

Ambulance tracking Web-App using GPS

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Abstract

An ambulance is very important for patients. Sometimes it is also called a lifesaver vehicle. This paper includes registration of users (patients), storing their basic details into the web app. Users can search details of the ambulance availability in the city for the patient's benefit. After Sign-up users can log in using a username and password. After log-in, the web app will ask users to allow location access to showing the nearest available free ambulance. Similarly, a driver can register to the website with basic details like Name, email, password, Ambulance number. After login into the website with email and password, a driver can view the respective booking details of the user that includes the booking user name, phone number. Also, the Driver page will be loading at a short period of 10 seconds, so that he/she can quickly get the booking details of the user. Our proposed system is least time consuming, least costly, easy to handle, secure, and efficient too for booking a free ambulance required to save the life of a serious patient.

Keywords: Ambulance; GPS Based Tracking; Restful API.

1.Introduction

In this work, the 3C's principle has been adopted:

- **Call:** When a person needs an emergency, he/she makes a call to the toll-free number (varies to each hospital) is then answered by the dispatch officer.
- **Connect:** The dispatch officer immediately looks for the ambulances nearest to the patient's place and contacts the driver and location coordinates are sent to drivers.
- **Care:** Through GPS tracking the exact location of the patient is grasped and rushed to the nearest hospitals as soon as possible and save the patient's life.

This paper includes the registration of patients, register their details into the system, and then used for the benefit. If the patient's party can't book an ambulance from a phone call due to phone engagement or many problems then this proposed system is useful for the booking of an ambulance. Using this proposed system patients can book an ambulance from the hospital of their nearest location. Our system will help patients in booking the ambulance easily because our system is interactive and the cost is minimal. In this proposed system, there are two modules Driver module and the User module. In user module, Users can sign up if he/she is a new user. After that, he can log in and get into the Website's welcome page. On the Welcome page, he/she will have to access the current location notified by the system. If a user doesn't allow access to the location, then the system will not show the nearest ambulance available in the patient's location. And if they allow access to the location, from this location all the ambulances of nearest hospitals will be displayed. From this available driver-list users can book available nearby ambulance in the list which will save time as well. Also, the user will get all details of the ambulance like owner name, owner phone number, Driver name, Driver phone

number, Driver address along with the location mark on the Google map. In the driver, the module driver will get his booking notifications or messages. Also, if the driver wants to make him not available for the booking, he/she can do it by clicking deactivate button and vice-versa. Moreover, the Driver page will be loading at a short period of 10 seconds, so that he/she can quickly get the booking details of a user. The location page will be updated at a short period of 10 seconds to show where the driver is present at which location.

The paper consists of as follows. Section 2 describes Literature Survey. Section 3 displays the proposed work. In section 4, the simulation results are presented. The conclusion is drawn in section 5.

2. Literature Survey

In 2014, B Prachi et.al [1] designed a system which consisted of GPS and GSM module that would be placed in the respected vehicle. As soon as the accident occurred, it sent the location of the victim's place to the main server which would inform an ambulance from the nearest hospital to rush to the spot.

In 2016, S. Walvekar et.al [2] had designed the framework which includes GPS location and GSM module. It gave the current location of an ambulance with the assistance of a GPS module. It detected patient's additional information like body temperature, beat rate, and so on by thermostat sensors, GSR sensors. This paper additionally sent the ambulance details to traffic police so that they cleared the traffic.

In 2016, C R Kamireddy et.al [3] detected the accidental prone areas which were grouped into clusters. The ambulances were placed in the clusters analyzing the request over the period. It was observed that among all the other clustering techniques that were proposed, the Density-Based Algorithm comparatively reduced the average distance traveled by ambulance.

In 2017, B Janani Saradha et.al [4] used an RFID device to modify and cleared the signal. It had a tiny chip and an antenna. The chip comprised patient's status and the ambulance's current location. The RFID reader was placed at the traffic signal which read this information from the RFID device installed at the ambulance. The signal would be changed to green soon as the server could recognize the ambulance paving the way for the ambulance to move rather than getting traffic jams.

3. Proposed work

We have presented a web application for booking an ambulance from the nearest location. In our proposed system, there are mainly two modules:

- a) One module is for the user in which users can book an ambulance from their nearest location and also user can view all the necessary details of the ambulance like driver name, ambulance number, owner name, Owner phone number, address, and many more along with the location mark on the Google map.
- b) Another module is the driver module, where a driver can register and log in to the website. And after that, a driver can make him available or not available for the reservation. Also, the driver will get his/her booking notifications on this page.

The proposed system provides the exact location of the ambulance to users from their location. Along with this it also provides the following features: -

- Details like ambulance number, Driver's ID, Driver's name
- Ambulance availability notifications
- Users can find the location of the ambulance.

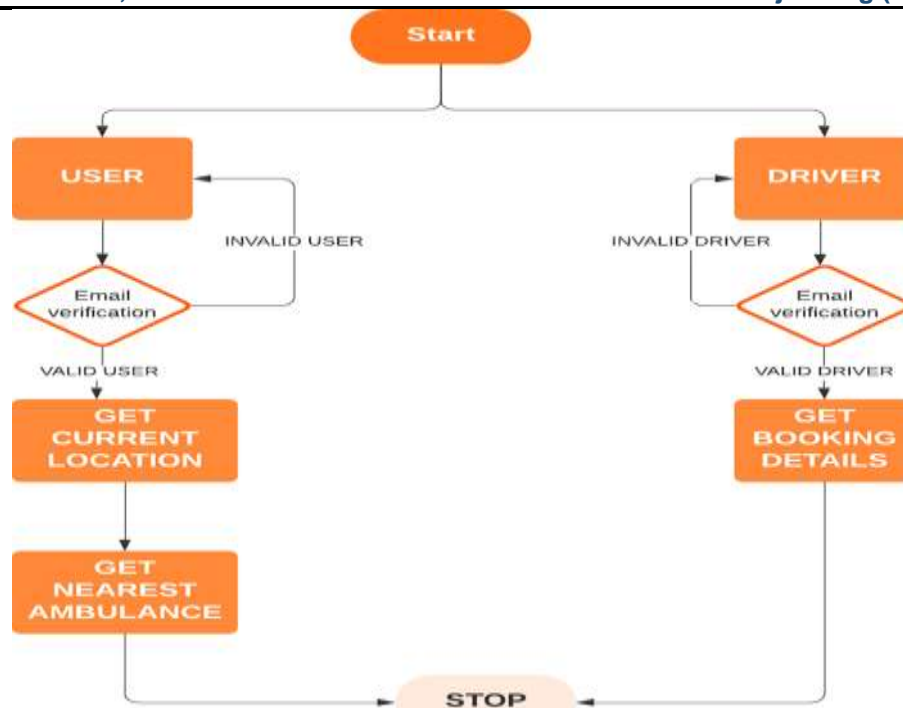


Fig1: Flow chart of the proposed work

This is the flow chart of our proposed system for ambulance booking. We can see that there are two modules, one is the user module and another one is the driver module. In both user and driver module registration of details is required with the verification (OTP) in their respective email id. After that user have to allow the location access and then the nearest ambulance will be shown which will be booked by patients. Then the driver will see the booking details book by the patients. After that, the driver will reach the patient's address for the ambulance service.

Advantages of the proposed system:

- The web application is user-friendly with an interactive map.
- The patients can get the exact location of the driver.
- Notifications are helpful to assure the availability of ambulance.
- The driver will get the notification of the booking details of the user.
- The driver page will be loading at a short period of 10 seconds so that he/she can quickly get the booking details of the user.

4. Simulation results

4.1 Software requirements

User side:

- Android OS Lollipop 5.0 or Higher
- Google Map
- Laptop / Computer
- Internet

Developer side:

- Windows/Linux OS
- Visual Studio
- ASP .Net tool
- Microsoft SQL Server

- IIS Server

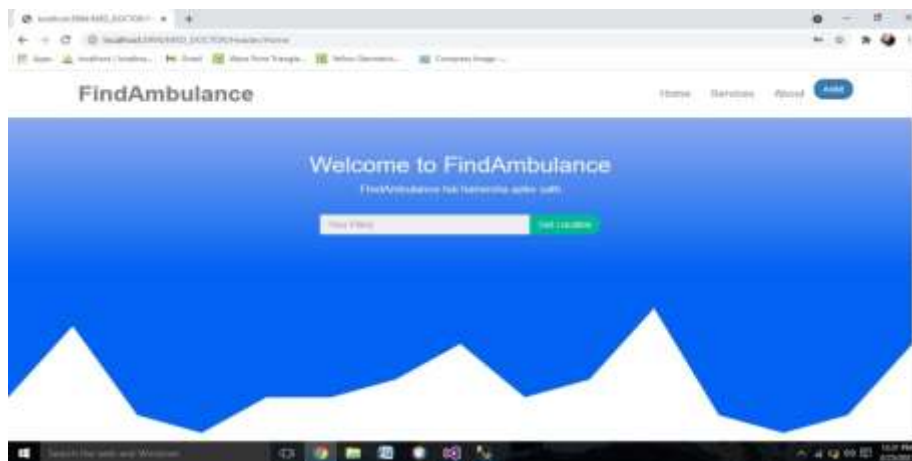


Fig2: Front Page

Fig2 shows the front page of our proposed system. From this page, user or driver gets into their respective webpage by the login.

User Module:

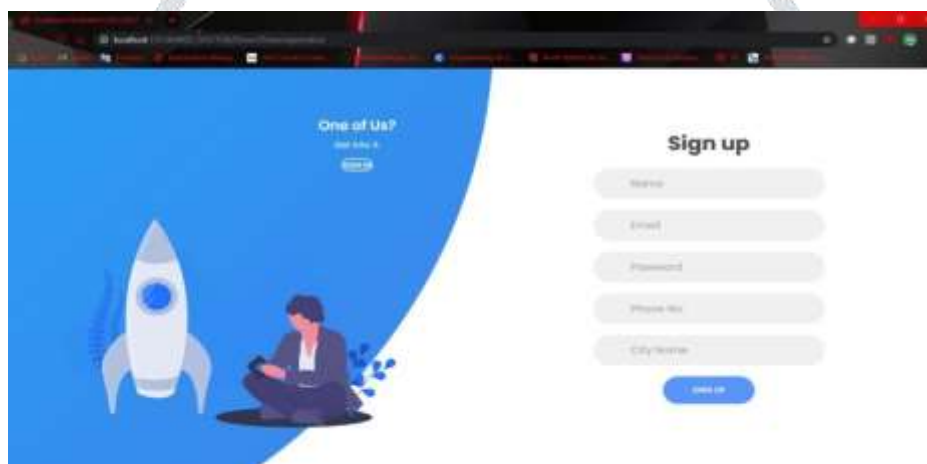


Fig3: User signup page

Fig3 displays the User signup page. If a new user wants to use the web application needs to do signup and then log in, he/she will be redirected to the email verification page.

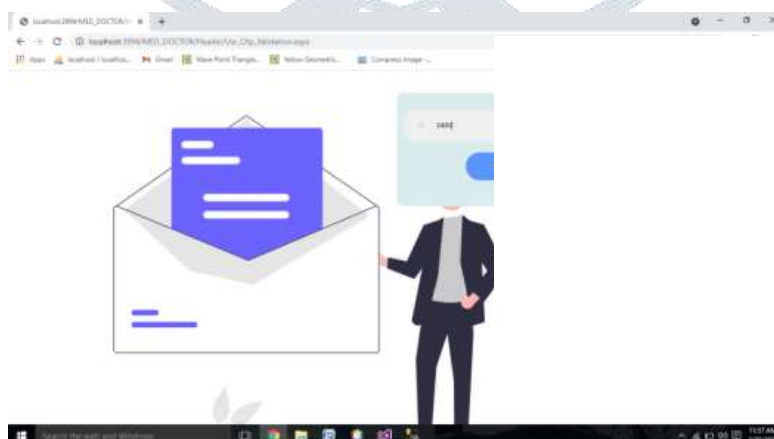


Fig4: Email verification page

Fig4 shows the Email verification page. After signup driver will get a mail which was given in signup. From this mail driver will enter the OTP (one-time-password). If OTP matches user will redirect to the login page otherwise it will show OTP NOT MATCHED.

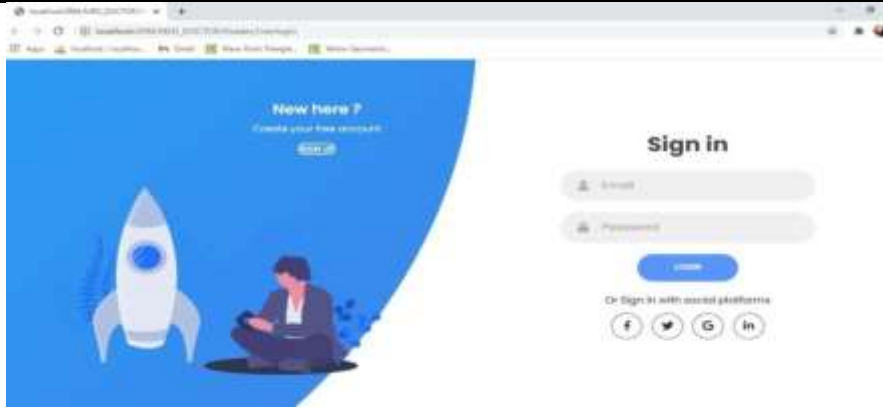


Fig5: User login page

The user login page is depicted in Fig5. After email verification, the user will automatically redirect to this page. On this page user will give his/her registered email id and password. And finally, he/she gets into the user welcome page.

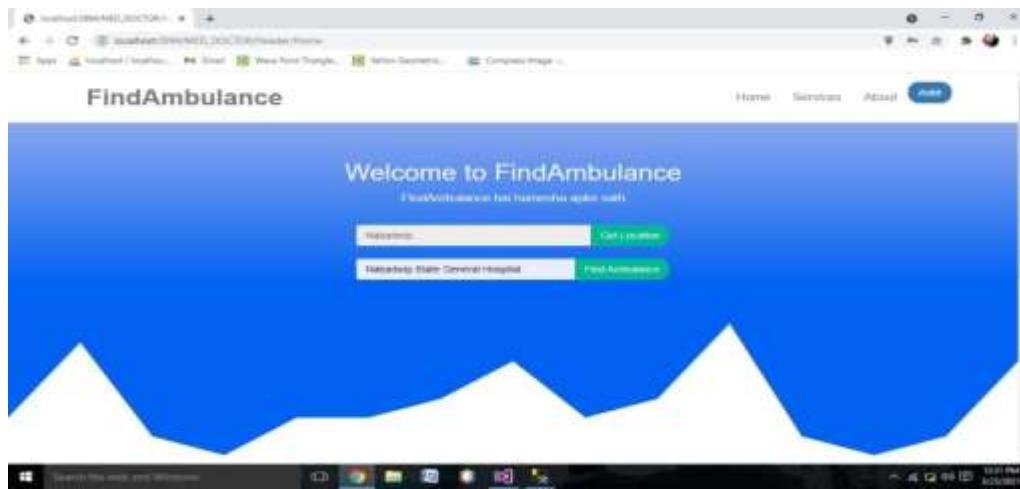


Fig6: Welcome page of a user

The welcome page of the user is displayed in Fig6. After login, the user will redirect to this page. For booking an ambulance at first user has to click the get location button and then the system will ask for the turn-on location. After that, the website will fetch the current location of the user. Then the second textbox will appear. In this textbox, you may give a hospital name (this is not a mandatory text field) in your location at a distance of 5km. After that, click the **FindAmbulance** button to get the available ambulance drivers.

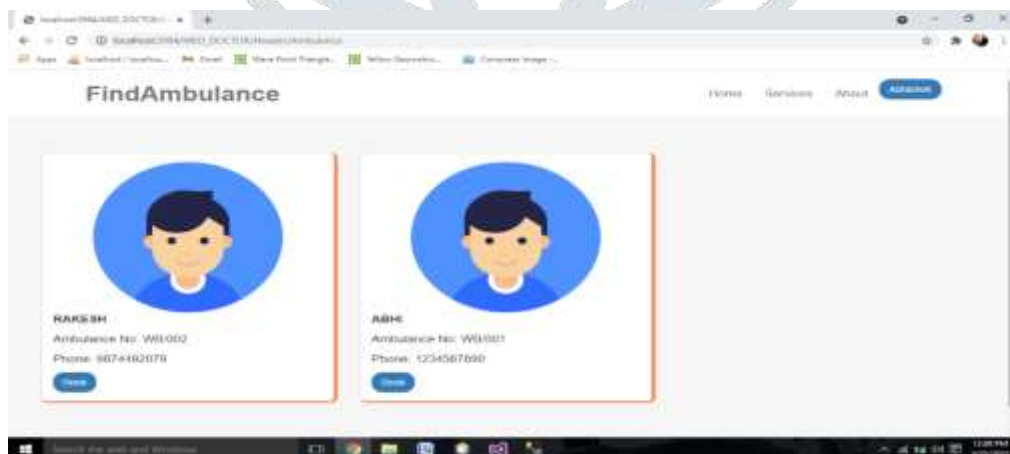


Fig7: Available driver-list

On this page, all the active drivers have been shown. Users can book anyone of the driver. After clicking the book button, the user will redirect to the next page.

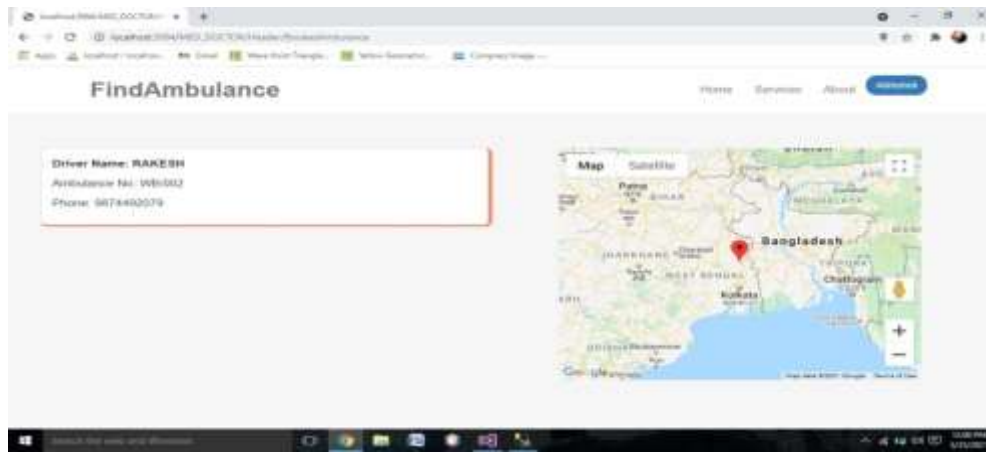


Fig8: Booking driver details

On this page driver's all the necessary details has been shown along with the location mark on Google map.



Fig9: Google map zoom in mode

In this figure zoom-in mode of Google map is shown. Here, the red location marker indicates the booked driver's current location.
Driver module:

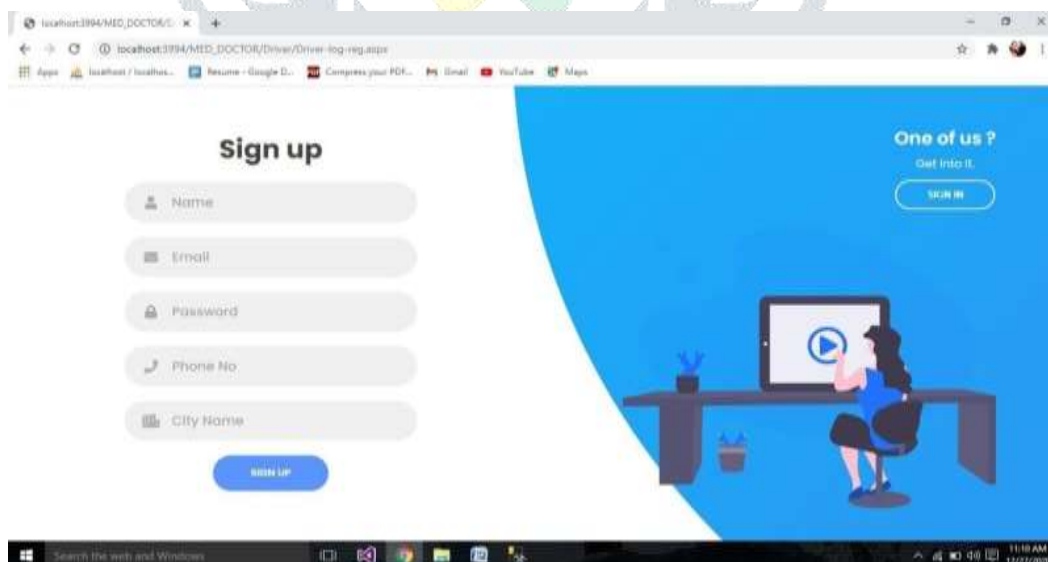


Fig10: Driver signup page

From the front, if a new driver wants to use this website, at first, he/she need to register on the website. After signup driver will redirect to the email verification page.

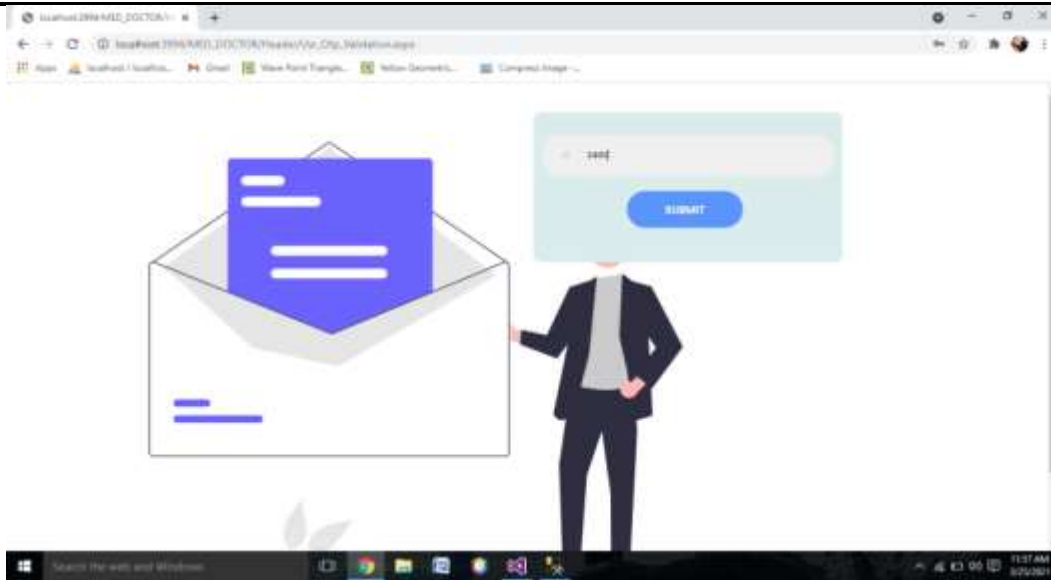


Fig11: Email verification page

After signup driver will get a mail which was given in signup. From this mail driver will enter the OTP (one-time-password). If OTP matches user will redirect to the login page otherwise it will show OTP NOT MATCHED.

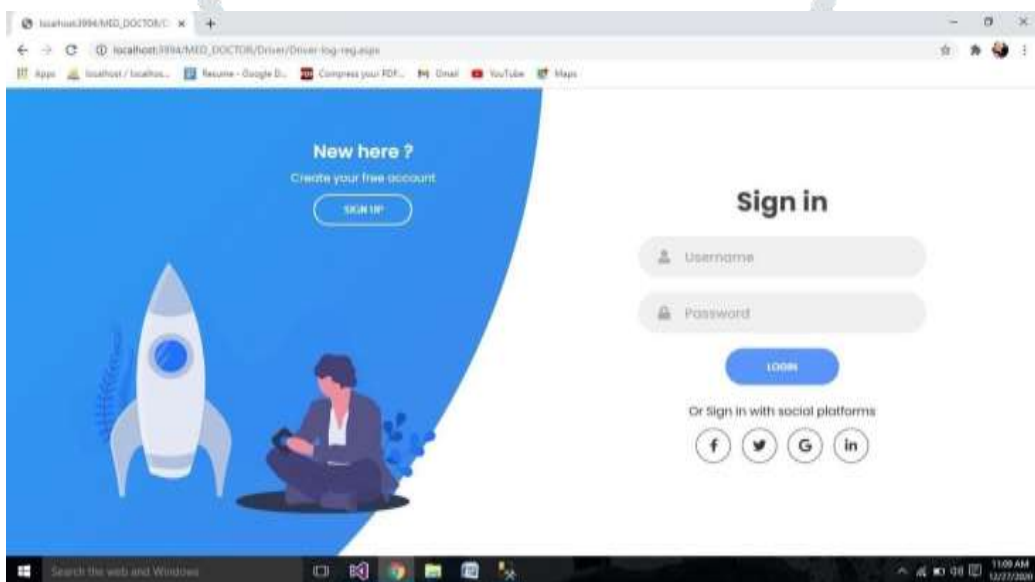


Fig12: Driver login page

From the front, if a new driver wants to use this website, at first, he/she need to register on the website.

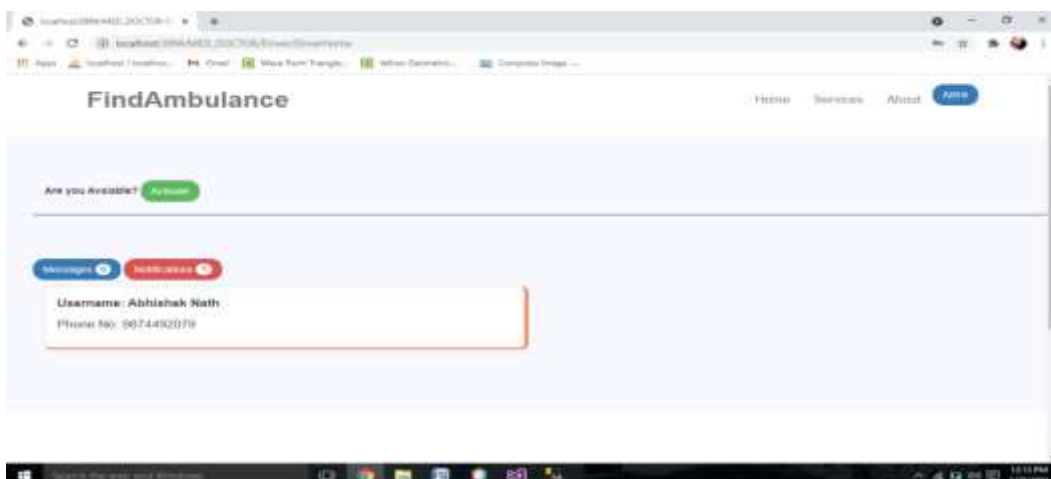


Fig13: Driver welcome page

On this page, the Driver can make him available or not by clicking this activates button and vice-versa. Also, on this page driver will get his booking notification.

5. Conclusion

The main aim of this paper is to develop a new secure, least time-consuming system for tracking ambulances. This paper presents the ambulance tracking web application. We have used GPS and Google API for tracking the location of an ambulance. We have created the front page, user sign-in, user log-in, driver sign-in, driver log-in, Driver front-page, and available drivers-list, booked driver details along with the entire required database. Our proposed system can save the life of a serious patient by taking minimum time to book and reach a nearby hospital safely and securely.

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