

# Intelligent Ambulance With Traffic Control

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## ABSTRACT

In this paper, a System has been developed that tracks the patient's health conditions. It measures health parameters such as body temperature, and electrocardiogram (ECG) and sends it to the hospital using the on board GSM unit. All these parameters are displayed in the hospital unit on a computer with the help of visual basic software or GSM unit. The other objective of this project is to control traffic signals. If the ambulance encounters traffic on the way due to a traffic signal, IR sensor technology is used to control the traffic signals. The particular signal is made Green for some time and after the ambulance passes by, it regains its original flow of sequence of signaling. GPS module is used for ambulance location finding purposes.

**Keywords:** GSM, GPS, IR SENSOR, MICROCONTROLLER.

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## I. INTRODUCTION

In today's world, health hazards are a major concern. Especially people in the older age group are the victims, and moreover the traffic conditions are worsening day by day, which results in traffic jams. Many important jobs get delayed due to these traffic jams. Ambulance service is one of the major services which gets affected by traffic jams. To solve this problem we have come up with the solution of "intelligent ambulance with automatic traffic control". Here we are tracking the patient's health conditions. The health parameters such as heart rate, body temperature, blood pressure and blood level are sent to the hospital using the on board GSM unit. All these parameters are displayed in the hospital unit on a pc with the help of visual basic s/w. Simultaneously if at all the ambulance encounters the traffic jam in the route, the driver is provided with the remote to control the traffic signals. The particular signal is made green for some time and after the ambulance passes by, it again regains its original flow of sequence of signalling. The GPS system will send the location of ambulance for track the ambulance.

## II. EXPERIMENTAL PROCEDURE

### 1. FIGURES

Ambulance unit:

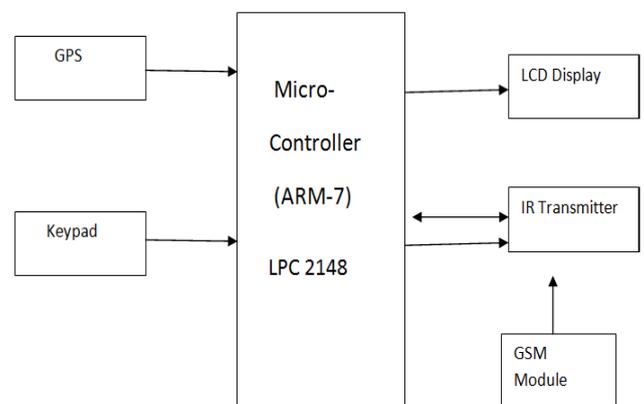


Figure 1: Block diagram of ambulance unit

Traffic signal unit:

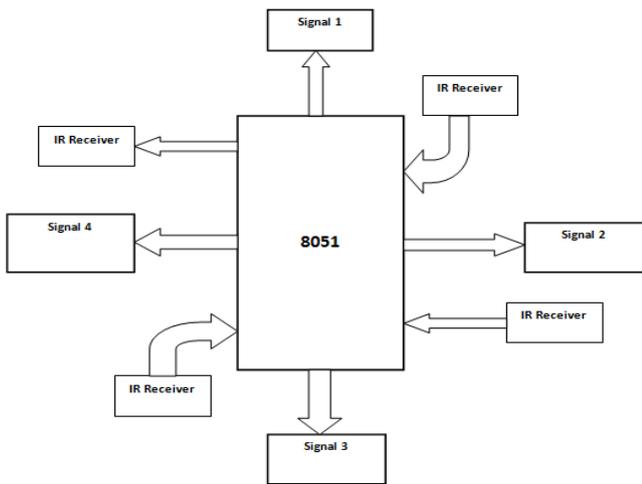


Figure 2: Block diagram of traffic signal unit

Hospital unit:

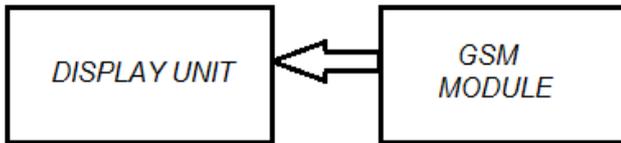


Figure 3: Block diagram of hospital unit

2. DISCRPTION

A.AMBULANCE UNIT

The block diagram as shown in Fig. 1 shows that GSM module, GPS module,IR sensor transmitter,LCD display, Keypad and Micro-controller. The GPS (Global position system) is used for the location finding purposes it is a navigation system and it gives signal in the form of Latitude and Longitude from the GPS satellite. This GPS module interface with microcontroller unit and controller save this data in the memory location and performed further operation.

The keypad is directly interface with controller for the operate parameter for e.g. Heart beat sensor readings, blood pressures etc. This data will be transmit GSM via the controller serial port to a SMS of an hospital GSM system. And LCD display is used to display the patient parameter before the sending to hospital unit.

The GSM module is used to transmit the patient parameter and it is interface with serial port of micro-controller (LPC2148) with the help of MAX232 logic.

The IR sensor transmit the signal indicators for ambulance drive easy in the traffic road it is defined to the controller signal1 for turn right, signal2 for turn left, signal3 for alerting and signal4 for block the other vehicle signals.

B.Traffic Signal Unit

The traffic light system designed by Levi L. Rose [1] used only for emergency vehicle. Sensor is used to transmit signal that has been installed in every emergency vehicle to the receiver which has been placed at every traffic light intersection. When emergency vehicle reach at the traffic light intersection, the signal code will be sent information of

frequency modulation to the receiver. The receiver demodulates the received code and the red traffic light will trigger at all the junctions. Thus, emergency vehicle will have special route from other vehicle to reach the destination.

The traffic light system designed by M. R. Smith et al [2] provided early warning of the approaching an emergency vehicle to find a way out from traffic congestion and lead the emergency vehicle to the destination. The emergency vehicle also may take control of traffic light at an intersection. A transmitter placed on an emergency vehicle transmits a signal to the receivers positioned at the traffic lights whenever it is on emergency mode. The received signal is then processed by a master controller which in turn pre-empt the sequence of the traffic light to control the traffic flow at the intersection which taken by the emergency vehicle. The master controller also provides an output which display signs to indicate that there is an emergency vehicle to the other road users from other direction at the traffic light intersection. Additionally, the display system indicates whether the emergency vehicle has passed through the intersection or not. W. L. Mitchell has designed a traffic light control system

[3] Which had overcame the traffic congestion problem and provided an emergency path for the emergency vehicle where the radio transmitter and antenna placed on the emergency vehicle. The radio will transmit the signal to the other vehicle that nearby. The radio receiver had been placed at four junction traffic light will receive the emergency signal from emergency vehicle that passed by the junction. The first signal code contains a frequency for emergency vehicle while the second signal code contains a frequency for other vehicle. The transmitted signals provide miscellaneous traffic light pole in normal condition or emergency. When the receiver received the signal from emergency

vehicle transmitter, traffic light system for emergency vehicle will be activated. W. E. Brill introduced an emergency vehicle detection system

[4] For alerting a driver of an approaching emergency vehicle includes a sound signal-producing unit mounted on an emergency vehicle, a sound signal detection unit mounted on a non-emergency vehicle, and a display unit remotely located on the non-emergency vehicle. The sound signal-producing unit has a sound generator for producing and transmitting a sound signal. A switch is used for controlling the operation of the sound generator in combination with a siren. A traffic light control system presented by Carl J. Obeck.

[5] Consists of two-way communication between emergency vehicles approaching a busy intersection with one or more traffic lights. The system temporarily pre-empt the sequence of the traffic light and provides the most effective method of routing the vehicle through the intersection while redirecting general traffic. As part of the invention, the traffic light control system will inform the emergency vehicle which it has received the transmitted signal. The stored preset traffic patterns may in one representation is responsive to manual intervention from a dispatching center or to time-of-day conditions. The traffic light control apparatus may be operated under control of data or voice transmitted from the emergency vehicle's regular two-way voice communications system to a central control station.

The block diagram as shown in Fig. 2 shows that a IR sensor and microcontroller is used to control traffic signals in the prototype of this project. The IR receiver will be present on the traffic signal and IR sensor transmitter will be mounted on the ambulance

### C. Hospital Unit

The hospital unit consists of a computer with visual basic software. It displays the patient parameters that it obtains in the form of waveforms via GSM to the hospital personnel and location of ambulance is also display to know how ambulance near the hospital. The hospital personnel can begin the preparation for diagnosis even before the patient has arrived at the hospital.

## III. ADVANTAGES

1. Avoid the accident and save the life of human.
2. Control the traffic signal.
3. Flexible and easy to install.

## IV. APPLICATIONS

This system is used for special application to control the traffic signal and monitor the patient health parameter before come in hospital for further diagnosis.

## V. CONCLUSION

The Intelligent Ambulance will send the patient's parameter continuously to hospital for further preparation for diagnosis even before the patient has arrived at the hospital with the help of GSM. By breaking any existing communications barriers and cutting the time a patient spends in the emergency department triage system, the ambulance team can wirelessly save their lives. And traffic signal control using IR sensor and GPS send the current location continuously to hospital for tracking ambulance.

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