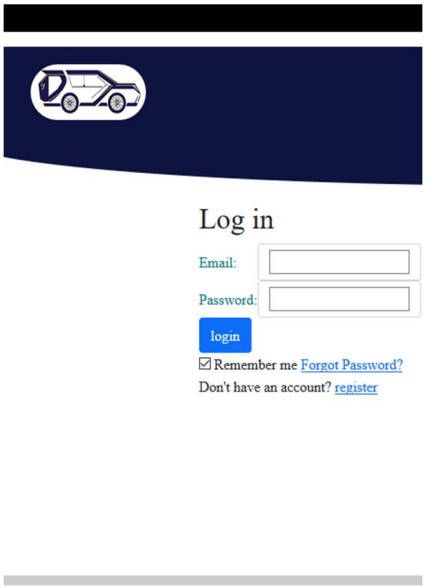


Fig. 2 Login page

F. Implementation

Majority of the users use smartphones while few use laptops so we implemented DOYO services using webapps. Webapps take very little space on the smartphones compared to native applications. Many things have been moved towards the digital platform. The users would be more than happy to rent a vehicle as time and effort saved through a webapp. Figure 2 shows login for the DOYO services page. To login into the webapp, users had to put their valid email address and password. If users do not have an account, they need to register for an account by clicking register link and redirect users to the register page. If the users forgets their password, the users are able to retrieve their password by clicking on the forget password link and the reset link will be sent to their email-id to reset their password.

Figure 3 shows the vehicle booking procedure. Once the user logs into the webapp, the user will be able to browse through the home page to view services provided by the DOYO webapp. The customer can select the services they desire, bike rental, car rental, tourist places and religious places are some of the services provided. Once the user clicks on any services, Then the user will have to select a vehicle of his choice to rent. The user can call the owner directly through the call button or place a request for the vehicle, which will be acknowledged by the owner through the approve button. Once the user receives the car the payment will be taken by owners and the documents which will be accepted as deposit for the vehicle safety



Fig.3 Customer page

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Figure 4 shows that the owner's portal. In the owner's portal, the owner will be having an option to either approve or not to approve the vehicle rent request. When user signs in as an owner, the owner will able to see all the vehicle which he has rented out along with the user details. The owner can also modify vehicle details whenever required which makes it user friendly.

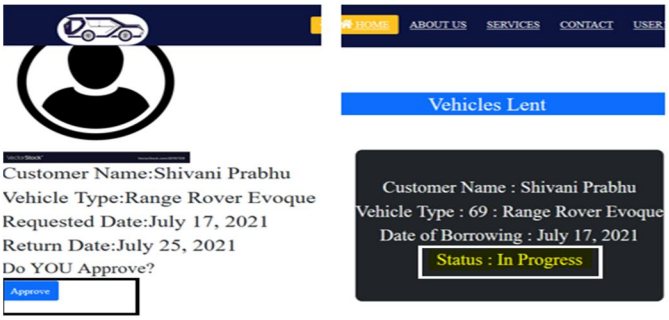


Fig. 4 *Owners portal*

G. Content based Recommended System

A content based recommender system works with data like the location that the customer provides. Based on that data provided by customer, a user profile is created, which is then used to make suggestions to the customer. As the customer provides more inputs, the engine becomes more accurate. Content-based filtering uses features of the items to recommend similar items to what the user likes, based on their previous likes. Fig 5 shows the result as Orzan beach which is closest to Vagator, when the input Vagator is given.

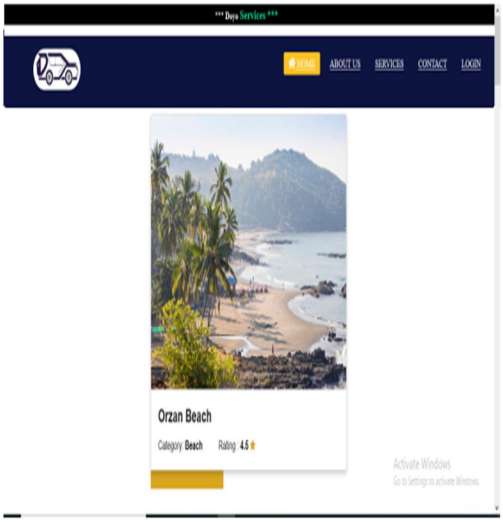


Fig.5 Content based recommender result

H. Min Finder algorithm

Min Finder Sorting Algorithm is used for sorting a list of items in a way that it will not consume large memory. We also tried to reduce the computational time that uses only one looping control structure 'for loop' in conjunction with branching control structure 'goto' that causes the logic to jump to a particular place in the program to reuse. This proposed sorting algorithm will try to overcome some basic drawbacks of conventional sorting algorithm. A lot of sorting algorithms have already been developed and these algorithms have enhanced the performance including time and space complexity, definiteness, stability etc. Min Finder algorithm will overcome some of the downsides and performs better than conventional algorithms in terms of complexity analysis, stability and computational time. Min Finder sorting algorithm finds the smallest element from the list and places it to the first position of the list by shifting elements one position to the right from the first position to the position of smallest element found. Then find the second smallest element and place to the second position using the same technique. This technique continues until all the unsorted elements place in the proper position of the array.

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The Min Finder sorting algorithm actually follow the in-place sorting mechanism where it sorts the elements within the same array without using extra memory or space and also the Min Finder algorithm is a stable sorting because it keeps elements with equal value in the same relative order in the output like they had appeared in the input. Fig 6 shows the result of min finder algorithm.

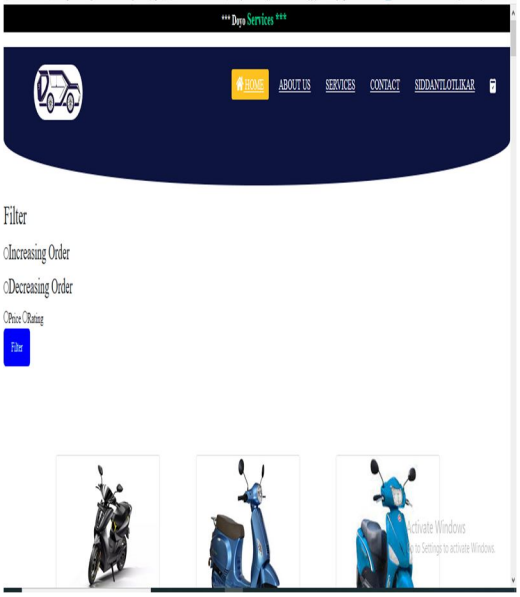
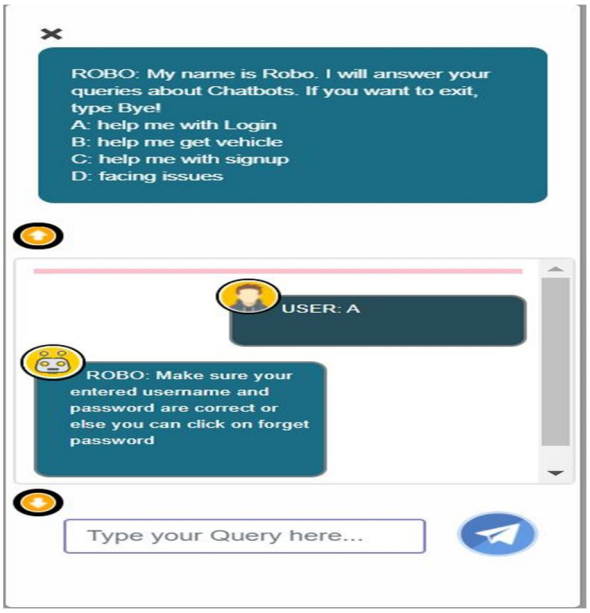


Fig. 6 min finder result

I. Chatbot

A chatbot is software used for an online chat conversation via text or text-to-speech, inline of providing direct contact with alive human agent. It is a program designed to stimulate conversation with humans, especially over the internet. Chatbot often treat conversation like they're A game of tennis, they keep the conversation going. Python is used most of the time for building all the major conversational components hosted by the web server. Fig.7 shows the result of chatbot.



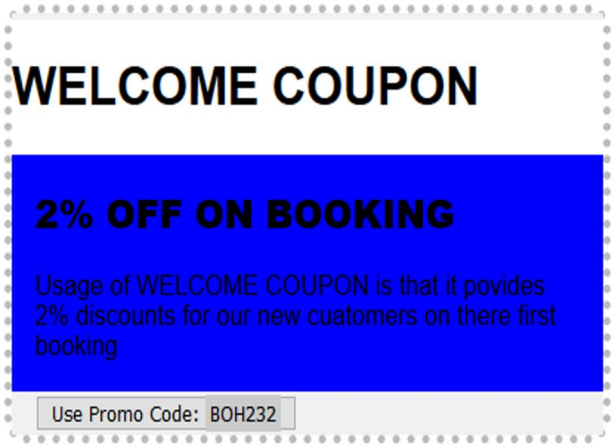


Fig.7 Chatbot Result Fig.8 Welcome Coupon

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J. Coupon redemption system

Coupon redemption system will provide some discounts to the customers. Whenever a new user will register, he will be offered a coupon. Similarly, there are few milestones that the user needs to complete in order to get future coupons. Fig.8 shows the welcome coupon that the new registered customer has received.

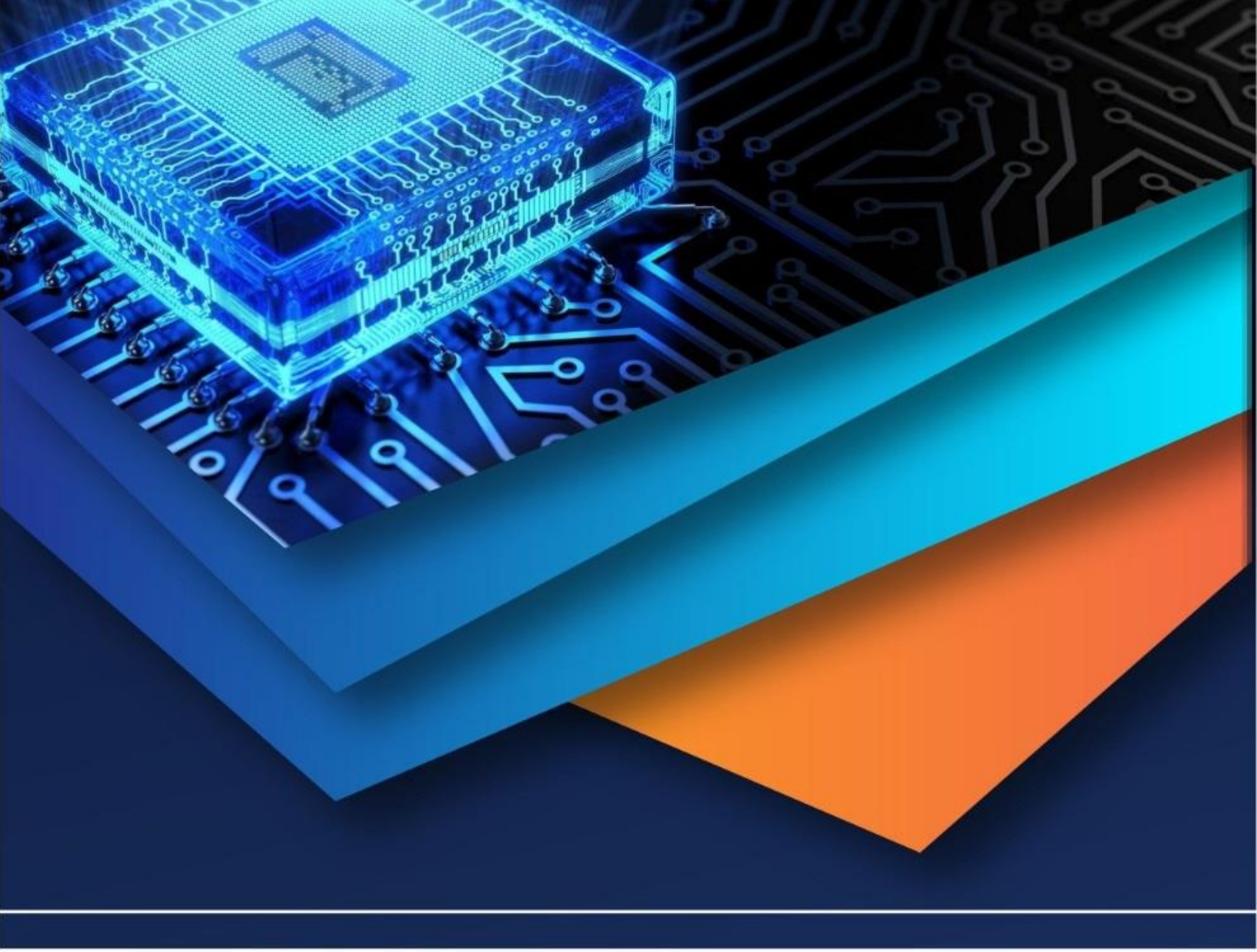
III. CONCLUSION

The motivating insight on this project is that the customers face many issues while finding their desired vehicle which is very time consuming and hence there is a need of a system where in they can search for the vehicle through a list of available vehicles and directly contact the owner for booking purpose. There will be two options to contact the owner of the vehicle either through form submission or a direct call to the owner. Our webapp also helps customers to find some of the famous places in Goa according to their current location and based on the ratings of the famous places. The owners can list their vehicles after registering and thus this system helps them to grow financially. Water sport activities and clubs etc can advertise on this system which will help them grow their business to the next level. Also, the coupon redemption system
will provide discounts to the customers based on the usage of the website or app. PWA will help to speedup site loading and has many advantages and also support platforms like IOS, and android. The chatbot will help the customers with their queries related to the system. This system will be of full benefit to the customer so that he/she can utilise his/her holidays happily. The project in future may have taxi services with GPS tracking features along with a GPS tracking for rent-a-car and rent-a-bike, which will make tracking of vehicles easy. We can make a payment portal, if the popularity of app will increase. We can add google map linkage for redirecting the users to their desired locations. We could have a common chat window where customers and taxi owners could get benefited by the availability of that taxi near the customers. We could possibly add mini video clips showing beauty of the tourist spots and religious places.

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