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AN ANDROID APP TO PROVIDE TAXI-AMBULANCE SERVICE FOR ACCIDENT VICTIMS

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Abstract: An ambulance is a vehicle equipped with medical devices to guarantee shifting of patients to healthcare institutions such as specialized hospitals and general hospitals. They are designed to allow paramedics access them promptly to provide required treatment and emergency care while transporting patients. In a life-threatening emergency, it is necessary for paramedics to act quickly and carry patients promptly even if there is traffic. Several solutions have been developed to improve the responsiveness of ambulances to reach patients and hospitals faster. However, these solutions are not considering the emergency-route selected by ambulances resulting in delays in responsiveness. In this paper, we propose an application that helps accident injured victims to reach the hospitals with the help of auto/cab drivers and the general public. The application highlights emergency-routes, enabling the driver to reach the health center in shortest time. The application is developed using Android Studio as an IDE. XML is used for the design part of the application and java is used for the functionality part of the application. The data is stored in the Firebase database.

Keywords: Accident victims, System Architecture, General Public.

I.INTRODUCTION

According to a survey, India accounts for the highest road accidents globally, with 1.5 lakh people being killed and more than 3.5 lakh crippled annually. Note that most of the cases are dead without even getting primary treatment because of the waiting time of ambulances and traffic issues. To overcome this problem an android application is designed to help an accident victim by alerting nearby auto rickshaw/cab drivers to come to the victim's aid. This is a one click service which sends notification to all available nearby autos, cabs and alerts them about the nearest hospitals location. This android application included online payment for the victim to pay for the auto/cab driver. The main motive of the project is to help the accident victim through an android application which will facilitate the admission of the victim to the nearby hospitals as soon as possible without waiting for an ambulance.It is an android application which is designed using Android Studio as an IDE. XML is used for the design part of the application and java is used for the functionality part of the application. The data is stored in the Firebase database.

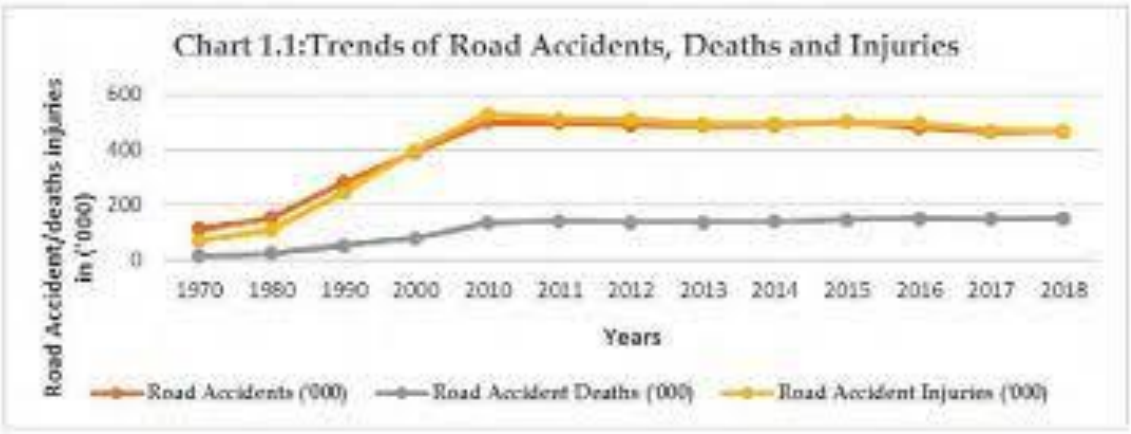

Figure 1: [11] Accident Statistics

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II.LITERATURE SURVEY

The authors Omkar Udawant and Nikhil Thombare [3] in their paper, proposed a smart ambulance service which contains sensors like heart rate sensor, blood pressure,ECG. The status of these parameters will be sent to the hospital's database so that they can make necessary arrangements.

The authors S. Sasipriya, Arfana Suraiba R, Ajaai R, and Harini S [4] , in their paper, proposed a mobile tracking application for emergency ambulance services with various challenges in vehicle tracking and monitoring systems.

The authors S. Hari Sankar, K. Jayadev, B. Suraj and P. Aparna [5] in their paper, proposed an android application which dispatches the nearest ambulance to the accident spot as soon as it detects an accident. It also provides guidance to the ambulance driver.
The authors Christien Camu, Kay Veronica Bacit [6] in their paper, proposed an android application which provides fast emergency response using private ambulances.

The authors P. Devigayathri, R. Amritha Varshini, MI. Pooja, S. Subbulakshmi [7] in their paper, proposed that Ambulance service providers install the application and register the details of the available ambulance services. Enquirer can avail of the ambulance facility either by registering the details in the application or directly in case of emergency situations.

The author AbdelGhani Karkar [8] in their paper, proposed a server application, user emergency end-user application and paramedic end-user application. The server is responsible for managing messages between end-user applications. It can improve the transportation time of patients.

The authors Toru Kobayashi, Fukuyoshi Kimura [9] in their paper, proposed a system in order to inform the approach of the ambulance to other vehicles. The authors developed a smart ambulance approach alarm system by making the position information of the ambulance open.

Based on the outcome of the Literature Survey it's observed that, One of the main infrastructures of the smart city is identified as smart health, which can be enabled with the use of modern technologies such as Mobile devices, especially for accessing the patients when they need help.

III.IMPLEMENTATION

The proposed application mainly consists of 3 modules: Public Module, Driver module and Hospital module. The functionality of the public module allows the general public to register in the app and provide alert messages to the hospital and Drivers for providing their services. The functionality of the driver module provides general public drivers to help the injured victims to reach out to the nearest hospital based on the alert messages received from the app. The functionality of the Hospital module is to receive the alert message and make the necessary arrangements to treat the injured victim. The outcome of the project will help the accident injured victims to reach out to the hospital at the earliest. The block diagram of the project is simple yet robust, here is the block diagram which consists of all the important modules present.

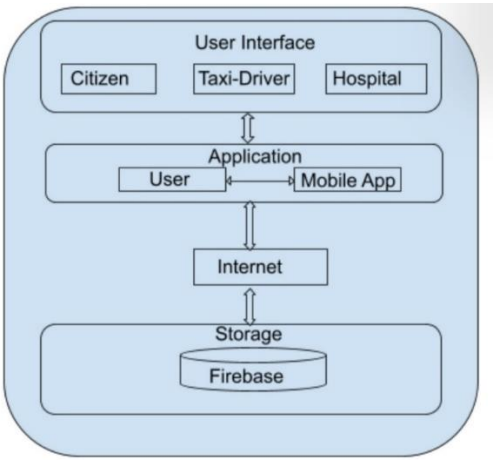

Figure 2: System Architecture

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Figure 2 shows the architecture of the project and the complete flow of the process. It shows the overall architecture of the system constructed. This includes the firebase database to store the data as well as the modules which are present in the system. The general public,taxi drivers and hospitals use the front end to view the application. The results are generated and accessible to the users.

IV.ANALYSIS OF TAXI-AMBULANCE SYSTEM

Screenshots of the proposed application are discussed below.

i) General Public Module:

If the general public notices an accident, then they'll press the panic button to help the accident victim. Once the button is pressed it'll fetch the current location of the victim and send it to the taxi-drivers. After this,Nearby autos/cabs will get the notification about the location of the victim.

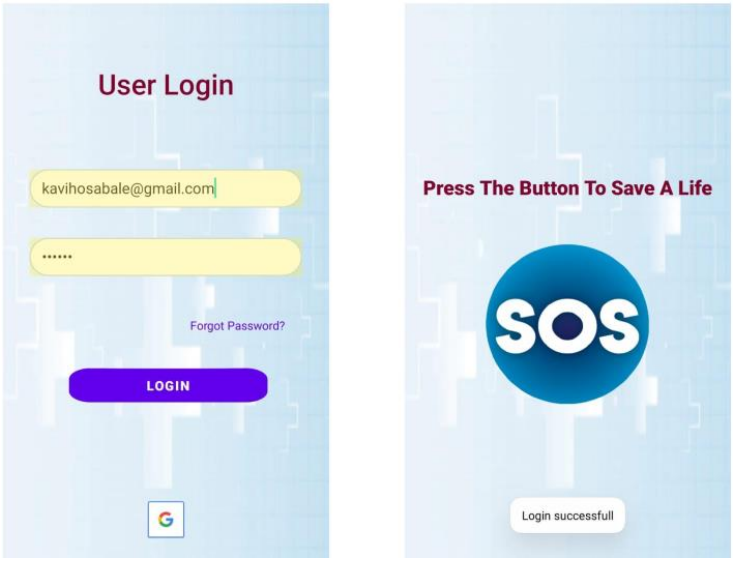

Figure 3: User Login and panic button

ii)Taxi Driver Module: Accept the request of the general public once they click the panic button and Searches for the nearby hospitals and sends a notification to the hospital. After this, the Hospital receives the notification.

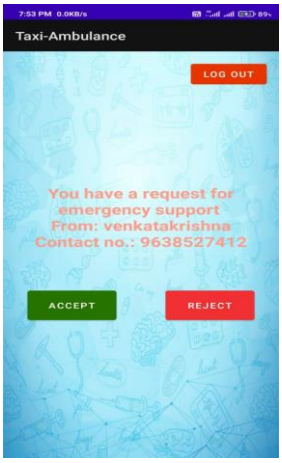

Figure 4: User Request

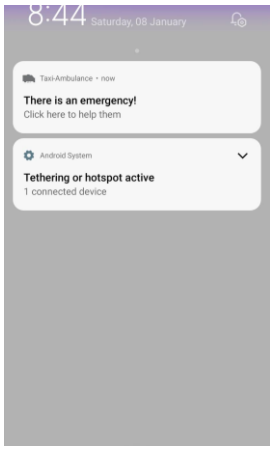

Figure 5: Push Notification

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iii)Hospital Module: Makes arrangements for the victim based on their condition, admits the patient and provides treatment for the accident victim.

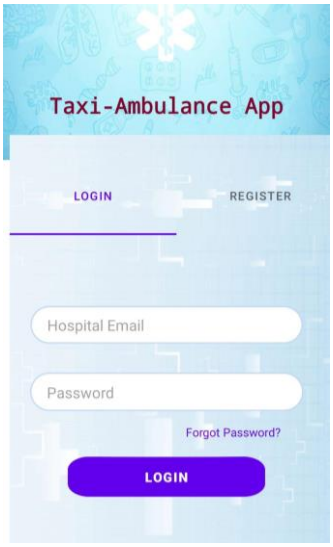

Figure 6: Hospital Login

V.RESULTS AND CONCLUSION

The original spark for this paper was conceived from the facts and figures from the daily newspaper and media depicting the number of deaths due to accidents which is shocking and alarming nowadays. Statistics show that approximately one dies every 30 hours in a fast lane of the densely populated roads. Thus, the personnel at the hospital can monitor and diagnose the patient's condition continuously and could suggest earlier precautions for the patients themselves. This system is effective and user friendly and thus its usage is not restricted or limited to any class of users. The person at the hospital should be available at all times to monitor and respond to the patient.The main motive of the proposed application is to help the accident victim through an android application which will help them to reach out to the hospital at the earliest and response time trend is decreasing with the incremental addition of taxis to the system and also the total travel time is decreased. There are certain specific improvements identified. The user interface can be more dynamic and attractive, web applications can also be developed so that the user can communicate through the website also and a multi language facility can be added and an online payment option can be added as part of future enhancement.

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