Geo-Location Based Medical Emergency Service Using Android

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Abstract **- Our project's major goal is to provide a smart method to an emergency vehicle during a peak hour and to create a smooth flow for the ambulance to get to the hospital on time. If the patient is trapped in traffic and is not provided the right route because of the holdup, he or she may die. We are introducing a new mode dubbed "ambulance mode," which will regulate traffic within the ambulance's path. Because this plan is automated, it selects the optimum route, allowing you to get to the hospital on time. This is frequently not selected only for an ambulance. It is preferred for other emergency vehicles, such as a fire engine. We have chosen to create an application that would give a "Green Corridor " to the ambulance. The project is divided into three modules: User, Admin, and Driver. Because of the high traffic, the ambulance driver initially did not know the exact position of the accident site, and as a result, we were unable to save many people's lives. Because everything in today's technology runs on smartphones and applications, we developed a mobile application that allows for real-time tracking of ambulance services. Ambulance drivers will be able to register their availability and location via this app. Either the executive emergency helpline or client-side users will schedule an ambulance and the user login. Once the user's position is located on the Google map, the close ambulance will also be marked on the map, Once the patient is on board, the ambulance position is indicated and sent to the administrator; this location is then shared with the ambulance driver, and a list of hospitals is indicated on the map, allowing the administrator to select the nearest hospital to take the patient on time. The navigator geolocation approach is used to track the ambulance's whereabouts. This method will aid in the updating of the ambulance location in the database. Furthermore, the ambulance driver may manage the traffic signals along the impending ambulance route by switching from red to green signals.**

Index Terms **- Ambulance, Application, Healthcare, Emergency, Navigation, Geolocation.**

I.INTRODUCTION

Major issues such as traffic congestion and tidal flow control were identified. As India's population grows, so does traffic. As a result, efficient synchronization of traffic lights is required to ensure an uninterrupted flow of traffic during peak hours. Furthermore, there have been several traffic accidents within the city, making it even more important to prevent the loss of life because of the incidents. We are compelled to push ourselves in our fast-paced environment, which leads to traffic congestion and accidents. In other nations, they effectively save human lives because whenever an ambulance arrives, they move aside to clear the path till the ambulance arrives. In other nations, modern technologies such as machine learning and artificial intelligence were also utilized. In INDIA, on the other hand, whenever an ambulance arrives, it is manually controlled at the traffic intersection by traffic police. Nowadays, all systems operate automatically. As a result, we presented an "Emergency Service Android Application" solution.

II. RELATED WORKS

A. INTELLIGENT TRAFFIC CONTROL SYSTEM USING RFID AND CLOUD

An android application, RFID (Radio Frequency Identification), and a cloud database are used in the intelligent control system employing RFID and Cloud. The usage of RFID is the most disadvantageous aspect of this project since the range of RFID sensors is highly restricted and cannot be recognized quickly. In our project, however, we are employing image processing, which does not require any range.

B. ADVANCED TRAFFIC CLEARANCE SYSTEM FOR AMBULANCE CLEARANCE USING RF-434 MODULE

The suggested Model's major purpose is to keep the ambulance from becoming stopped in traffic. There is a risk of patient death if the ambulance becomes stuck in traffic. Traffic congestion may be avoided by employing this approach. In this study, we provide an intelligent traffic management system that uses Wireless Communications technology to alleviate traffic congestion. The suggested system is made up of an Arduino module, an Android GSM phone, an LCD, a transmitter, and a receiver module. This initiative is more concerned with traffic congestion. Using hardware components also adds weight to the project, and the range issue persists. Too.

C. AUTOMATIC AMBULANCE RESCUE SYSTEM USING SHORTEST PATHFINDING ALGORITHM

Traffic congestion and tidal flow management have been identified as key issues in modern city settings, causing significant discomfort for ambulances. Furthermore, accidents in the city have been unending, and preventing the loss of life because of the accidents is even more difficult. To put this AARS concept into action (Automatic ambulance rescue system). The major purpose of this strategy is to enable a smooth flow for ambulances to access hospitals on time while minimizing the practical implementation. The aim behind this project is to create an ITS that would regulate the traffic lights in the ambulance's path mechanically. The ambulance is managed by the MCU, which provides the scantest path to the ambulance and regulates the traffic lights according to the ambulance position, allowing the ambulance to arrive at the hospital. The server also calculates the position of the accident site using the sensor systems of the car that was involved in the collision, and so the server walks through the ambulance to the exact place. This technique is automated, so it discovers the accident site, manages traffic signals, and assists in getting to the hospital on time.

D. SMART TRAFFIC CONTROL SYSTEM USING IMAGE PROCESSING

Image processing is used in the smart traffic control system for traffic congestion control. This initiative is likewise primarily concerned with traffic congestion. This initiative is simply intended to alleviate traffic congestion, not to provide a green lane for ambulances and other emergency vehicles such as fire engines.

III. PROBLEM IDENTIFICATION

There was no accurate booking of the ambulance in the current system, and the driver had trouble reaching the accident site in a fast time owing to heavy traffic, thus it would take a long time to reach the hospital. As a result, many individuals may lose their lives or become injured because of excessive traffic. This approach would not assist the ambulance in reaching the hospital promptly.

IV. PROBLEM SOLUTION

A smartphone application that users may use to order an ambulance. The user can email the accident location to the admin, and the admin will get the address of the GPS coordinates obtained from the user. This location will be communicated to the ambulance driver. The ambulance driver will then arrive on the scene. The ambulance driver will then send a notice to the admin, who will then transmit the location of the nearest hospital to the driver. By turning the red to green light, the driver can clear the signal for the approaching ambulance route.

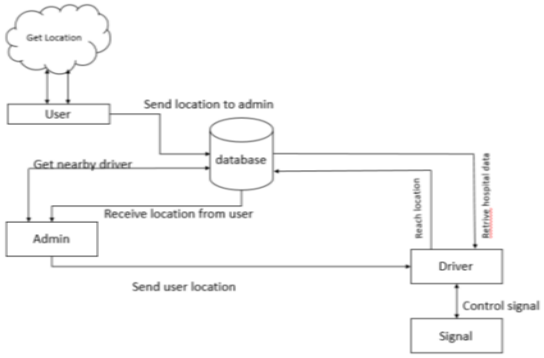

Figure 1. Flow Diagram

The diagram depicts the application's flow. The user will provide an accident scene position to the admin, which will be saved in the database. The admin will then obtain a nearby driver location, which the admin will share with the driver. After arriving at the accident site, the driver will send a notice to the admin, after which the driver will be able to receive the hospital location. The upcoming ambulance route's signal can be controlled by the driver.

V. SOFTWARE USED

Android Studio is Google's official integrated development environment (IDE) for the Android operating system. It is based on JetBrains' IntelliJ IDEA software and is developed exclusively for Android programming. It may be downloaded for Windows, macOS, and Linux-based operating systems. It is intended to be a substitute for the Eclipse Android Development Tools (ADT) as the primary IDE for developing native Android applications. You may install a proprietary plugin called Android Development Tools (ADT) in the Eclipse IDE as your development environment for Android apps, which includes integrated support for Android projects and tools. The ADT plugin contains several sophisticated extensions that let you create, launch, and debug Android applications more quickly and easily.

Figure 2. Android Development Tool

ADT expands Eclipse's capabilities to allow you to easily create new Android projects, construct an application UI, add packages based on the Android Framework API, debug your apps using the Android SDK tools, and even export signed (or unsigned) app files for distribution.

VI. PROPOSED SYSTEM

A. Algorithmic Design

To ensure that the system performs well and meets the needs of the users, we combined the current scheduling method of First Come, First Serve with Dijkstra's algorithm. This pick, which includes the pseudocode, provides the application and the potentials of controlling infrequent reserving, as well as different crises where various ambulances are necessary; nevertheless, only a few are available. Aside from the First Come, First Serve method, the long tail of patients can be handled by the notion of LILO or FIFO queues, which indicates that the first to book is the first to be serviced. The location, route, distance, and cost of the patient are not considered in this technique. This strategy is simple, but the ramifications on length, diversification, and hold time have a greater impact on the progressed cost. Dijkstra's method, on the other hand, discovers the shortest path between the user-selected source and destination; in the case of traffic, an alternate route with a new length is determined. Dijkstra's algorithm is a unified system that locates the patient and emergency vehicle among all available resources. For instance, if only one emergency vehicle is available on any given day and each patient's demand is addressed the same way for atomic understandings, it is critical to manage the situations adequately. Dijkstra's method is utilized by the Google Maps API to direct a directing GPS device to assist our journey to our destination by every conceivable route, mode of transportation, traffic, and time.

B. System Operation

The suggested system would generate information based on the functionalities assigned to users. The system would have two application users, patients, and drivers, who would each access information through a flow. The program would allow the patient to access the Payments, Trip History, Service Filter, Emergency Booking, Settings, and About Us menus. The driver, on the other hand, accesses/generates information such as Availability Status, Alerts, Payments, and Analytics. The accompanying graphic Fig3 depicts these menus and their entire information flow. The system includes basic features such as an emergency, procedural booking, and blood inventory. The method for booking a ride, on the other hand, is consistent.

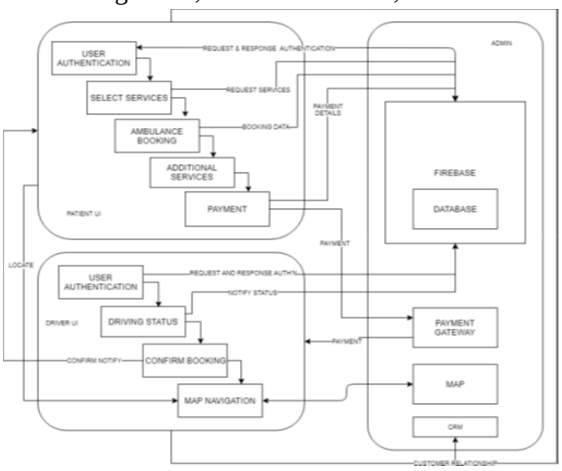

Figure 3. System Architecture

Step 1: Sign in
Step 2: Choose your services.
Step 3: Enter Your Location Data
Step 4: Locate the vehicle on a map.
Step 5: Calculate
Step 6: Reserve a ride
Step 7: Choose a payment option and complete the transaction.
Step 8: Travel Receipt

VII. IMPLEMENTATION

MODULE 1-User

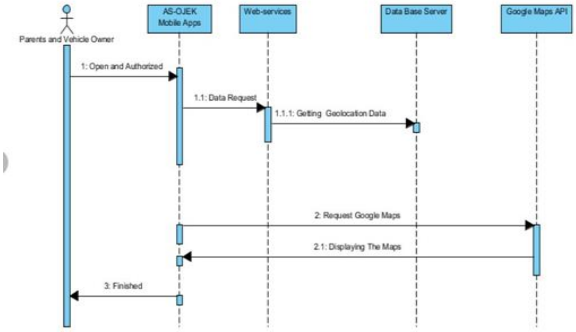

Figure 4. User Module

When a user installs the program, the first action that appears in this one. To login into the app, the user must supply a valid phone number and a password, which he or she enters upon enrolling. If the information entered by the user matches the data in the database table, the user is successfully logged into the app; otherwise, a login failed to notice is presented, and the user must reenter the right information. For new user registration, a link to the registered activity is also supplied.

MODULE 2- Admin

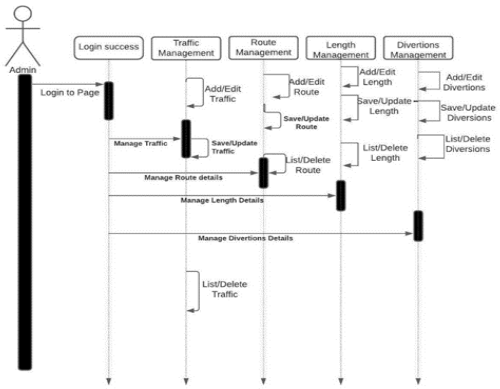

Figure 5. Admin Module

The user will provide the administrator with the location of the accident, which will be communicated with the ambulance driver. The admin checks their driver availability by computing latitude and longitude values. When the driver arrives at the site, he will send a message to the admin, who will assign the hospital by calculating the latitude and longitude values where the driver must travel.

MODULE 3- Driver

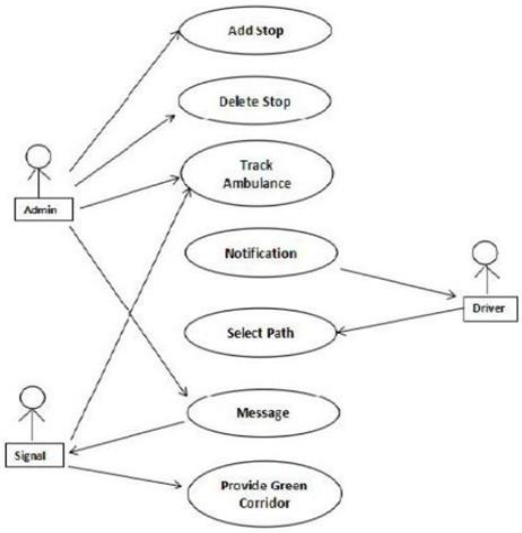

Figure 6. User Case

The driver sends a message to the admin system, and after doing so, he receives the location of the hospital to which he must travel. The driver can modify the traffic light for the future ambulance route by switching from red to green.

VIII. CONCLUSION

According to the Times of India, over 146,133 persons died in road accidents in India in 2016. Unfortunately, ambulance delays account for around 30% of all fatalities. With this project, any emergency vehicle will not have to deal with traffic congestion and will be able to function more efficiently. There will be a reduction in the total number of deaths caused by delayed ambulances. We will give an Android application via which all hospital administrators and ambulance drivers will be able to operate without interruption. The key benefit of these is that all contacts between the administrator and the driver would be recorded and monitored by Indian government officials.

VIII. FUTURE WORKS

Our future work will be to improve the system by incorporating Internet of Things (IoT) and Image Processing technologies to scale it up and connect it with all traffic signals to all nearby hospitals specified if a service isn't available in one, another hospital that supplies such service will be suggested immediately alongside its distance, time of arrival, and thus the availability of paramedics, doctors, and so on to attend to the emergency

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