A Vehicle Breakdown Service Provider System

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ABSTRACT

Travelling day to day became integrated part of everyone. To travel we use different types of vehicles. A machine is not for a life time and with day to day usage and time-tested in various conditions, it is meant to witness some kind of breakdowns. Many breakdowns can be resolved on the spot by self-repairing. A lot of people are facing difficulties getting help when their Vehicle breaks down on the road. These problems are the motivations for the development of this project to help those who are in need when their Vehicle breaks down along the roads. The objective is to develop an django application that will help the user to avail help by using the application and get access to the nearby mechanic and thereby contact them.

Keywords : Vehicle Breakdown, Mechanic, Garage, Django.

I. INTRODUCTION

Travelling is a delightful experience which everyone is experienced. So we plan ahead but due to unforeseen situations there may be complications to our vehicles. The application will use the user's current location to decide the nearest mechanic workshop or their garage available and display all the remaining mechanic shops in ascending order of the distance from the user. When we take the situation of Vehicle breakdown there are different aspects which can cause problems that lead to injuries and fatalities. In such situations getting help from a person who is having in detail practical knowledge about vehicles is a life saver. The Vehicle Breakdown Service Station Locator gives accurate information about nearest garage or workshop facilities around a particular area allowing users to reduce the amount of time required

searching the mechanic garage once the incident happens. The Mechanics in our vicinity have contributed for our project and in some areas we collected their information. They provided information such as the contact number, Owner of the shop, Address of the shop, Types of services provided by them, the shop establishment year etc.In this web application if the user is accessing the application for the first time then they are needed to register or else they simply login. When the details are submitted after registration they receive a confirmation link to their registered mail address to activate their account. After Login the Dashboard appears upon which the user has to give their location as input. Based on their input the shops present around the user's location are shown. With the help of Dijkstra's Algorithm we get the nearest mechanic shop details from the current location of the user. So

the user can move along the path to reach the destination.

II. LITERATURE SURVEY

The user should give their location and details around an area are based up on the distance which are calculated by Google maps and are shown as messages. They also provide emi calculator. Before requesting for service it is checked that the user are not automated if so they are not accepted. When the user requests it is placed automatically based their needs. The needs of the customer changes based on the situation. [1]

The system begins by allowing users to sign up for the website through standard registration form and also through Gmail. After that based on user's current location it is shown on Google map. Website also gives Login and Registration and data is kept on

Firebase database which provided by Google. They use maps to observe the garages whether mechanics are busy working or idle. [2]

The system starts from the customer, where a problem arises and the related vehicle details will be noted for service and are stored. Along with these details, user credentials will be delivered to the mechanic shop in that area. The mechanic will get a list of customer service requests based on shortest distance algorithm the data displays the closest customer who need assistance first and remaining customers in that particular format. [3]

Django is a Web Framework obtained from Python Programming Language. This Framework takes care most of the tedious work so we concentrate on writing our web application without the need of starting from the scratch. For the development of the front end of the project it has been made friendly to user with better use of HTML, CSS and JS. The back end has been written in Python Programming Language. Web development with Python is popular and sophisticated because of its readability, efficiency and security. [4]

Considering AAM annual report, the numerical values describe that nearly 70% of services can be solved immediately because these are very minute problems. The small failure breakdown has settled into different groups like problems related to engine, vehicle lockout and others. This clearly interprets that the vehicles having emergency problems requires the service to be available. [5]

Shaveta Bhatia suggested "Localize Intelligence Algorithm" for the Location tracking when the user is present in a particular area. These kinds of information are hidden and are not available generally through satellite. It only displays their approximate location, for example the general area. They presented different techniques on Location Tracking along with the new approach.[6]

A Vehicle Routing is a problem which changes as the time progresses where new request for information is received and the information should be dynamically added into an updating scheme. The Disruption management is first seen for flights the similar can be applied for project scheduling, production planning, and transport vehicles. These problems that must be solved in real time, such as dial- a-ride systems, courier services, taxi cab services and emergency services. So when a breakdown occurs with a vehicle new routing should be generated. [7]

They first used the social network belonging to vehicles terminology in RoadSpeak. They took consideration about the vehicular network system for human socialization from entertainment actions, utility, and emergency messaging point of view. They narrate Road Speak which is a voice and a chat application where vehicle users from any location, time, route, and interest can engage in interactions. [8]

In day to day life applications perform transactions and give real-time information. Creating these web applications requires creative thinking way for designers, advanced and sophisticated tools, and a

variety of options to choose. Here the main concept is around an open source web development framework Django. Radon and Pylint are the metrics used for measuring Django Web Frameworks code quality. By using the same process we can measure the metrics for other web frameworks. [9]
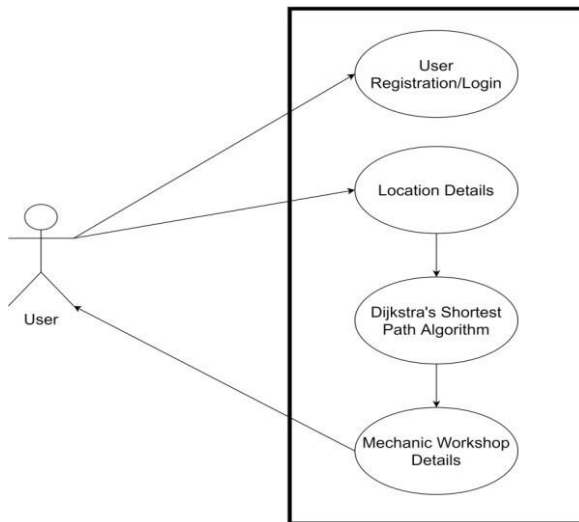
III. III. PROPOSED SYSTEM

A. Design Methodology

Fig. 1 UML Representation

In Figure 1 the actor in this context is a user, the one who is having issues with the vehicle. Only the registered users can access this application and its features. The maps used for this project are taken from mapbox. This is used for customizing the map so that we can provide better navigation and search experiences.

When the input from the user is taken the mechanic shops which are present around the user's proximity are shown. Simply, those are the shops that are present approximately five kilometers around the user's location. Along with these features the user is informed about the nearest hospitals, restaurants and other well known places.

The Dijkstra algorithm is used for calculating the shortest path from the user (source) to the nearest mechanic shop (destination) here distance to each shop is calculated and the shop having least distance is produced as the output and path connecting source to destination is plotted.

B. Algorithm

With With the help of Dijkstra algorithm, we continuously calculate the shortest path between two points having multiple paths. The Algorithm contains of the following steps:

1. Firstly, Initialize the cost of all nodes of the graph to "infinite"; and we take the start node value to be 0.
2. Secondly,We pick a node which is not visited and also having the shortest distance based on the start node.
3. Now we select the path which is having least distance between the start node and end node which is the optimal path.
4. Then we calculate the distance from the start node to the end node with the help of weights present on the edges.
5. We then compare the values if the value which is calculated in step 4 is smaller that the current value then we update the values. This is a update step and referred as relaxation is the main concept of Dijkstra.
6. If we update the value then the node is taken into consideration along the path.
7. Finally, We repeat the steps 4 to 7 until we find that all the nodes are having a permanent distance.
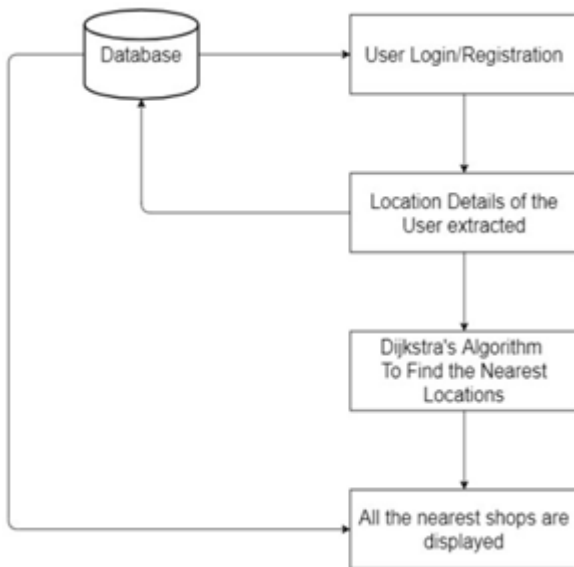
C. System Architecture Design

Fig. 2 Architecture of the System

In Figure 2 the architecture of the system is mainly divided into three parts they are

User (Front-End):

The client side of the web app mainly concentrate on getting new users to register, if user is already registered they need to login and provide the location input details and thus the nearest mechanic workshop/garage details are presented.

Logic:

The main logic of the application is by using Dijkstra's algorithm to find the nearest mechanic garage. By calculating the distance of the user location to all the workshop details and presenting the shortest distance workshop as the output.

Database (Back-End):

The database contains all the details which are used to retrieve such that the mechanic workshops or garages address, contact details etc. The logic uses these details to calculate distance to the nearest shop and also the user registration information is stored as well.

IV. RESULT

Fig.3. Web Application Landing Page

When the project is running the landing page is loaded first this is shown in Figure 3 here the registration, login and documentation are present.
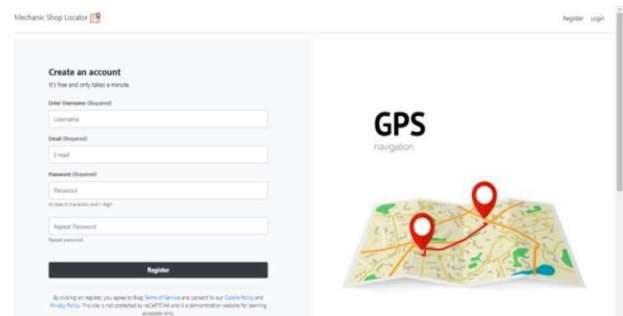

Fig.4. Application Registration Page

When the user needs to register the registration page is clicked. It is depicted in the Figure 4 here validation is performed.

Fig.5. Application Login Page

If the project is accessed by an existing user they simply login. The login page is shown in Figure 5

Fig.6. Application Dashboard User Information

When the user gives input it is shown on the map by placing a blue pin on the respective location and mechanic shops around the user's location are displayed. This is displayed on the Figure 6
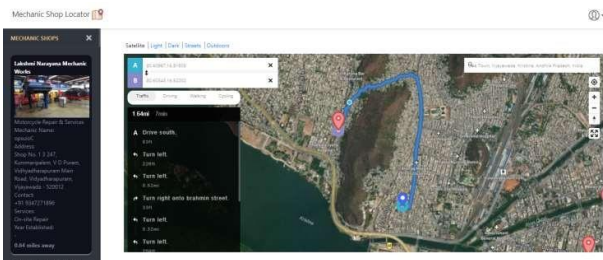

Fig.7. List of Arranged Mechanic Shops based on User location (Left Navigation bar)

After displaying the mechanic shops in the user's vicinity the shop with the least distance is calculated by using dijkstra' algorithm from the user's location and path is plotted. This can be observed from the Figure 7 and we can see that in the left navigation list of mechanic shops are arranged in the ascending order.
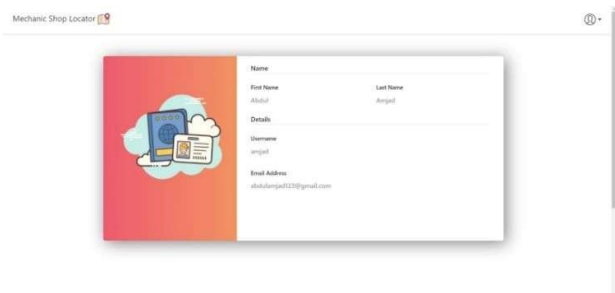

Fig.8. User Details

The user account information can be verified by using the details section. This is shown in Figure 8
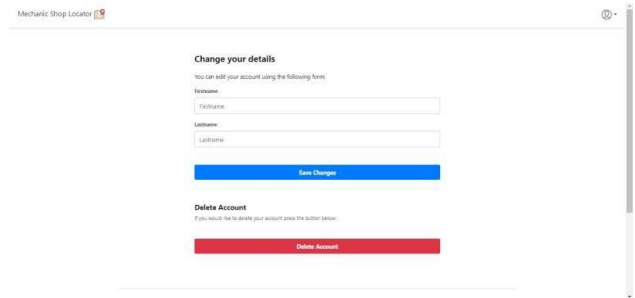

Fig.9. Update/Deleting Account

In the Figure 9 it is showing when the user needs to update their personal information they can access this Change the details section.
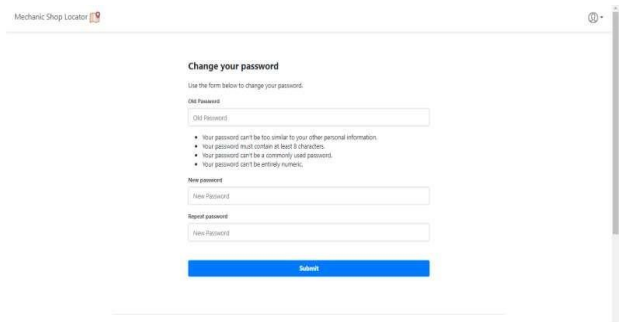

Fig.10. Change Password Form

In the Figure 10 there is a form to change the existing password when the user feels that their password is not secure.
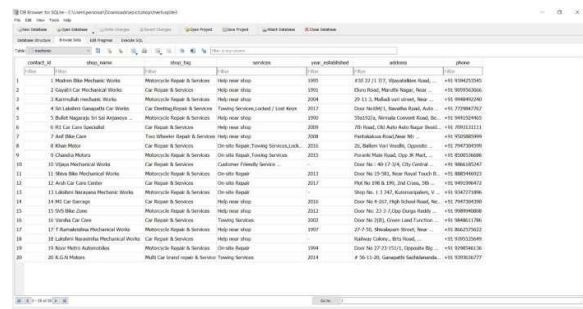

Fig.11. Database Details

The details that are stored in the database are shown in the Figure 11. These details are used for displaying the information on the map.

V. CONCLUSION

In conclusion, Breakdowns of cars and bikes have different triggers. The vehicle may or may not need to be towed, depending on the nature of the problem. In such an ambiguity, the user may be in a dilema and dosen't understand what needs to be done and few people don't even know the location mechanic. A user who does not possess any mechanic work shop's contact number can only rely on the help of others passing along with them and there is a threat of being scammed. The development of this Vehicle Breakdown Service Provider System dominant centre of attention is to overcome the flaws of applications which are in the market.

VI. REFERENCES

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