

# Ambulance Dispatch System

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## Abstract

The ambulance dispatch system is a Web based application that efficiently receives and records the details of an emergency incident including location, finds the next available ambulance and dispatches the ambulance within the minute and this web application also shows the nearby hospital. Leaving to the dispatcher to track local ambulances make it more easy. Ambulance dispatch systems come equipped with an interface that allows for direct communication with ambulance drivers and provides the ability to provide drivers valuable information about the emergency. Dispatchers help to track and manage the ambulances in their area. This research work provides a comprehensive system that tackles this problem of manual ambulance dispatching by replacing it with Ambulance Dispatch System .

**Keywords:** Ambulance Dispatch System, Dispatcher, Location.

## 1. Introduction

Conventionally during an emergency, a victim or the victim's caretaker calls ambulance dispatch service by dialing the helpline number. The ambulance dispatcher asks for the detailed address and calls the available ambulance to go to that particular location. This process consumes time. A person have to first make a call and wait until the call connects and then guide the ambulance dispatcher about the location of accident or emergency. The dispatcher then alerts the ambulance near the location of the victim and guides the ambulance to the victim. In case of emergency, every minute is crucial for saving a life and one cannot afford to wait longer.

The need of a system that can reduce this time where the information of the victim flows from the victim to dispatcher and dispatcher to ambulance. It maintains locations of ambulances that can be dynamically configured at administration time. The system maintains a history of response results for analysis. The scope of the ADS starts at the moment the dispatcher gathers information from the witness and ends at the patient arrival to a hospital. The ambulance driver is the key person to respond to the status queries. The system allow sending the emergency information to the ambulance as well as querying the ambulance about the status of the emergency. Simple to Operate the user should not require special skills or training to operate the system. The user interface is kept as simple as possible so as not to make the application too confusing for the user to understand.

The Ambulance Dispatch System (ADS) is a web based tool to allow the administration of emergency response system. It maintains locations of ambulances that can be dynamically configured at administration time. The system maintains a history of response results for analysis. The Ambulance Dispatch System supports the following users the witness and

the ambulance driver. The system shall locate the available ambulances that are closest to the emergency location. Emergency lines rang and rang without an answer and those lucky enough to get through were greeted by woefully unprepared operator<sup>8</sup>. The delay in the arrival of ambulance is also one of the main causes of deaths.

## 2. Literature Survey

The design of the project is influenced by the paper "Public

Awareness of the Emergency Medical Services in Maharashtra" by Pranav D Modi, corresponding author<sup>1</sup> Rajavi Solanki,

Tripti S Nagdev, Pallavi D Yadav, Nyayosh K Bharucha, Ajay Desai, Paresh Navalkar, Sunil B Kelgane and Deepak Langade. Thus the paper states that the most widely used emergency medical services (EMS) model in India is the '108' emergency service which primarily in functions as an emergency response system to attend patients need of critical care, trauma and accident victims. This is an observational cross-sectional study which was conducted using a questionnaire that asks the participants about their awareness and opinion of the current EMS the system. The results of this study will enable us to the certain level of awareness of EMS among the public.

From the paper "Automatic Ambulance Dispatch System via one- Click" a clear idea of the components to be included into the project was taken. The idea about the geographical location and the time response was taken. The article "An Emergency System to Improve Ambulance

Dispatching, Ambulance Diversion and Clinical Handover Communication—A Proposed Model" by the authors Samir El-Masri and Basema Saddik. It gives the idea locating the nearest hospital.

The current system is a manual, paper-trail process. One has to call the emergency number '108' and the operator would take in the emergency call, write down necessary information from the caller, & manually locate a free/idle ambulance. Without having an automated computer system, there is no guarantee the operator will locate a nearest available ambulance on time. The operator will have to call each ambulance to see which one can be dispatched to the site. This process is time

consuming & risky depending on the severity of the emergency situation.

## 3. Methodology

### Existing System:

The current system is manual, paper-trail process. The operator would take in the emergency call and write down necessary information from the caller and manually locate a free/ idle ambulance without having an automated computer system, there is no guarantee the operator will locate a nearest available ambulance on time. The operator will have to call each ambulance to see which one dispatched to the site. This process is time consuming and risky depending on the severity of the emergency situation.

### Proposed System:

Calling and asking for the ambulance service would connect the caller to a dispatcher who feeds the information s/he receives from the caller into the system. The system would allocate & mobilize a suitable ambulance within minutes, transmit details to the selected vehicle, and track and monitor actual position. The system would show the location of each patient, the nearest three ambulances, and the nearest available hospitals. Upon receiving the request from victim's device, the ADS server does the following:

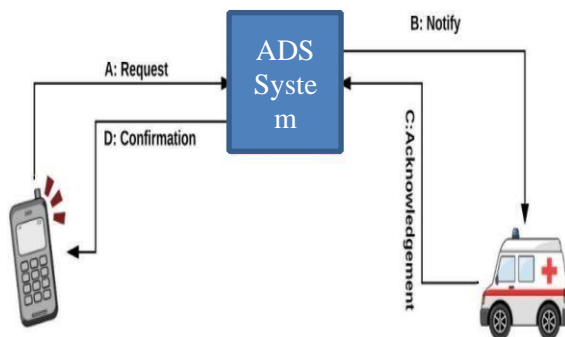
- Store the victim's unique application id and the coordinates in the database table for maintaining the record of victim currently suffering from any mishap.
- ADS server looks for the nearest vacant ambulance to location of victim. The ADS server maintains the status of all ambulances if they are vacant, on a rescue mission or not available due to maintenance or break down.
- Once the nearest vacant ambulance is located, the ADS server forwards the victim's location to the ambulance driver
- Enabling the driver to either accept or reject the emergency alert.

**Ambulance Dispatch System** has identified modules Witness, Ambulance, driver, dispatcher and Hospital witness who can report the incident. The person can also share the location of the accident. Ambulance Driver can register and login with their credentials.

He can also be able to view the location shared by the witness.

**Geopy Package** in python is used for finding the optimal location with the help of Closest rule. we will be able to dispatch the ambulance. Geopy is a Python client for several popular geocoding web services. Geopy makes it easy for Python developers to locate the coordinates of addresses, cities, countries, and landmarks across the globe using third-party geocoders and other data sources. Geopy includes geocoder classes for the OpenStreetMap Nominatim, Google Geocoding API (V3),

and many other geocoding services.



**Figure 1.** ADS Architecture Victim ADS Application UI.

Dispatcher will respond to the request from the witness through location and will automatically send the request to the nearby Ambulance that is available and will show the nearby hospitals

## 4. Result and Discussion

The immense need of automation of ambulance dispatch system is necessary for solving this problem. It maintains locations of ambulances that can be dynamically configured at administration time. The system maintains a history of response results for analysis. The scope of the ADS starts at the moment the dispatcher gathers information from the witness and ends at the patient arrival to a hospital. The ambulance driver is the key person to respond to the status queries. The system allow sending the emergency information

The model is set up subject to the following:

- Allocation of ambulances: The ambulances are station edat one or several stations. optimal allocation is done here.
- Zero queue: There will be status availability of the ambulance. so that the dispatcher will understand t and allocate accordingly

## 5. Conclusion

to the ambulance as well as querying the ambulance about the status of the emergency. Simple to Operate the user should not require special skills or training to operate the system. The user interface is kept as simple as possible so as not to make the application too confusing for the user to understand .it is a user friendly interface.

The Project was aimed at developing an web application using which a user can report casualty and request an ambulance to the spot. The user can add his phone number, medical condition of the patient along with the location. The Application automatically finds the nearest available ambulance and dispatches it to the nearest hospital. As soon as a accident is reported , the system automatically attempts to pinpoint the victim's location based on their GPS. If it succeeds, the dispatcher simply needs to verify this location with them. As a dispatcher learns more about the emergency (i.e., the details include the following : victim's name, location, phone number, the nature of their situation, etc.) they input this info into the ambulance driver.

In the event that there aren't any available ambulances, the system will check the status of each vehicle and determine which ones will be able to respond the soonest.

## 6. Future Enhancement

Ambulance Dispatching System is a flexible system and various can be brought about as required by client even in the new system has gone leave there may be need for some system design activity this will arise some changes that are necessitated by the

dynamic nature of the system and its environment. As the competition in the software development is greatly increased the new system may be out dated and another system with more valuable added features has to be developed. Further enhancement can be made without affect in the existing system. Enhancement can be made

as a separate module. As further enhancement we can incorporate our web application to android application. Hospital booking and online consultancy Module can be added in which hospitals can share their availability status and the hospitals can also be booked by the user in the future.

## 7.Reference

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