

CHAPTER-1

INTRODUCTION

1.1 Introduction to Intelligent Ambulance System

The primary role of all ambulance services is emergency pre-hospital medical care, although they generally provide both emergency response and patient transfer on behalf of the health sector. They provide easy access to health services, particularly out of hours, and contribute significantly to telephone triage and telephone health services through sophisticated communications infrastructure. In recent times it has become apparent that increasing health system pressures cannot be resolved only by adding resources, but must also be addressed with new methods of service delivery. If ambulance services can develop towards an out-of-hospital, clinical care service rather than merely pre-hospital clinical care, they could substantially add to functionality of the health system. This could be through more efficient transfer of patient information; more efficient movement of patients; an ambulance service with a public service rather than profit driven philosophy; and patient treatment regimens consistent with the broader health system.

By integrating ambulance services into the health system generally, their respective strategic agenda are aligned, increasing efficiency, and providing an opportunity for an ambulance service, with its relevant expertise, to influence the outcome of 'health' initiatives.

The Traffic congestion can also be caused by large Red-light delays, etc. The delay of respective light is hard coded in the traffic light and it is not dependent on traffic. Therefore for simulating and optimizing traffic control to better accommodate this increasing demand arises.

One of the major problems faced by heavy traffic is by ambulances. But due to heavy traffic, one can often see the ambulances stuck in traffic for long durations thus causing danger to patient's life. Traffic research has the goal to optimize traffic flow of people and goods. As the number of road users constantly increases, and resources provided by current infrastructures are limited, intelligent control of traffic will become a very important issue in the future. However, some limitations to the usage of intelligent traffic control exist. Avoiding traffic jams for example is thought to be beneficial to both environment and economy, but improved traffic-flow may also lead to an increase in demand. There are several models for traffic simulation.

The problem of ambulance getting stuck in a traffic jam can be addressed by ensuring that the lane in which the ambulance is travelling is cleared. That is, the arrival of the ambulance is to be communicated to the nearest traffic signal, so that it can turn the light to green and hence clear the traffic. However, all the ambulances will not be carrying emergency cases. Hence, the traffic clearing system, if done for all the ambulances, will certainly pose a traffic problem. Present Traffic Light Controllers (TLC) are based on microcontroller and microprocessor. These TLC have limitations because it uses the pre-defined hardware, which is functioning according to the program that does not have the flexibility of modification on real time basis.

All developed nations have a well-developed transportation system with efficient traffic control on road, rail and air. Transportation of goods, industrial products, manpower and machinery are the key factors which influence the industrial development of any country. Mismanagement and traffic congestion results in long waiting times, loss of fuel and money. It is therefore utmost necessary to have a fast, economical and efficient traffic control. The monitoring and control of city traffic is becoming a major problem in many countries. The measures taken are development of new roads and flyovers in the middle of the city; building of several ring such as the inner ring road, middle ring road and outer ring road; introduction of city trains such as the light rapid transit (LRT), and monorails; restricting of large vehicles in the city during peak hours; and also development of sophisticated traffic monitoring and control systems.

1.2 Problem Definition:

Case 1:

Unlike western countries, Indian cities cannot think of having separate lanes for emergency purpose due to lack of road planning and infrastructure. With the lives of the patients depending on the speedy arrival of the ambulances to hospital, an alternative solution to the above problem is the need of the hour. Improvement in the quality of life along with substandard public transportation has resulted in spiraling growth of private automobiles. Moreover, the ambulances often get stuck at the traffic signals where all other vehicles try to squeeze in to all the available space so as to move ahead as soon as the signal turns green.

Case 2:

While transiting the patient from source to the hospital there is a lack of communication between the patient in the ambulance and doctor where no measures can be taken to hospitalize the patient with proper direction.

This problem is solved in our project by sending the measured parameters like heart rate and body temperature to hospital priorly where a suitable measure can be taken.

Case 3:

When a patient needs to be hospitalized there is a requirement of having the bio-data of the patient to have records which is manually done in hospitals.

This problem is solved by using the finger print system where the details of the patient is stored earlier in the database.