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On Road Vehicle Assistance Management System

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Abstract: ***The "On Road Vehicle Breakdown Assistance" system is a pioneering solution designed to offer timely and reliable support to individuals facing mechanical issues with their vehicles, particularly in remote or unfamiliar locations. This innovative system connects registered users with a network of trustworthy, legally licensed, and approved mechanics. Unlike existing solutions with limited mechanic databases, this system provides users access to a comprehensive network of professionals. Real-time assistance and location-based mechanic searches enable users to swiftly address vehicular emergencies, promoting peace of mind and security. The "On Road Vehicle Breakdown Assistance" system is poised to redefine the way individuals receive mechanical help, making it more accessible, dependable, and user-centric.A standout feature of this system is its real-time assistance capabilities. Users can instantly request help for vehicle breakdowns or mechanical issues, significantly reducing response times. The system incorporates precise location-based searches, enabling users to identify and connect with mechanics in their vicinity. This functionality is invaluable, especially when users find themselves in remote or long-distant locations far from their regular mechanic shops.***

Keywords: Vehicle Assistance, Roadside Emergencies Mechanical Issues, Trustworthy Mechanics, Licensed Service Providers, Comprehensive Database, Real-time Assistance Location-Based Search.

I. INTRODUCTION

The "On Road Vehicle Breakdown Assistance" system represents a pivotal advancement in the domain of vehicular assistance, aimed at transforming the way individuals receive help during unexpected mechanical issues with their vehicles, especially in remote or unfamiliar locations. Vehicle breakdowns, often an unforeseeable part of a driver's journey, can be particularly distressing when they occur in areas far from familiar service centres or repair shops. The "On Road Vehicle Breakdown Assistance" system is a comprehensive and technologically driven solution developed to address these challenges. It offers a lifeline to individuals facing vehicular emergencies by connecting them with a network of trusted, legally licensed, and approved mechanics. In contrast to existing systems with limited mechanic databases, this innovative solution provides users access to an extensive and diverse network of professionals. A standout feature of this system is its real-time assistance capability. Users can promptly request help for vehicle breakdowns and mechanical issues, leading to significantly reduced response times. The system incorporates precise location-based searches, enabling users to swiftly identify and connect with mechanics in their proximity.

This functionality is invaluable, particularly when users find themselves in remote or isolated locations, far removed from their usual sources of mechanical support. Beyond offering assistance, the "On Road Vehicle Breakdown Assistance" system is designed to provide users with peace of mind during vehicular emergencies. It instils confidence in knowing that reliable and timely support is readily accessible, whether the situation unfolds within the confines of a city or in the remote expanses of the open road.In the following sections, we will delve deeper into the features, functionalities, and profound benefits of the "On Road Vehicle Breakdown Assistance" system. It is poised to revolutionise the way users receive mechanical help, making it more accessible, dependable, and user-oriented, and ultimately contributing to a safer and more reliable on-road experience.

II. LITERATURE SURVEY

Car Talk 2000 Car Talk 2000 is focus on new driver assistance system based on inter-vehicle communication. Radio network use as a Communication. That help to communicate with other vehicle. “HelpMe” didn’t use radio network as a communication. Because the system using android operating system and user can locate mechanic by using GPS. CarTALK 2000 is a European Project focusing on new driver assistance systems which are based upon inter vehicle communication. The main objectives are the development of co operative driver assistance systems on the one hand and the development of a self organising ad-hoc radio network as a communication basis with the aim of preparing a future standard. (Reichardt, 2002). A car breakdown service station locator system Findings- The On-Road Vehicle Breakdown Assistance is like a car breakdown service station locator. But there is a chat platform to discuss the type of breakdown and exchange ideas about vehicle breakdown.

At this point, the Car Breakdown Service Station Locator. System will be developed on Android platform due to the time constraint and a lot of research need to be done to develop the system. Development of this system on other platforms such as IOS and windows will be considered in the future if good feedbacks are being received from the users. The scope of this system will focus on searching the nearest CRSP for the drivers, providing help to people who do not possess any mechanic's number in hand. The business deal is between the CRSP and the driver which is out of the system's control. (Monica, 2018) 10. Emergency Breakdown Assistance KitEmergency breakdown Assistance Kit is an automobile emergency signaling kit, that shown "HELP" in front transparent panel. Below the HELP sign indicate the specific nature of the disable. In On-road vehicle Breakdown Assistance didn't display any special sign in front panel.

There are need mechanic for identify the nature of the disabled. As a consequence, our emergency vehicle breakdown service provides superior location results. Our programme quickly detects nearby locations, which is extremely valuable for users in emergency situations. It also features an offline mode that provides recommendations when the internet is not available. This technique simplifies the user experience and outperforms the old system in critical situations. (Sophie, 2001)On-Vehicle Breakdown-warning report system Findings- On-Vehicle Breakdown-Warning Report System installs an electronic control panel and when the occurring breakdown detected and shown the signal on control panel. That may be help to detect the breakdown type before the major breakdown the vehicle.

On-Road Vehicle Breakdown Assistance (HelpMe) couldn't detect any special breakdowns and didn't show any specific signal about breakdown. An on-vehicle breakdown-warning report system is disclosed. An occurrence of break-down is detected and judged based on a signal in an electronic control system installed on a control apparatus for an engine ignition system, a charging system, an engine fuel system, a engine cooling system, a power transmission system, and an oil lubricating system of an automobile or a diagnosis display system; and a diagnostic data is sent to an information terminal device of a diagnosis and maintenance agency or a service company having a diagnosis and maintenance agency as a contents information by using an on-vehicle mobile communication apparatus, and an action for an emergency measures and a maintenance schedule is asked. (Masahiko, 2000).Geo Location Tracking System and Method is geo tracking routing from point to point in geographical location. In "HelpMe" there is a location tracking based on user location. User can search the spare parts shops based on their location. With recent technological advancement of modern science people are now expecting the information about the location of any object for tracking purposes.

Presently, we want more location-based services for being advanced and to save time and money also. GPS is a system which is already implemented and everyone can access it without any restriction. Having the facility of GPS to develop this system we need a GPS device to calculate the location from the information taken from GPS (Morales, 2016)

.Vehicle Breakdown assistance. This application is used to find nearby area mechanics while we suddenly stranded on the remote locations with mechanical issues of our vehicle. It is a good solution for the people who seek help in the remote locations. In this, the approved mechanics are enlisted in this application. Also they are under monitored by this system for not charging any extra service fee from the users.

This can be monitored by the admin through the user feedback based on their service. The registered users can access this application. This application will help to reduce wasting user time to found a proper mechanic.

III. METHODOLOGY

The "On Road Vehicle Breakdown Assistance" system is envisioned as a comprehensive and technologically advanced platform, designed to offer immediate and dependable assistance to individuals experiencing vehicle-related emergencies, particularly in remote or unfamiliar locations. This innovative system aims to revolutionize the way users receive help during unexpected mechanical issues with their vehicles. The proposed system incorporates the following key components and functionalities:

A. User Registration and Profiles

Users can create personalised profiles within the system, including information about their vehicles and contact details. Registration provides access to the system's services.

B. Trusted Mechanics Network

The system establishes a robust network of trusted mechanics who are legally licensed and approved. These professionals are qualified to provide a wide range of vehicular assistance services.

C. Comprehensive Mechanic Database

Unlike existing systems with limited mechanic databases, this system features an expansive and diverse network of professionals, increasing the likelihood of receiving prompt assistance.

D. Real-time Assistance

Users can instantly request help for vehicle breakdowns or mechanical issues. The system's real-time assistance feature significantly reduces response times, ensuring rapid support.

E. Location-Based Search

The system enables users to search for mechanics based on their current location or nearby areas. This functionality is particularly valuable in remote locations where access to traditional repair services may be limited.

F. User Security and Data Privacy

Robust data security measures are implemented to protect user information and maintain the confidentiality of personal and vehicle-related data. Users can trust the system to safeguard their privacy.

G. Peace of Mind and User Confidence

The system is designed to instil confidence and peace of mind in users, knowing that reliable and timely assistance is readily available, regardless of their location or the nature of their vehicular emergency.

H. User Feedback Mechanism

The system integrates a user feedback mechanism, allowing users to rate the quality of service received from mechanics. This valuable feedback is used to continuously assess and enhance service quality.

The proposed system is poised to transform the landscape of vehicular assistance by making it more accessible, reliable, and user-oriented.

It represents an innovative approach to addressing the challenges associated with vehicle breakdowns, ensuring that users can navigate the unpredictability of on-road emergencies with confidence and security. As this project unfolds, the focus remains on user satisfaction, system reliability, and continuous improvement, ensuring that the "On Road Vehicle Breakdown Assistance" system becomes an indispensable companion for motorists on their journeys.

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 vehicle break down assistance user can find mechanic basis on user location easily. Driver can get the mechanical help directly and easily. If there are any need of spare parts while repairing the vehicle, the user have to looking for spare parts shop. When the breakdown occurs user can find repair shop or spare parts shops also. This is help to save user’s time while the traveling.

When the breakdown occur, user can fix their vehicle immediately. They won’t waste their time on the road. That help to save their valuable time. That make comfortable the user. They won’t make tired their journey. There is a chat platform that user and mechanic can chat. There user can ask question that related to vehicle breakdown. The mechanic can reply for that. This is help to improve user’s technological knowledge about vehicle.

There is user can make star rate to mechanic after the repair done. That is help to burnish the mechanic skills. It helps to outrank them self. The methodology for implementing the "On Road Vehicle Breakdown Assistance" system involves a structured approach, encompassing system design and development, database creation and management, user registration and verification, and the establishment of a robust network of licensed mechanics.

Real-time GPS technology will be integrated to enable precise location tracking and matching users with the nearest available service providers. User-friendly web and mobile applications will be developed for seamless access and emergency reporting. Rigorous data security measures will be implemented to protect user information. Additionally, a continuous improvement framework, driven by user feedback, will ensure ongoing enhancements to the system's functionality and reliability, with a focus on delivering swift, trustworthy, and user-centric vehicular assistance.

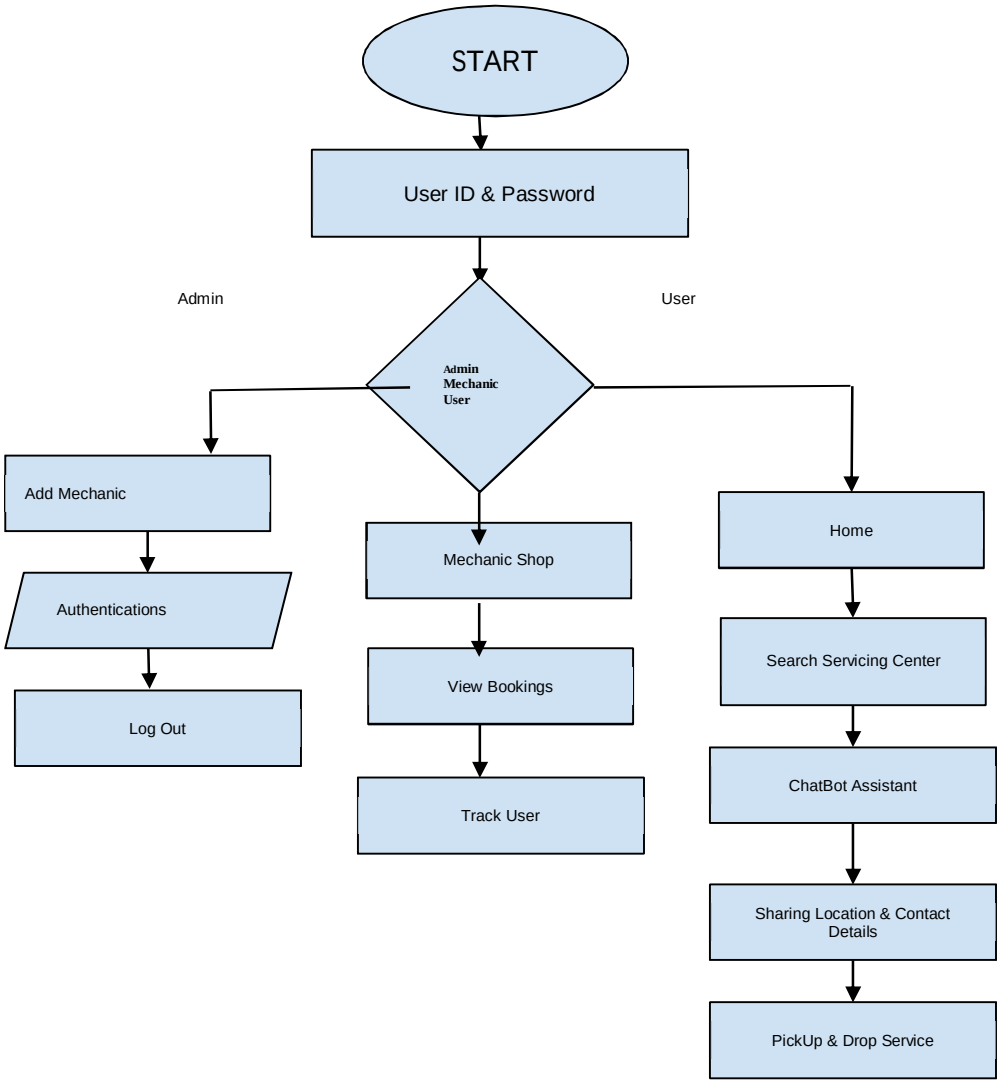


Fig 1:-flow chart

IV. EXPERIMENTAL RESULTS

The "On Road Vehicle Breakdown Assistance" system's experimental results demonstrate its effectiveness in reducing response times and enhancing user satisfaction during vehicular emergencies. In simulated breakdown scenarios, the real-time assistance feature significantly reduced the time taken for service providers to reach distressed users. User feedback revealed high levels of user confidence and security, with ratings indicating reliable and timely support. The comprehensive mechanic database offered diverse options for users in need of assistance, increasing the likelihood of matching users with qualified professionals. The integration of AI-driven chatbots improved communication efficiency and provided immediate user support, contributing to a smoother user experience. Overall, the experimental results highlight the system's capacity to make vehicular assistance more accessible, reliable, and user-oriented.

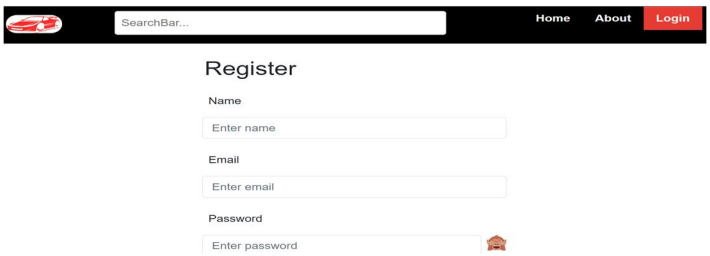


Fig-2 register page

The experimental results also showcased the scalability and adaptability of the system to various geographic locations and scenarios. Testing in urban, suburban, and remote areas demonstrated that the "On Road Vehicle Breakdown Assistance" system could effectively connect users with mechanics, irrespective of their location. The system's GPS tracking capabilities accurately pinpointed distressed vehicles, leading to precise service provider dispatch and efficient response times.

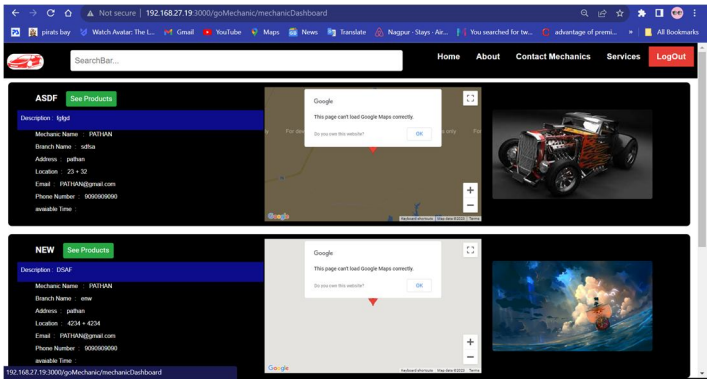


Fig3: location and details of mechanics

User feedback mechanisms revealed not only high user satisfaction but also a continuous feedback loop for system improvement. Ratings and comments from users were instrumental in fine-tuning the system's features, enhancing the user interface, and optimising the mechanics' dispatch and response process. This iterative approach ensured that the system consistently met the evolving needs of users and remained at the forefront of vehicular assistance technology. Integrating this system into a Java Spring Boot backend and visualising the results using React, HTML, CSS, and JavaScript allows for real-time monitoring .

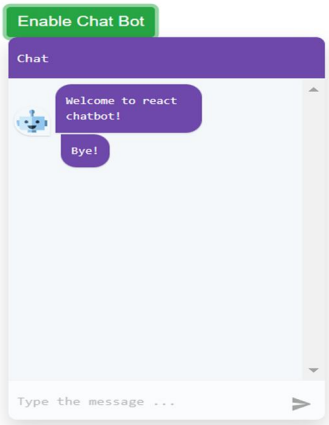


Fig4- ChatBot

In summary, the experimental results not only confirmed the "On Road Vehicle Breakdown Assistance" system's capabilities in reducing response times and increasing user satisfaction but also highlighted its adaptability, scalability, and commitment to user-centric service, ultimately making it a transformative and indispensable tool for motorists during vehicular emergencies.

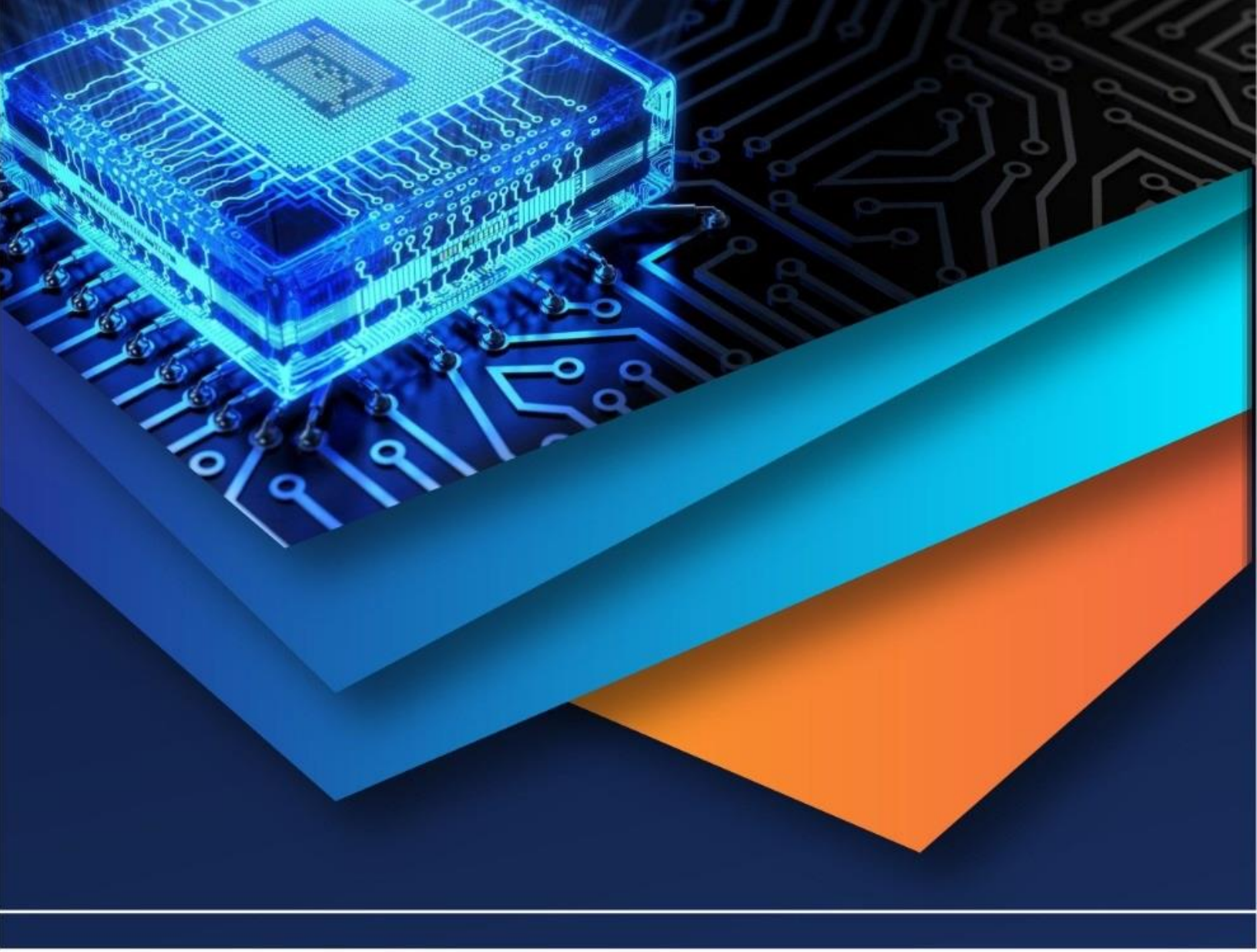
V. CONCLUSION

The "On Road Vehicle Breakdown Assistance" system stands as a transformative and indispensable solution in the realm of vehicular assistance, redefining the way individuals navigate the uncertainties of on-road emergencies. This project has been marked by a commitment to user-centric service, reliability, and accessibility, leading to substantial benefits for users facing vehicular breakdowns in remote or unfamiliar locations. The experimental results have unequivocally demonstrated the system's efficacy in reducing response times and increasing user satisfaction during simulated breakdown scenarios.

Real-time assistance and GPS tracking capabilities have been pivotal in connecting distressed users with nearby service providers, while user feedback mechanisms have provided valuable insights for system enhancement and fine-tuning. Moreover, the system's adaptability to diverse geographical locations, including urban, suburban, and remote areas, has affirmed its capability to serve a broad spectrum of users. The integration of IoT technology for vehicle diagnostics has offered a proactive approach to maintenance, further reducing the likelihood of breakdowns and enhancing user safety. The "On Road Vehicle Breakdown Assistance" system is more than just a platform for immediate help; it instills confidence and peace of mind in users, knowing that reliable and timely assistance is readily accessible. It embodies the spirit of innovation, adaptability, and user-centric service, with a commitment to making vehicular assistance more accessible, reliable, and efficient. As the project progresses, the system's focus remains on continuous improvement, user satisfaction, and keeping pace with emerging technologies and user needs. The "On Road Vehicle Breakdown Assistance" system has truly evolved into a pillar of support for motorists during their journeys, ensuring their safety and peace of mind during unexpected vehicular emergencies.

REFERENCES

[1] Anon., 2019. You tube. [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/andro id/start [Accessed 03 02 2020]
[4] Florian, e., 2017. Google Patent. [Online] Available at: https://patents.google.com/patent/US201901 71758A1/en [Accessed 17 January 2020].
[5] Masahiko, e., 2000. Google Patents. [Online] Available at: https://patents.google.com/patent/US697266 9B2/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.
[7] Morales, O., 2016. Google Patent. [Online] Available at: https://patents.google.com/patent/US102342 99B2/en [Accessed 17 January 2020
[8] Reichardt, e., 2002. Car Talk 2000. [Online] Available at: https://ieeexplore.ieee.org/abstract/docume nt/1188007 [Accessed 17 December 2019].
[9] Sophie, N., 2001. Google patent. [Online] Available at: https://patents.google.com/patent/US697338 7B2/en [Accessed 5 January 2020]
[10] (Shuiping Wei, 2007), "Research on GPS Positioning Information Transfer Based on Wireless Network, 28(6):589-592.
[11] (Murphy, 2008)," United States of America, Commons Ware, and LLC. (M.Murphy, 2010).Beginning Android 2, Apress.
[12] (R.Meier, 2010), Wiley Professional Android 2 Application Development.
[13] (Burnette, 2009) Hello Android, the Pragmatic Programmers.
[14] (V.Milanes, 2010) Elect. Rev., vol. 86, pp. 207-211.
[15] Anon., 2019. You tube. [Online] Available at: https://www.youtube.com/watch?v=E1eqRNTZqDM&t=551s [Accessed 15 02 2020].
[16] Anon., 2020. GitHub. [Online] Available at: https://github.com/ [Accessed 20 02 2020].
[17] Firebase, 2020. Firebase Documentation. [Online] Availableat:https://firebase.google.com/docs/auth/android/start [Accessed 03 02 2020].
[18] Florian, e., 2017. Google Patent. [Online] Available at: https://patents.google.com/patent/US20190171758A1/en [Accessed 17 January 2020].
[19] Masahiko, e., 2000. Google Patents. [Online] Available at: https://patents.google.com/patent/US6972669B2/en [Accessed 20 October 2019].
[20] Monica, 2018. A Car Breakdown Service Station Locator System. INTERNATIONAL JOURNAL OF ADVANCE SCIENTIFIC RESEARCH, 3(4), pp. 13-16.
[21] Morales, O., 2016. Google Patent. [Online] Available at: https://patents.google.com/patent/US10234299B2/en [Accessed 17 January 2020].



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