INTELLIGENT TRAFFIC LEGISLATION CONTROL SYSTEMS

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ABSTRACT

During the past few years, traffic accidents have increased enormously. In our daily life, we come across many problems caused due to traffic rule violation by some people. Also when we go through the daily news, we realize that road accidents is one of the major problems. These problems cause disturbance to the whole system. We improve the traffic discipline with the need for high tech computerized solutions. In this project, we are designing a system which will automatically incur penalty to the car driver for violation of traffic rules.

KEY WORDS: GSM Module, Arduino, Traffic Light Board, LCD Display, RFID Reader, Alcohol Sensor.

INTRODUCTION

In Present industry is increasingly shifting towards automation. Two major components of today's industrial automations are programmable controllers and robots. In order to aid the endless work and to serve the mankind, today there is general trends develop an intelligent operation. ARDUINO is the heart of the device which handles all the sub devices connected across it. It has flash type memory and reprogrammable. It has some peripheral devices to play the role in project perform.   It also provides sufficient power to inbuilt peripheral devices. We need not give individually to all devices. The peripheral devices also actuates as low power operation mode. These are the advantages are appear here. It can be performed vision based methodologies to know well the real measurements in urban road [3].

EXISTING SYSTEMS

In The previous paper is Accident Alert using GPS Technology and Automated Traffic Light Control for Ambulance [11].
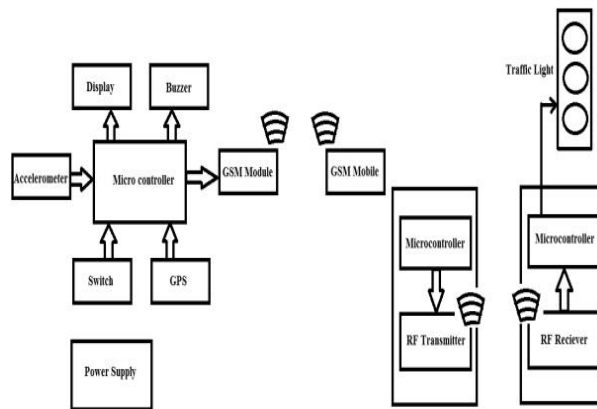
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Fig 1: Block diagram

In this systems have a best control over road accidents by the quick communication between the victim and the control centre. In this way we can reduce the possibility of accidental death.

Ambulances running on emergency could not afford for the light gone red on traffic islands. Using algorithms traffic can be controlled much more efficiently. Time and life could be saved hence to an extent on road.

Accident detector is detecting the presence of accident or shakes over a limit that may occur to a vehicle during its motion. When the accident is detected, the location is decoded from the result of a GPS module and this data is send as a message to an emergency call center by using a GSM module.

In the paper [12] Use of GPS With Road Mapping For Traffic Analysis is explores the use of the Global Positioning System (GPS) technology incorporated with road mapping focused at the traffic data collection and analysis for traffic conditions.

 All these aspects can be analyzed both in real-time and historically basing on the fact that historical data is captured and stored for future use. The system has an addition ability to trigger email alerts on speeding vehicles.

 Using the geographic components in the collected GPS data and visualizing by mapping, provides a clearer view of the traffic conditions for any given region.

The data collection utilized a GPS device, a Webcam and an opinion survey. Human perceptions were used to rate the congestion levels into three levels light, heavy and jam.

PROPOSED SYSTEMS

In the world level we are facing the major problem is traffic. We are in the busy schedule in our day to day life. Sometimes we didn't consider the traffic rule.

In this paper, If the vehicle is move on the time of red signal it sends the information to the traffic controller and also owner of the vehicle by using GSM. And alcohol is detected it sends the information to the traffic controller.
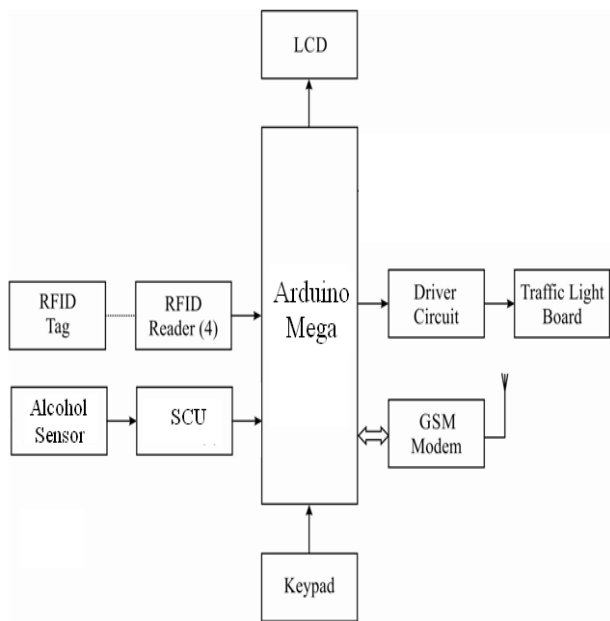
BLOCK DIAGRAM

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Fig 2: Block diagram

As shown in the fig 2, the main component of the systems is Arduino, RFID reader, RFID tag, keypad, driver circuit, LCD display, traffic light board, alcohol sensor, GSM module and SCU.

Arduino is an open source software and hardware [1]. The Arduino Mega 2560 is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins, 16 analog inputs, 4 UARTs, a 16 MHz crystal oscillator, a ADC connector, an ICSP header, a USB connection and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer With a USB cable or power, with an AC to DC adapter or battery to get started.

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The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however, the 5V pin may supply less than five volts, if the board may be unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts.   The ATmega 2560 has 256 KB of flash memory for storing code, 8 KB of SRAM and 4 KB of EEPROM. We are using the Arduino project tool for implement the coding [2].

Each pixel of an LCD [4] typically consists of a layer of molecules aligned between two transparent electrodes, and two polarizing filters, the axes of transmission of which are perpendicular to each other. Before, the electric field is applied; the inclination of the liquid-crystal molecules is determined by the alignment at the surfaces of electrodes.

This induces the rotation of the polarization of the incident light, and the device appears gray. This light will then be mainly polarized perpendicular to the second filter, and thus be blocked and the pixel will appear black. It controlling the voltage applied across the liquid crystal layer in each pixel, light can be allowed to pass through in varying amounts thus constituting different levels of gray [5].

There are a huge variety of different operating principles for RFID [9] systems. The most important principle is inductive coupling, which is described in detail below. Most tags also carry an unalterable unique electronic serial number, which makes RFID tags [8] potentially very useful in applications where item tracking is needed or where security aspects are important. The reader powers the tag, by emitting a radio frequency wave. The tag then responds by modulating the energizing field. This modulation can be decoded to yield the tags unique code, inherent in the tag. Tags have various salient features apart from their physical size: Other available features are: Read Only, Read Write, Anti-Collision.

Blood alcohol content (BAC), also called blood alcohol and ethanol concentration, or blood alcohol level is most commonly used as a metric of alcohol intoxication for legal or medical purposes. Blood alcohol content is usually exhibits as a percentage of alcohol in the blood. This alcohol sensor is suitable for detecting alcohol concentration on your breath, just like your common breathalyzer. It has a high sensitivity and fast response time [10]. Sensor provides an analog resistive output based on alcohol concentration.

The SCU accepts input signals from the analog sensors and gives a conditioned output of 0-5V DC corresponding to the entire range of each parameter. This unit also accepts the digital sensor inputs and gives output in 10 bit binary with a positive logic level +5V. The calibration voltages (0, 2.5 and 5V) and the health bits are also generated in this unit. Microcontrollers are widely used for control in power electronics. They providing real time control by processing analog signals obtained from the system. A suitable isolation interface needs to be designed for interaction between the control circuit

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and the high voltage hardware. A signal conditioning unit provides necessary interface between a high power grid inverter and a low voltage controller unit.

A GSM modem is a specialized type of modem. It accepts a SIM card, and operates over a subscription to a mobile operator like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. The purpose of this document, the term GSM modem is used as a generic term to refer to any modem that supports one or more of the protocols in the GSM evolutionary family, including the 2.5G technologies GPRS, EDGE, and as well as the 3G technologies WCDMA [7], UMTS, HSDPA and HSUPA [6].

A GSM modem exposes an interface that allows applications such as Now the SMS to send and receive messages over the modem interface. The mobile operator charges for this message sending and receiving as if it was performed directly on a mobile phone. To perform these tasks, a GSM modem must be support an "extended AT command set" for sending/receiving SMS messages, as defined in the ETSI GSM 07.05 and 3GPP TS 27.005 specifications.GSM modem can be a quick and efficient way to get started with the SMS, because a special subscription to an SMS service provider is not required. In most parts of the world, GSM modems are a cost effective solution for the receiving SMS messages, because the sender is paying for the message delivery.

ADVANTAGES

- To reduce the corruption.
- Accuracy in finding the database of the vehicle owner.
- To avoid the accident in traffic.
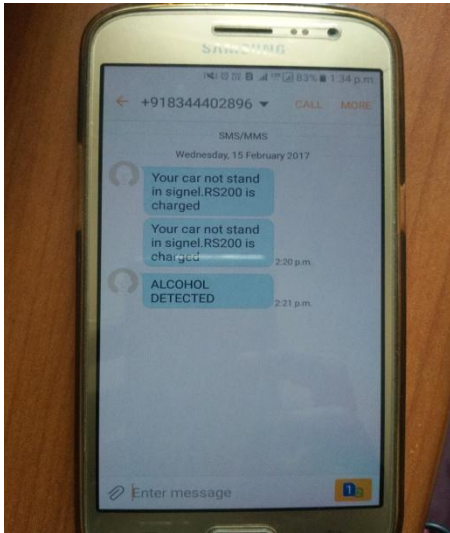- To legislation the traffic rules.
- Fast tracking of vehicle.

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RESULT

Fig 3: Output

CONCLUSION

The progress in a science & technology is a non-stop process. New things and new technology are being invented. As the technology grows day by day, we can imagine about the future in which thing we may occupy every place. We conclude the paper by believing that the project was successful up to a level as we are concerned.   We are very much happy that to the hard work that we had put into this paper was fruitful. Arduino is an open source software and hardware. The whole point of the Arduino is to allow for easy and fast. Being able to just hook up an LCD and be able to display messages on it Ii a matter of minutes, instead of hours, is just amazingly powerful and convenient. A GSM modem exposes an interface that allows applications such as, now SMS to send and receive the messages over the modem interface. The mobile operator charges for this message sending and receiving as if it was performed directly on a mobile phone.

The principle of the development of science is that "nothing is impossible". So we shall look forward to a bright & sophisticated world.

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