

APPLICATION OF VEHICLE BREAKDOWN ASSIST MODEL

Rakshit Sadanand Bhat

VI Sem, MCA

Department of MCA

RV College of Engineering,

Bengaluru

Dr S Anupama Kumar

Associate Professor

Department of MCA

RV College of Engineering,

Bengaluru

ABSTRACT

Today most of people use their own vehicle for travel. While traveling most of the drivers will face the trouble as vehicle breakdown on the road, thus causes in wastage of the user's valuable time. That is a worst experience the driver has to face. When the vehicle breakdowns on the road, the driver has to search for mechanic and have to see a spare-part shops near to their location. At that time if driver unable to search a good mechanic they have to ask for someone's help, but that may not be a good technical help for driver. This paper discusses about the application where users can avoid all the On Road problems and have a peaceful ride.

The On Road application is an Android application which registers the mechanics and users where the data is stored in the real time in firebase realtime database. Registered users can login during the vehicle breakdown and can find the nearby mechanics. Notification will be sent to the mechanics and those who accepts will get the details of user along with location vice-versa. It will also provide the user a functionality to track the live location of the towing vehicle with the help of geolocator API. Emergency calling module will dial to nearest hospitals and police stations during occurrence of the accident.

Keywords: API-Application Programming Interface, SDK-Software Development Kit, NoSQL, Roadside Assistance, Geolocator

This paper is divided into Introduction, literature survey, proposed model and conclusion.

I. INTRODUCTION

“On Road Assist Model” is an android application for On-Road Vehicle Breakdown Assistance that can search a mechanic for assistance based on the user's location. To build the above application Android Studio is used for Android app development, dart and java for frontend and backend development and Firebase realtime Database is used to store and sync data with NoSQL cloud database. Data is synced across all clients in realtime, and remains available when the app goes offline. When cross-platform apps with Android and JavaScript SDKs are built all of the clients share one Realtime Database instance and automatically receive updates with the newest data. This project aims to assemblage of modules with which this automation can be carried out and they are emergency calling system for hospital where a call goes to the hospital during critical situation, another module is of police station when an accident occurs emergency call

will be dialled to the nearest police station and the last module deals with live location tracking using geolocator API.

This android application will allow users who are travelling on their own to get roadside assistance, since the application provides functionalities such as emergency dialing to nearest hospitals and police stations during occurrence of the accident, it will also provide the user a functionality to track the live location of the towing vehicle when the vehicle breaks down. Hence this application lets the users to have a stress-free travel time.

II. LITERATURE SURVEY

Sai Chand , Emily Moylan , S. Travis Waller and Vinayak Dixit [1] discussed about what are the reasons for the vehicle breakdown and how many vehicles got broken down in the middle of the road and collected the traffic incident dataset covering 4.5 years in Analysis of Vehicle Breakdown Frequency.

Miss. Harsha Supare, Miss. Kanchan Yadav, Miss. Divya Solav, Mr. Aniket Budhbaware, Mr. Sahil Daronde [2] proposed a method for locating the Breakdown Service Station. The system connects Car Repair Service Providers and the Public in on road vehicle assistance system.

Bheema Yugandhar Reddy, Boorla Sairam, R. M. Gomathi, K. Nithya [3] explained the android application which can be used to track down the mechanic shops or automobile service centers in tracking of automobile service centers using android application.

Akhila V Khanapuri, Anagha Shastri, Gareth D'souza, Shannon D'souza [4] surveyed the number of cars on road, number of road accidents and vehicle breakdown cases recorded as well as finding effective ways to solve the problem in On road a car assistant application.

Ankush Das, Nisarg Gandhewar, Devendra Singh Nehra, Mayank Baraskar, Shubham Gurjar, mubbshir Khan [5] surveyed on vehicle tracking services which discusses about mobile application that provides the user to interact with nearest mechanic when needed and to provide services to the user with the help of local mechanic in less time.

Tanusri Dey, Upama Bhattacharjee, Sanjana Mukharjee, Tripti Paul, Rachita Ghoshajjra proposed [6] Advanced Women Security Application which discusses about alarming neighbours by loud noise, autodailing, finding location of nearby police station and hospitals etc. it is developed in Java development kit using Android Studio. Which focuses on the emergency calling system.

Abusayeed Topinkatti, Deepa Yadav, Vikram Singh Kushwah, Amrita Kumari [7] proposed about android phone to provide a solution which can be used to precisely detect the accident spot and to send the emergency notification to the nearby hospital's ICU and to the victims relatives in car Accident detection system using GPS and GSM.

G.M.Djuknic, R.E.Richton published Geolocation and assisted GPS [8] which discusses about how mobile users will gain the ability to get the local traffic information and detailed directions to gas stations, restaurants, hotels and other services. Police and rescue team will be able to quickly and precisely locate people who are lost or injured but cannot give their precise location.

W. Wang, H. Chen, M.C. Bell [9] proposed an analysis of vehicle breakdown duration on motorways. The distribution of breakdown duration was shown to be statistically significantly different for three categories of vehicle type and were shown to conform to a Weibull distribution. A predictive vehicle breakdown duration model was developed, based on fuzzy logic.

Prof. MS. Pranita P. Deshmukh, Mr. Yash S. Puraswani, Mr. Aditya D. Attal, Mr. Prasad G. Murhekar, Mr. Vivek A. katole, Mr. Vidhitya M. Wankhade [10] discussed about vehicle breakdown during journey, it is very difficult to search mechanic in unknown place. Therefore, to sort out this problem proposed a mobile as well as web based assistance system.

From [1-10] , the various technical details to build the system is understood and the important modules that can be developed is studied.

The next section gives the details of the proposed model.

III. PROPOSED MODEL

When the vehicle breakdown occurs the driver have to see a mechanic or the repair shop. The driver has to ask for help from the people. If driver using this OnRoad Assist Model user can find mechanic basis on user location easily. The user logging in to the App after User Registration. Then User current location track by GPS. Then user location goes to DB and match with the mechanic who registered with the App. There is shown mechanic that nearest to user location. Along with that user can search spare part shops basis on the user location. There is user can make star rate to mechanic after the repair done. This is help to mechanic that they are rated by their client. That is help to burnish the mechanic skills. The details of the functionalities are listed below:

Phase 1: It is a process for adding Registration of Mechanic, user and Spare parts. Mechanic details are stored in the database after the validation. All the details of user and mechanic is stored in real time.

Phase 2: It is an API for Live Tracking. User registration and requisition for the mechanic. System will pick the location using geolocator API. It will live track the mechanic and user vice-versa.

Phase 3: It is the process of finding the nearby spare parts shop. For searching the nearby spare parts shop during the time like damage of any parts. It will search for the nearby registered spare parts shop.

Phase 4: It is a process calling system during emergency. Input can be given by Emergency call button. It will call the nearest hospital or police station during emergency situation like accident.

The following figure-3.1 describes the proposed model.

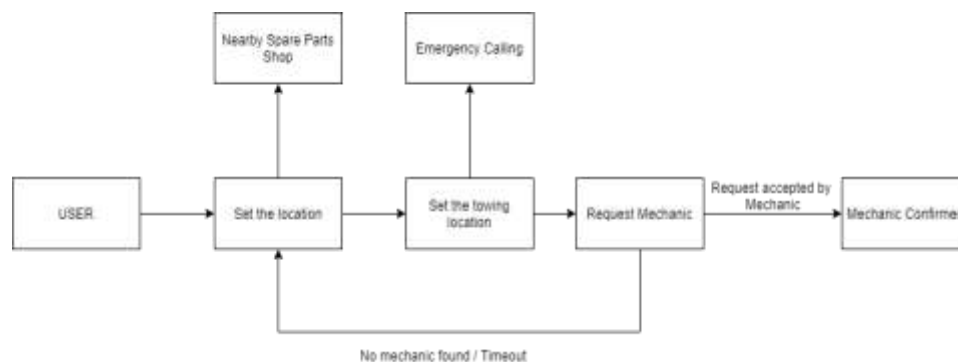
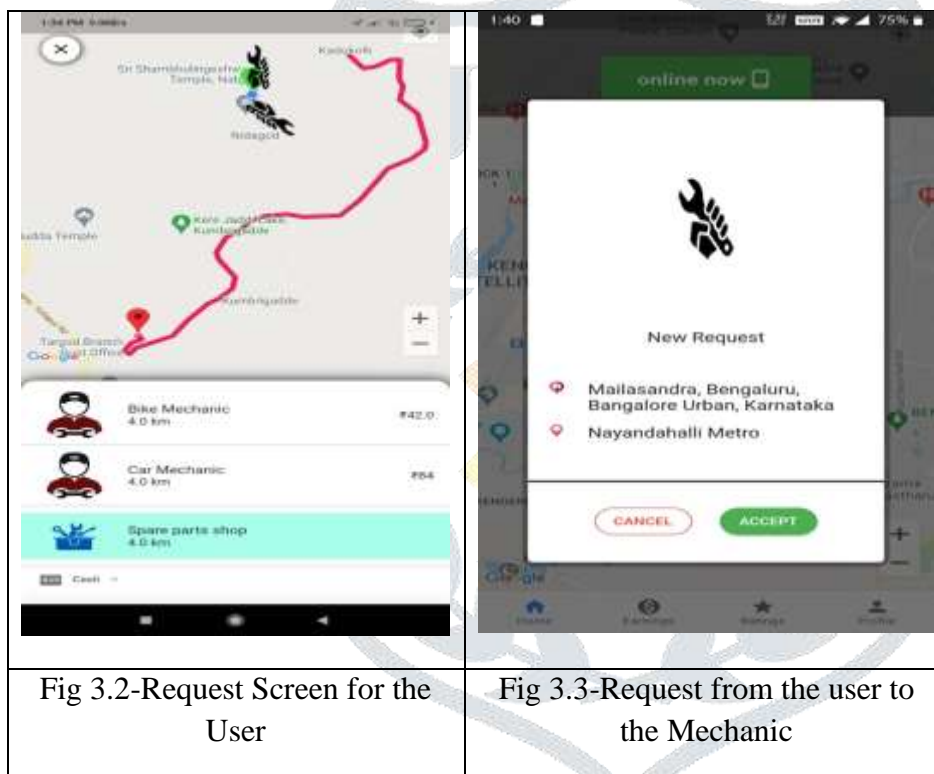


Fig 3.1-Model Workflow

Android Studio which is the official IDE for Android application development, is used to create the application. Dart which is an open-source, general-purpose, object-oriented programming language is used. The Dart programming is mainly focused to create a frontend user interface for this mobile application. It is under active development, compiled to native machine code for building mobile apps, inspired by other programming languages such as Java, JavaScript, C#, and is Strongly Typed. It supports most of the common concepts of programming languages like classes, interfaces, functions, unlike other programming languages. To Store and sync data Firebase realtime database has been used and these data is synced across all clients in realtime, and remains available when the app goes offline. Basically it is a cloud-hosted database. Data is stored as JSON and synchronized in realtime to every connected client. When the build applications with Android and JavaScript SDKs, all of the clients share one Realtime Database instance and automatically receive updates with the newest data. These are the important technologies used in the application.



The figure-3.2 shows how the request screen will be shown to the user and how the request can be made and the figure-3.3 will show the request notification from user to the mechanic. These 2 figures shows the process of sending request and accepting it.

IV. CONCLUSION

In this work, how the driver can be assisted during the vehicle breakdown by a mechanic is explained. During the vehicle breakdown driver has to ask for help from the people. If driver is using the OnRoad Assist Model android application user can find mechanic basis on user location easily. Driver can get the mechanical help directly and easily. When the breakdown occur, user can fix their vehicle immediately. They won't waste their time on the road. That help to save their time. Along with that it can track the location and can fetch the mechanics details with help of geolocator API. During the emergencies it is also helpful to contact the nearby police station or the nearby hospital. This approach makes the user experience very easy and performs better than the existing system in crucial times.

V. REFERENCES

- 1) Anon.,2019.Youtube. [Online] Available at: <https://www.youtube.com/watch?v=E1eqRN TZqDM&t=551s> [Accessed 15 02 2020].
- 2) Anon., 2020. Git Hub. [Online] Available at: <https://github.com/> [Accessed 20 02 2020].
- 3) firebase,2020.Firebase Documentation. [Online] Available at:<https://firebase.google.com/docs/auth/android/start> [Accessed 03 02 2020].
- 4) Florian,e.,2017.GooglePatent.[Online] Available at: <https://patents.google.com/patent/US20190171758A1/en> [Accessed 17 January 2020].
- 5) Masahiko, e., 2000. Google Patents. [Online] Available at: <https://patents.google.com/patent/US6972669B2/en> [Accessed 20 October 2019].
- 6) Monica, 2018. A Car Breakdown Service Station Locator System. INTERNATIONAL JOURNAL OF ADVANCE SCIENTIFIC RESEARCH, 3(4), pp. 13-16. Morales, O., 2016. Google Patent. [Online] Available at: <https://patents.google.com/patent/US10234299B2/en> [Accessed 17 January 2020].
- 7) Reichardt, e., 2002. Car Talk 2000. [Online] Available at: <https://ieeexplore.ieee.org/abstract/document/1188007> [Accessed 17 December 2019].
- 8) Sophie, N., 2001. Google patent. [Online] Available at: <https://patents.google.com/patent/US6973387B2/en> [Accessed 5 January 2020].
- 9) Tracking of Automobile Service Centers Using Android Application (Visit Mechanic). Available from: <https://ieeexplore.ieee.org/abstract/document/9121172>.
- 10) Tracking of Automobile Service Centers Using Android Application: <https://ieeexplore.ieee.org/abstract/document/9121172>.
- 11) The Interaction Design Foundation. (2020). Prototyping: Learn Eight Common Methods and (Anon., 2020)Best Practices. [online] Available at: <https://www.interaction-design.org/literature/article/prototypin-g-learn-eight-common-methods-and-best-practices> [Accessed 20 Jan.2020].
- 12) The Interaction Design Foundation. (2020). Prototyping: Learn Eight Common Methods and Best Practices. [online] Available at: <https://www.interaction-design.org/literature/article/prototypin-g-learn-eight-common-methods-and-best-practices>. [Accessed 20 Jan.2020].
- 13) Best breakdown cover 2015. Available from : <http://www.autoexpress.co.uk/car-news/driver-power/92413/best-breakdown-cover-2015> [Accessed 5 January 2016]
- 14) Google Maps JavaScript API – Places Library. Available from : <https://developers.google.com/maps/documentation/javascript/places> [Accessed 2 April 2016]
- 15) Google Developers, Google Maps APIs – Pricing and Plans. Available from: <https://developers.google.com/maps/pricing-and-plans/#details> [Accessed 3 April 2016]