

ANDROID APPLICATION FOR AUTOMOBILE REPAIR SERVICES

Atharv Jangam¹, Jitendra Choudhary², Sandesh Kale³, Pratik Zimbire⁴

¹⁻⁴(B.E, Dept. Of Computer Engineering, Bharati Vidyapeeth college of engineering, Lavale, India)

Asst Prof. Pramod Pandurang Salunkhe⁵

⁵(Dept. of Computer Engineering, Bharati Vidyapeeth college of engineering, Lavale, India)

Abstract - While travelling if a traveler's automobile gets breakdown due to some reason, issues faced by them are lack of knowledge of nearby garages, surrounding area unknown to them, breakdown in deserted area, issue of reliable mechanic (expertise level). To overcome this problem, we have come up with an Android application which uses GPS to locate traveler's location and accordingly show all nearby garages. Users can put their issue of breakdown (if known), on the application. Accordingly, one of the garages would take the job and go to the traveler's location and repair their automobile. Once the garage delivers the service to the customer, they will get a bill through the application. The project is developed using Android Studio and google cloud firebase which includes a variety of custom tools and libraries helpful to develop Android based mobile/tablet applications such as database (Fire-store NoSQL), Google maps support, rich GUI and UI components, etc.

Key Words: Cloud computing, Global Positioning System, NoSQL database, Fire-base.

1. INTRODUCTION

Almost every man now owns a vehicle and there are always chances for something going wrong with the vehicle which results in a breakdown. These days, the services accessed from location-based applications is one of the most relevant and commonly explored. There are many applications which make use of google maps and GPS to explore the neighborhood and give services to the consumers, E.g. Food delivery, Grocery shopping, etc. But there are very few and limited systems available to solve the problem of vehicle breakdown. In this project we are going to develop a system to overcome this problem in an effective way. To do this we are developing an Android application which will help people easily, effectively and in minimum time. In this application, garages are used, searching by radius. The user will search for nearby garages to his location. The garages will store their shop's location in the database. Google Maps API will be used for working of the project.

1.1 PROBLEM STATEMENT

To develop an android application for auto-mobile repair services. Users can locate and apply for service from a nearby garage. Garages can see all the requests and location of the users. Garage can provide a bill via application to the users once serviced.

2. EXISTING WORK

By studying the previous research paper and surveying some garages and repair station we get to know there are fewer systems exist but not many android applications are there for vehicle services. There is a web application which doesn't provide the chatbot or billing module for user. We will be providing this module to make payment easier to do and will help to save the time. Not necessary to carry cash everywhere there are card and UPI payment made available for that. To minimize all the drawbacks from the previous system of Automobile servicing, this system reduces complexities in the process of finding garages in emergency and difficulties in management of services of automobiles. Automobile servicing becomes easy through this application. With the help of this application car owners can easily locate all the nearby garages in case of car breakdown in an unknown location. This application aims at providing the best way for managing automobile servicing.

3. PROPOSED SYSTEM

The system mainly consists of three major parts:

1. User
2. Garage
3. Admin

3.1. USER

Sign up page is shown in screenshot 2 with user data. Once user will sign up, user will have to enable its permission for location access to track his location. Whenever user operates the application, the application connects to the service centers on the fire-base storage based on the Geo-location. After that Google Maps API is used by the application which will help to locate nearby registered service centers within the radius of the user's location. For example, after giving location permission the user will be able to see all nearby garages which are already registered on the application. Whose data is already on our database with all the details services provided by that garage owner from those vehicle service center users can choose the service center and services he wished to get from them. In now days in location-based applications is trending. So, to save time and efforts this application will help. Due to this kind of location-based application human lifestyle improved. Due to this kind of

application user valuable time gets saved in unknown areas. He can get the services anywhere any-time according to his needs. It's easy to get the details about the car services.

E.g. if user want to get his vehicle painted so he can just search paint in the search box and all available paint services service provider will get fetched from our fire-base database and accordingly results will be given then user just need to request the service center.

3.2. GARAGE

Registered owner as shown in screenshot after filing location details system updates their location details in the database daily. This location data every day saved in database. An admin will handle the adding and deleting or modification in details of service centers. For example, a vehicle service center updates his/her changing locations daily. So, the database saves their most current location. If a recipient sends out a question within the radius of the service center site, the information stored in the firebase storage is ready for display as shown in screenshot

3.3. ADMIN

Admin is monitoring body here he will be handling the CRUD operation on the database. Only if necessary, then only he will interfere with the system. He will monitor the billing transaction which is going to handle by the cloud.

4. PROPOSED WORK

- Creation of GPS based Android Application.
- Using GPS system fetches the location of user and with the help of garage database displays nearby garages.
- System is made such that bookings can be made through available list of garages.
- AI chatbot will be integrated with system. To help user 24*7.
- After providing the service to user according to its pricing and extra work that is done on the vehicle if any the system will generate bill on its own. One copy will be sent to user for payment and all the options are made available to user to make payment.

4.1. METHODOLOGY

It comprises of six modules namely Administrator Module, User Module, Garage Module, Billing Module, Chat-bot Module and GPS Module.

A. Administrator Module:

In this module admin can use CRUD operations on garage database and monitor it.

B. User Module:

In this Module User can sign up, login, search for nearby garages, select a garage, select services. This module is build using Fire-base and Android Studio. Connections between fire-base and User are handled by JSON.

C. Garage Module:

In this Module Garage owner can sign up, login, enter garage details and see requests and location of customers. It is built by fire-base and Android Studio. All connections between fire-base and Garage is handled by JSON.

D. Billing Module:

In this Module depending upon the entered details of work done by garage a bill is generated and given to customer for payment. This Module is created by firebase CLI and stripe API.

E. Chat-bot Module:

In this Module user can interact with AI chatbot to solve any queries. This module is implemented using Amazon Lex.

F. GPS Module:

In this Module Google maps API will be used to locate the location to user and garage, find nearby garages around user and display live location of garage mechanic.

4.2. SYSTEM ARCHITECTURE

The system mainly consists of three-part customer side, garage side and one is admin side. Whenever user need assist then using google map API location his/her request gets into our fire-base cloud. With the help of Service Request Manager and Real-Time database of fire-base cloud user will get the list of nearby garages and he can check the services offered by them. Garage will get the request if user demands. If garage owner accepts the request, then they can

communicate through message or via call. After providing the service to user garage owner can fill the details of services he has done on vehicle in our app and accordingly system will generate bill and send one copy to user. Admin will be the monitoring body. He will do the update, delete, create operations according to the needs.

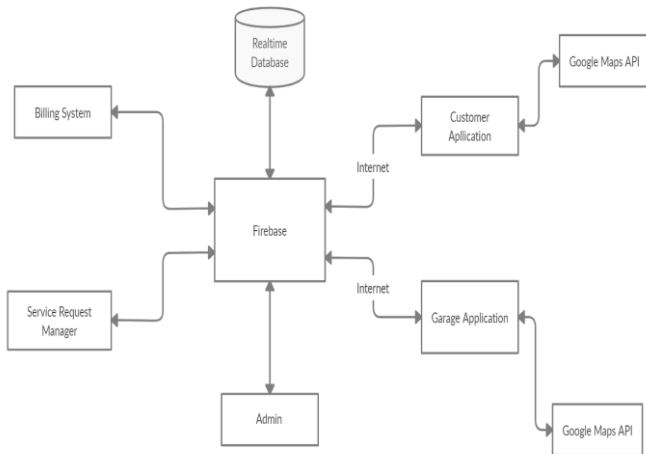


Figure 1 System Architecture

5. DATA FLOW DIAGRAMS

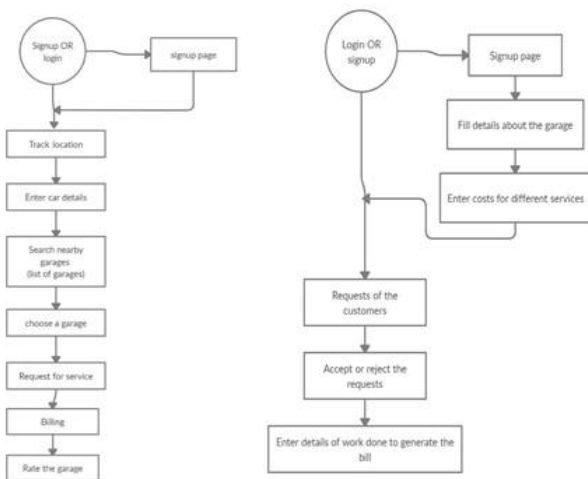


Figure 2 User and Garage view

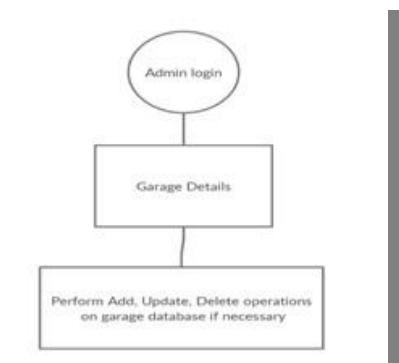


Figure 3 Admin view

6. MAJOR FEATURES

6.1. AMAZON LEX CHATBOT

Amazon Lex is a service for building conversational interfaces into any application using voice and text. Amazon Lex provides the advanced deep learning functionalities of automatic speech recognition (ASR) for converting speech to text, and natural language understanding (NLU) to recognize the intent of the text, to enable you to build applications with highly engaging user experiences and life like conversational interactions.

By using this Amazon service Chat bot is integrated with system for user to get help 24*7. This chatbot will guide user through app and provide all the necessary help.

6.2. ADVANCE BOOKING

User can made booking through application for his/her vehicle. No need to go there and wait for your turn if garage is providing the pick and drop service then user just have to made booking as per his convenient. After that garage will do the needful.

6.3. INVOICE SYSTEM

Basic services details and prices is already provided by the garage owner which is saved in the database so as per the user requested service charges and details will be added to bill and if there any extra work done on the vehicle than the basic services the Garage user will fill the details of services provided by him such as cost of service, time taken and any extra work. An invoice will be generated based on all services provided by garage by the cloud. This invoice will contain amount which is to be paid by user with all tax included. After getting bill all the methods are option are made available to user. All the payment method will be safe and secure. This payment methods are using UPI, Debit card, Credit Card, or cash on spot.

7. APPLICATION INTERFACE

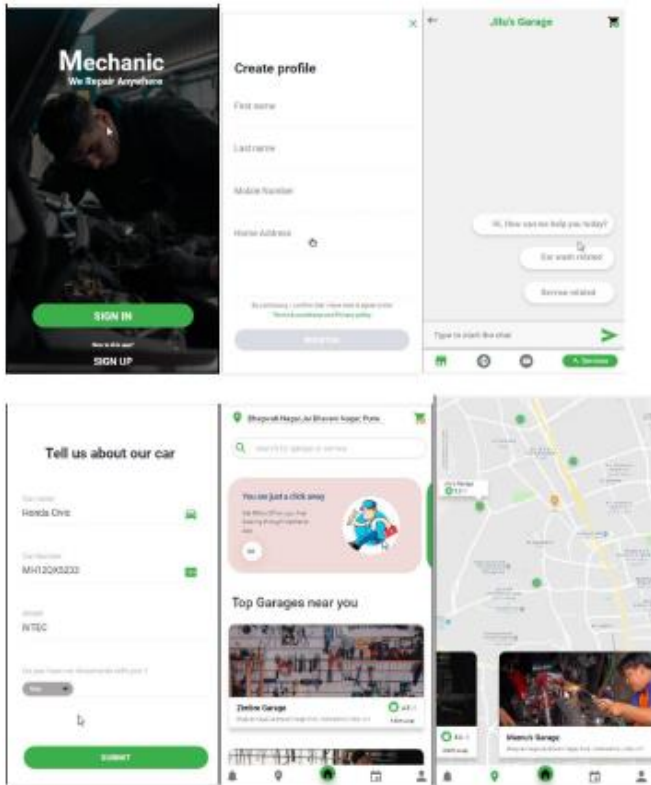


Figure 4 Application Interface Screenshots

8. APPLICATIONS

1. In case if vehicle breakdown in unknown areas, car owner can get easily help that's the motive to build the app. By using app, he can make sure that there will not be that much time wasted in search of garage.
2. It will also enable option for car owner to get any kind of vehicle servicers on fingertips.

E.g. car owner can ask for washing service, or usual checkup from nearby garage by selecting service from menu of garage services. If pick and drop is available, then he can ask for that.

3. Our database will take care of bill generation so no paper as well as time will be wasted in that. Vehicle owner can see detailed bill about the services and pay according to him like he can pay by doing online transaction or he can pay in cash according to availability.
4. Sara is the chatbot we are providing in app so she will help in understanding the app to user and its made available 24*7. And if still there is some problem then there is customer care service that will help user out in that situation.

9. CONCLUSION

The purpose of this project is to provide car or any other auto-mobile servicing system more effectively than the existing system. There are some disadvantages of the existing service center management systems. Those disadvantages are overcome by this Automobile repair services application. And it can be made handily available to every person. Previously people could not get help or locate the service centers conveniently in case of their car breakdown or any other emergencies. Thus, this android vehicle repair application is proposed to assist people and fulfill their requirements easily.

10. FUTURE WORK

In future, we hope this system helps users to easily find nearby garages for Automobile repair services.

This work can be extended by adding functionality such as:

1. Vehicle health monitoring system:

In future we can add this vehicle health monitoring system in app so that user can check its vehicle health and will know if any minor problem comes so that how user time will be saved.

2. Marketing platform:

Like Amazon, Flipkart we can extend our work and can make marketing platform available for retailers and automobile parts provider from where they can directly sell or purchase the automobile parts on their own.

3. Towing providers:

As of now there is no towing service provided if that garage which is selected by user provides then only, he can ask for that service but in future we can integrate with towing service provider so that user can directly contact with them in case of emergency and ask for service.

4. Medical help:

In case if any accident situation, on the app by user location we can make available some nearby hospital contact by which user can ask for medical help. That will be some help for vehicle owner and in less time medical help will be made available.

REFERENCES

- [1] Prof. Shilpa Chavan, "Auto-mobile Service Center Management System", International Journal of Scientific and Research Publication, Volume 4, Issue 3, March 2014 ISSN 22503153.
- [2] Bheema Yugandhar Reddy ; Boorla Sairam ; R.M. Gomathi ; K. Nithya, "Tracking of Auto-mobile Service Centers Using Android Application (Visit Mechanic)", Proceedings of the International Conference on Intelligent Computing and Control Systems (ICICCS 2020) IEEE Xplore Part Number:CFP20K74-ART; ISBN: 978-1-7281-4876-2.
- [3] Ankit Choudhari ; Balu Gobade ; Akshay Khatale ; Anand Narnaware ; Prof. S. B. Jadhav, "Vehicle Repair and Puncture Services App ", International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE) Vol. 6, Issue 5, May 2018 ISSN(online): 2320-9801.
- [4] G. Rajalakshami ; Y. jeya Singh, "An Android Application for Location Based Car Service Recommendation", Asian Journal of Applied Science and Technology (AJAST) Volume 1, Issue 3, Pages 145-148, April 2017.
- [5] Hanamant B. Sale ; Dharmendra Bari ; Tanay Dalvi ; Yash Pandey, "Online Management System For Auto-mobile Services ", International Journal of Engineering Science and Computing, February 2018.