



# Adaptable ANDROID Based Green Corridor Using Lpc 2148 and GSM Module

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**ABSTRACT:** Traffic congestion is a major problem in all major cities all over the world. Conventional systems have many limitations. In our project we worked with three major goals that is,

- Provide variable time slots as per traffic density.
- Provide green corridor for emergency vehicles.
- Provide zero waiting time to a car at a junction if all other roads are empty.

Through this paper we are trying to improve these standards. In our system we are using IR sensors and photodiode to sense status of the traffic. For controlling the system ARM7 is used. Green corridor can be established by using a Bluetooth device from Android application device. The microcontroller chip supervises every signal and the GSM module and either change the time slot or turn the signal green.

This research paper presents a novel intelligent traffic administration system based on Internet of Things, which is featured by low cost, high scalability, high compatibility, easy to upgrade, to replace traditional traffic management system and the proposed system can improve road traffic tremendously. The Internet of Things is based on the Internet, network wireless sensing and detection technologies to realize the intelligent recognition on the tagged traffic object, tracking, monitoring, managing and processed automatically.

**KEYWORDS:** GSM module, ARM7, IR Sensors.

## I. INTRODUCTION

### A. Project idea:

In this project we introduce the concept of Android Based Green Corridor. Traffic is very big issue now a day and in this the traffic is being controlled automatically without any traffic police. In this project the green corridor is controlled with the help of an android application. In now a days many deaths are caused due to the traffic congestion. And ambulance could not go fast due to traffic jams near to traffic junctions. Solution to this problem is to control the traffic system so that it would be helpful to protect someone's life by giving the high priority to the ambulance. But making the system fully automatic is very big task. Many times people do not give way for ambulance because of traffic. Suppose someone suffered a heart attack and need the ambulance immediately but because of the traffic the person will die before ambulance could reach to the hospital. So in this project we are going to design an android application. By which when ambulance is going for emergency the green corridor will get activated. On every signal GSM module will be installed to which android application is connected. When ambulance is about to reached at signal one the notification will be send by the android application to that signal from the driver of the ambulance that Green corridor is activated and one particular lane will be get cleared for ambulance. And when that signal is passed then another message will be send to the next signal and that lane will be cleared.

### B. Necessity:

India's traffic problem has often been the cause for many deaths, only because ambulances couldn't get patients to hospitals in time or ambulances were not able to reach the accident spots on time. The same applies to organ transplants hearts or other organs from brain dead patients sometimes have to be transported over long distance and often from other cities getting them to the patients who need them in time is important for their survival. So this project will help to solve this problems and issues like death because of the traffic or ambulance not reach on time will be less.



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This research proposes to employ the IoT, agent and other technologies to improve traffic conditions and relieve the traffic pressure. Information generated by traffic IoT and collected on all roads can be presented to travelers and other users. Through collected real-time traffic data, the system can recognize current traffic operation, traffic flow conditions and can predict the future traffic flow. The system may issue some latest real-time traffic information that helps drivers choosing optimal routes. Therefore, the system can precisely administrate, monitor and control moving vehicles. Constructing an intelligent traffic system based on IoT has a number of benefits such improvement of traffic conditions, reduction the traffic jam and management costs, high reliability, traffic safety and independence of weather conditions [1, 2]. Such traffic IoT must include every element of traffic such as roads, bridges, tunnels, traffic signals, vehicles, and even drivers. All these items will be connected to the internet for convenient identification and management through sensor devices, such as RFID devices, infrared sensors, global positioning systems, laser scanners, etc. Traffic IoT provides traffic information collection and integration, supporting processing and analysis of all categories of traffic information on roads in a large area automatically and intelligently. Thus, modern traffic management is evolving into an intelligent transport system based on IoT. Traffic requires suitable information about services and logistics available on the road and therefore the system can become more self-reliable and intelligent. With a number of WSN and Sensor enabled communications, an IoT of data traffic will be generated.

## C. Related Work:

In “GPS Based Automatic Vehicle Tracking Using RFID”, Devyani Bajaj, Neelesh Gupta, paper illustrates about a vehicle tracking system is an electronic device installed in a vehicle to enable the owner or a third party to track the vehicle's location. Designing of a remote control vehicle having the facility of tracking location through GPS tracking & detection of object to avoid collision are the main objects of this paper.

The “Design and Implementation of Web-Based GPS-GPRS Vehicle Tracking System”, Dr. Khalifa A. Salim, Ibrahim Mohammed Idrees, paper states that an integrated cost effective web based GPS-GPRS vehicle tracking system was designed and implemented. The system enables enterprises owners to view the present and past positions recorded of the target vehicle on Google Map through purpose designed web site.

The current position of the vehicle was acquired by GPS device which is integrated in the target vehicle and the location coordinates are sent through GPRS service provided by the GSM network. The GPS data are sent using Get method of HTTP protocol, the data at server side are stored in a database tables and can be retrieved as request for position browsing on map. A web application is developed using JavaScript, Ajax, XML, and MySQL with embedded Google Map to retrieve and display on track details.

The “Use of GPS with Road Mapping for Traffic Analysis” proposed by Obuhuma, J. I., Moturi, C. A, explored the development of a GPS TCP Server that listens to GPS trackers' data and routes it to a centralized database. In addition, a client-side application that retrieves and displays the raw GPS data in a user friendly and human readable format was also explored. Furthermore, a road mapping concept for different analytical purposes relating to traffic analysis on the Kenyan roads is incorporated. The study aims at streamlining the transport industry by analyzing the operation patterns on the roads and the general road usage patterns including speed of traffic with email alerts on speeding.

In proposed system GPS integrated system provides real-time meaningful location and status of the vehicles in the traffic to control it for ambulance. The system has been used to show the second-to-second positional changes in speed and directions of vehicles travelling.

## II. MODELING/DEVELOPMENT OF SYSTEM

### A. WORKING OF PROJECT:

When green corridor is activated then from the android application the message will be send to the signal and the LED placed on road will start blinking. It will notify the peoples that green corridor is activated and they will clear that lane. When first signal is passed the message will be send to the second signal and signal will turn to green so that ambulance will pass. The GSM modules are placed on each signal for communication with the android application.

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## B. BLOCK DIAGRAM:

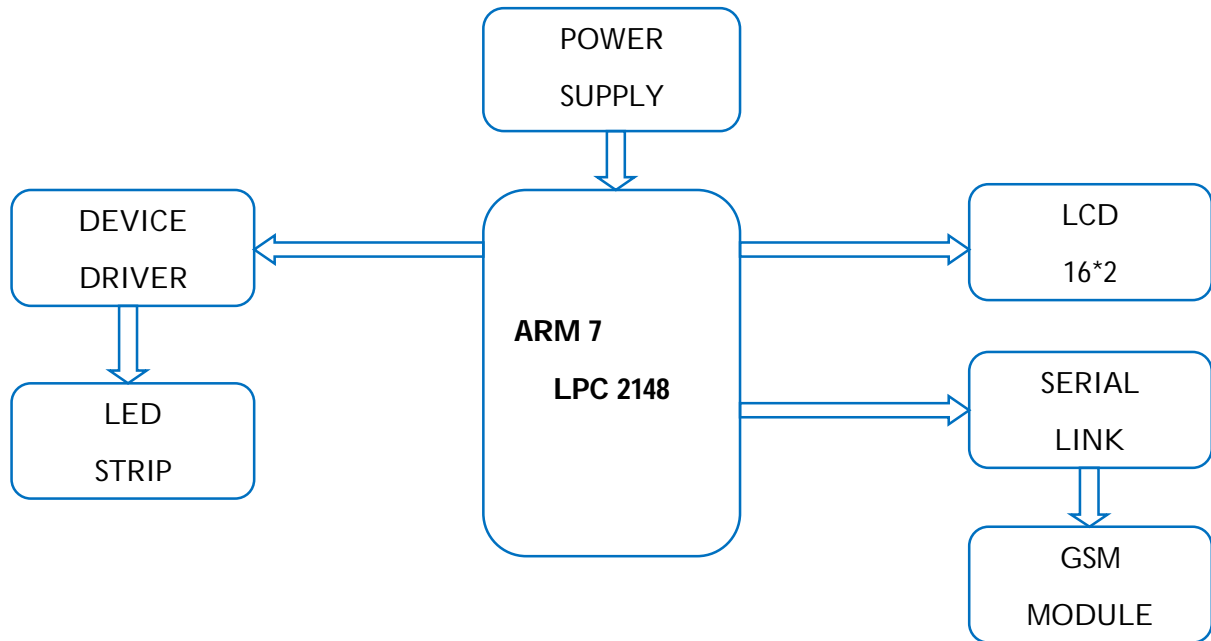


Fig 1: Block diagram of proposed system

- i. **Power Supply:**  
All the electronic circuits need the DC voltage power supply which is derived from the single phase AC main supply. For this purpose we have to use the regulated power supply. The regulated power supply consists of transformer, rectifier, filter, voltage regulator IC, etc.
- ii. **ARM 7:**  
The LPC2148 microcontroller based on 16 or 32 bits ARM7 TDMI-S CPU with real time evolution and embedded trace support that combines the microcontroller with embedded high speed flash memory ranging from 32kb to 512kb. It has 128 bit memory and 32 bit code execution at maximum clock rate.  
**Features:**
  - a) It is an ARM7 TDMI-S based high performance 32 bit RISC microcontroller.
  - b) 512kb on chip flash memory with In System Programming (ISP) and In Application Programming (IAP).
  - c) Vector Interrupt controller.
  - d) Two 10 bit ADC with 14 channels.
  - e) Two SPT interface and 32 bit timers.
  - f) It also have a Watchdog timer.
- iii. **Device Driver:**  
In this we are using ULN2803 device driver. It is a high voltage current Darlington transistor array. It consists of 8 NPN darling tone pairs that feature high voltage output. The ULN2803A device has 2.4k series base resistor for each Darlington pair for operation directly with TTL or 5v CMOS driver. Each channel consist of Darlington connected NPN transistors.



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Features:

- a) 500mA Rated Collector current.
- b) High voltage output.
- c) Inputs compatible with various types of logic.

Applications:

- a) Relay drivers
- b) Display drivers
- c) Lamp drivers

iv. LCD Display:

(LCD) Liquid Crystal Display is commonly used display as LCD can be easily interfaced with microcontroller to display a message. It is economical, easily programmable. In this we are using 16\*2 LCD.

v. GSM Module:

GSM (Global System for Mobile Communication) is the most popular standard for mobile telephony system in the world. GSM is used by over 3 billion peoples across the different countries. GSM is considered as 2G (Second Generation) mobile phone system. GSM is also a well-known low cost implementation of the short message service (SMS). The standard includes a worldwide emergency telephone number feature. GSM was designed with the moderate level of service security.

Features:

- a) Highly Reliable for 24\*7 operation with matched antenna.
- b) Status of modem indicated by LED.
- c) Simple to use and low cost.
- d) Tri-Band Modem support all GSM operator SIM cards.

## C. Android Application:



Fig 2: Android Application



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## III. PROPOSED WORK REGARDING PROJECT

Now a days there is a high traffic at a particular time at a place due to that the traffic signals should maintained correctly to reduce accidents but at the same time if there is some emergency situations, ambulance may blocked in the signal it leads to major cause. To avoid this, based on all statistics, traffic signal should be controlled. For that strategy, the proposed system is built in real time. This application is very useful for the world's day to day life to save someone's life. Proposed application plays the role between ambulance and the traffic signals.

- Collect all detailed information about project.
- Collection of all required data sheets and documents.
- Study of hardware and software requirement regarding to block schematic. According to circuit design creates the PCB artwork.
- Soldering and interfacing of all components.
- Design a software programming of Embedded C.
- Testing of project after completion of all works regarding hardware and software.

The following figure shows the android app screenshot and project demo of proposed system.

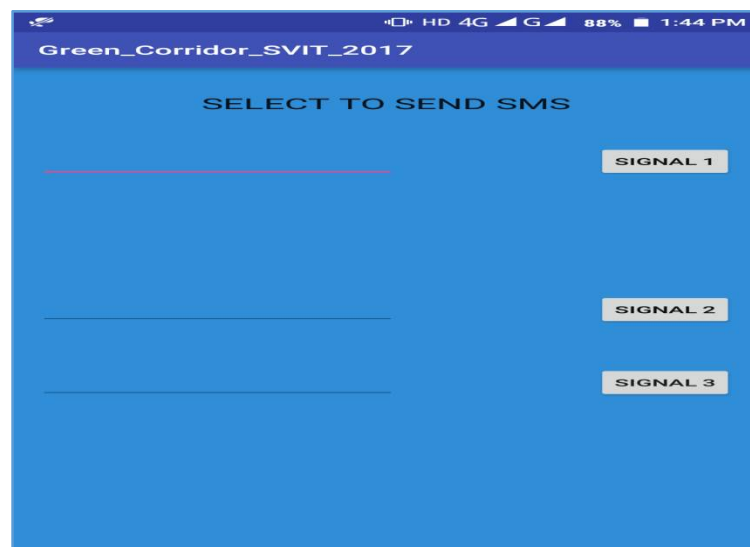


Fig 3: Android Application screenshot

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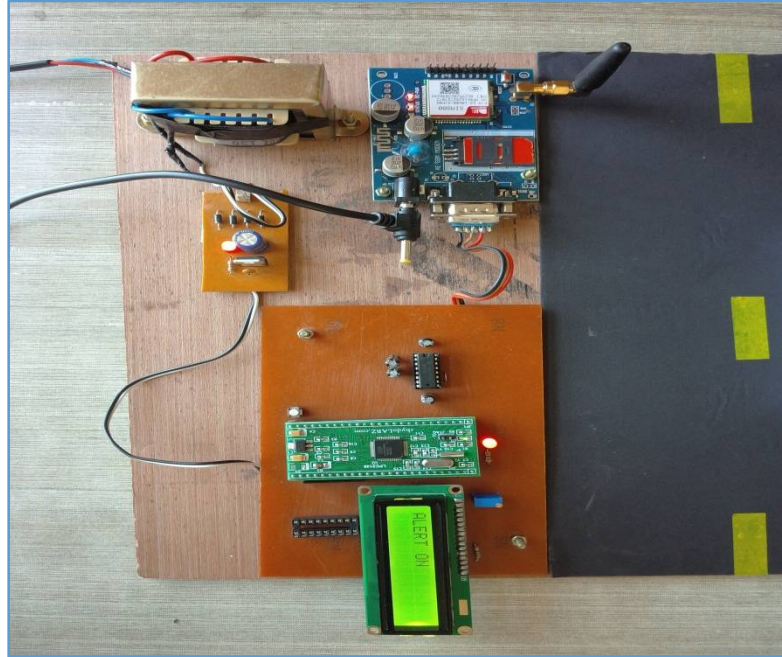


Fig 4: Project Demo

## IV. FUTURE SCOPE AND CONCLUSION

The traffic can be managed by the help of drone camera. There is tremendous increase in traffic over past years. There are various problems occurring due to traffic. One of the major problems is with ambulance. Human life is very precious. The application mainly depends on measures very conscious in all aspects. Ambulance could not reach to the patient on the time due to heavy traffic. So in this we are focusing on the main topic that is traffic. Our project will help in resolving this problem. We have developed an android app which helps in controlling the traffic.

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