Automatic Railway Gate Controlling and Smart System Railway Gate Crossing System

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Abstract*: Internet of Things (IOT) is the network of physical objects that contain embedded technology to communicate and sense or interact with their internal states or the external environment and transfers data over a network without requiring human- to-human or human-to-computer interaction.*
This paper presents a highly sensitive and more secure management system for bus transport with a help of PIC microcontroller and various sensors. The proposed system provides information regarding moving bus to the owner of bus who is located outside the bus based on IOT. Major aim is to transport information like number of non-ticket holders in a bus, accident occurrent places, location of moving bus, fuel level in bus and running speed of bus, pressure level in tires to a bus owner who is outside the bus based on IOT.

Keywords: Zeta function, Statistical measures, Euler's function, Riemann Hypothesis

I. INTRODUCTION

The Internet of Things (IOT) is a scenario which has the ability to automatically transfer data over a network without requiring human-to-human or human-to- computer interaction. IOT has evolved from the convergence of wireless technologies, micro-electromechanical systems and the Internet. The internet of things also called an Internet of objects. Online monitoring system for continuous casting equipment is established based on IOT sensing technology and communication technology. As the system contains a variety of sensor types like IR speed sensor, pressure sensor, Fuel level sensor, etc. And data transmission protocols, it will lead to a large amount of heterogeneous data of different sensors current and voltage values and the data is difficult to integrate with applications in upper layer. A data processing framework is introduced into the system to deal with such problems. A data processing framework is introduced into the online monitoring system, which is a bridge between physical layer and application layer. Finally, application in online monitoring system proved the validity of the framework. From this framework we came to know that the requirements of the equipment are used in the technology and we can also monitor system wide changes. In order to study new methods of multipurpose transport services, researchers need to prototype integrated transport systems. We demonstrate its feasibility by presenting the integrated real-time transporting management solution, by studying signal delay and transmission robustness regarding changing communication channel characteristics, and by evaluating issues reported by the bus during the trial phase. Embracing this approach for the bus data like pressure, fuel level, and speed levels are in data acquisition unit. GPRS are used to find the location. Data are received from the LAN network and it is passed through the router to data stored data base server like .net, c sharp, MySQL. User take the information from data base server by using Ethernet IP address connected between LAN server and SQL data base. This paper helps to reduce traffic congestion, real-time traveler information, road weather information systems, traffic signal optimization and commercial vehicle operations.

Problem Definition:
With the increase in technology and motor vehicle production the number of road accident has increased. The survival rate after accident is very low as proper emergency facilities are not available. Our project would help in detecting an accident and determine its location and the location is dispatched to rescue team and emergency contacts of the rider. The existing models are not reliable as they use vehicle distance between two vehicle provided by certain sensors and does not show concern about speed. Very slow emergency facility can also be a drawback that can be solved by our model.

Objectives:

- To Establishing a wireless network communication between the vehicle andIOT.
- To design and implement cost effective vehicle tracking system yet an efficient one.
- To design a user friendly and a safe system to control vehicles especially aimed to aid the all aged people.
- As well as it's designed such a way so that it can be used for multi-purposelike detecting the accident place of the vehicle or the accident alert system as well as it's useful to track soldiers or to track child/ kid for their safety or missing purpose and also can be useful for women safety purpose.
- So when this embedded system design take care of very aspect of its purpose as it mentioned above.
- Create a simple yet reliable vehicle tracking system using ARM7 LPC2148as a microcontroller that will be the medium between the GPS and the IOTweb server so that embed system works efficiently

II. LITERATURE SURVEY

Shailesh Bhavthankar explained Wireless System for Vehicle Accident Detection and Reporting using Accelerometer and GPS. In this paper, Accelerometer sensor is used to detect crash and GPS give location of vehicle. In case of any accident, the system send automated message to the preprogrammed number such as family member or emergency medical services via GSM.

suggested the vehicle tracking for accident detection system. The authorsused both accelerator and ultrasonic sensor for capturing the accidents details.Finally, wireless camera is used to capture the image of accidents occurred. Based on the obstacle detected during the accident, ultrasonic sensor gathers the information and sends to the micro controller. Even though, the suggested method provides optimum solution, time required for completing the overall process is more. Nimisha Chaturvedi et al.

designed an accident prevention system based on the microcontroller. Thephone number of nearest police or the nearest emergency help center is stored in the ROM embedded in the microcontroller. With the help of method, emergency facilities can be reached at the correct time. Depend upon the microcontroller used; the accuracy of message will reach to the control room.

used the integrated system to provide the alert information about the accident through the registered email. Based on the vibration sensor, it will alert the driver is out of control. The alert message is send to the registered user via through the mobile number and then location is shared to the GPS system. Response time for altering the control system is depend upon the GPS location shared. After analyzing the related works, there is need of automated system for alerting the accident information to control center. The proposed IOT based system gathers the vehicle information and immediately passed
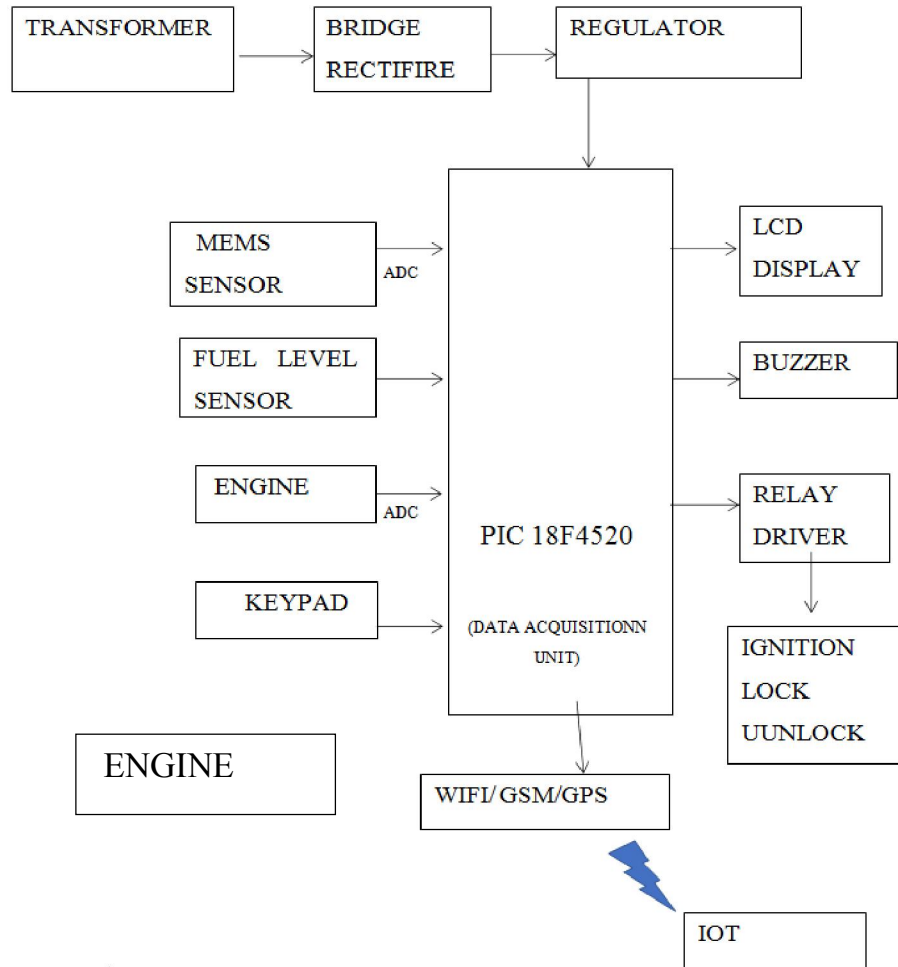
III. SYSTEM DESIGN

Block Diagram:

Fig 3.1: Block diagram Autometic Gate Railway Controlling&Smart system Railway Gate crossing system

Block Diagram Description:

Tracking of vehicle is a process in which we track the vehicle location in form of Latitude and Longitude (GPS coordinates). GPS Coordinates are the valueof a location. This system is very efficient for outdoor application purpose. This kind of Vehicle Tracking System Project is widely in tracking Cabs/Taxis, stolen vehicles, school/colleges buses etc.

This circuit is designed for tracking the location of vehicles. Most of trackingsystems are made by using GPS. This is very simple and cheap. Tracking systems are mostly used by fleet operators for tracking a vehicle location, routing and others. This is a very good method for preventing our vehicles from stolen. This tracking system sends us the geographical

Coordinates and by using these coordinates we can track our vehicle position on electronic maps using internet. By using these tacking systems we can share real time information about transportations. And also can be share real time information or position bus/taxi/cab with passengers. Means passengerscan see the real time of arriving bus/taxi/cab on Mobile.

Specification of components

Microcontroller (PIC18F4520)

PIC18F4520 is a low-cost, low-power, high-speed 8-bit, fully-static Microcontroller unit that has 40 pins out of which 36 pins can be used as I/O pins. It has Power-on-Reset (POR) as well as the Extended Watchdog Timer (WDT) circuitry, which can be programmed for 4ms to 131s.

It is an 8-bit enhanced flash PIC microcontroller comes with inbuilt peripheral with the ability to perform multiple functions on a single chip.

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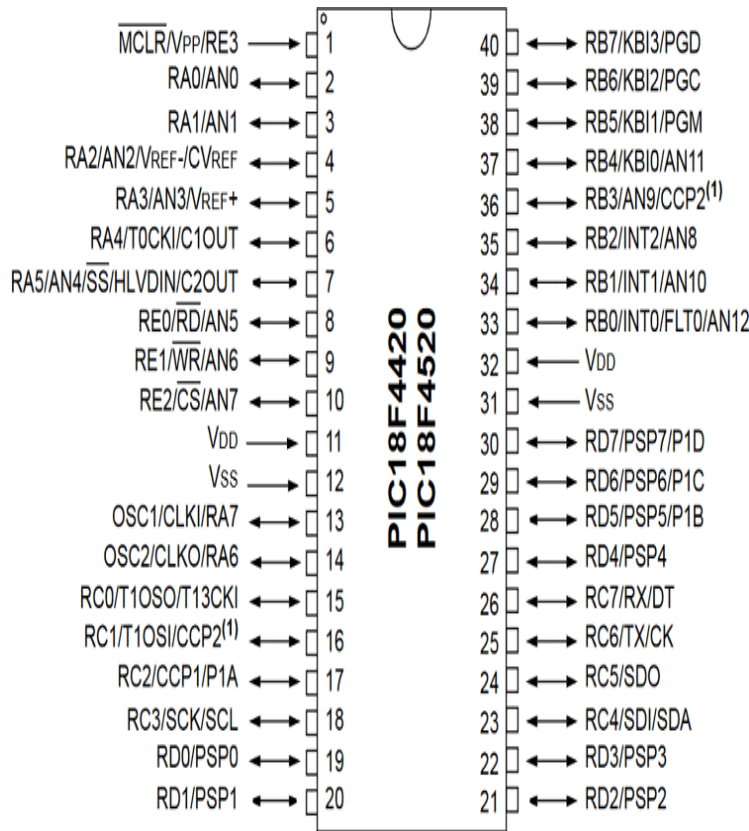Fig 3.3.1(a): pic18f4520 microcontroller

Fig 3.3.1(b): pin diagram of PIC18f4520

GSM Module :

This GSM modem has a SIM800A chip and RS232 interface while enables easy connection with the computer or laptop using the USB to Serial connector or to the microcontroller using the RS232 to TTL converter. Once you connect the SIM800 modem using the USB to RS232 connector, you need to find the correct COM port from the Device Manger of the USB to Serial Adapter. Then you can open Putty or any other terminal software and open an connection to that COM port at 9600 baudrate, which is the default baud rate of this modem. Once a serial connection is open through the computer or your microcontroller you can start sending the AT commands. When you send AT commands for example: "AT\r" you should receive back a reply from the SIM800 modem saying "OK" or other response depending on the command send.

IOT

"The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction."

Things are either sensors or actuators. A sensor is something that tells us about our environment. Think of a temperature sensor, or even the GPS receiver on your mobile phone. Actuators are something that you want to control, things like thermostats, lights, pumps, and outlets. The "Internet of Things" brings everything together and allows us to interact with our things. For example, you could have your thermostat control itself based on where you're located

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Power Supply :

Design of Power supply :

All electronic circuits use DC power supply of adequate voltage for their operation. To obtain this DC voltage from 230V AC mains, we need to use a 'rectifier'. The rectified DC voltage is 'pulsating' in nature. We know that a combination of rectifier & filter can produce a dc voltage which is almost pure i.e. ripple free. However, the problem with such a power supply is that its output voltage will not remain constant in the event of fluctuations in ac input voltage or changes in load current. This type of power supply is called as unregulated power supply.

The power supply, which provides a constant output voltage irrespective of everything is called, regulated power supply. So we have to design a regulated power supply using series voltage regulator IC 7805.

Following figure shows general block diagram of regulated power supply.
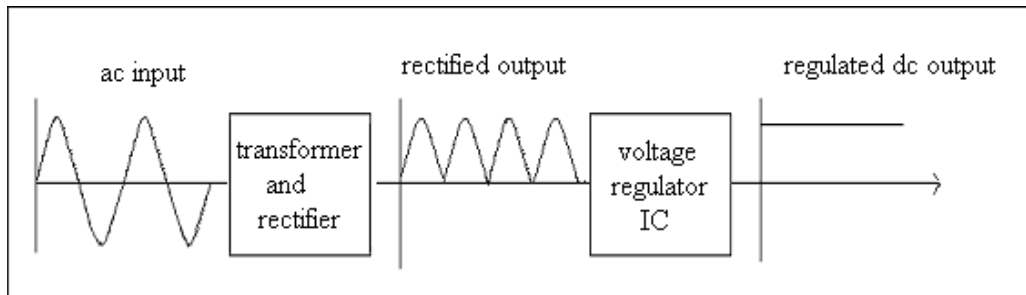

Fig 3.3.4: Power Supply

MEMS Sensor:

ADXL345 from Analog Devices is a triple-axis accelerometer with digital I2C and SPI interface. We added an on-board 3.3V regulator and logic- level shifting circuitry, making it a perfect choice for interfacing with any 3V or 5V microcontroller such as the The sensor has three axes of measurements, X Y Z, and pins that can be used either as I2C or SPI digital interfacing. You can set the sensitivity level to either +-2g, +-4g, +-8g or

+-16g. The lower range gives more resolution for slow movements, the higher range is good for high speed tracking. The ADXL345 is the latest and greatest from Analog Devices, known for their exceptional quality MEMS devices. The VCC takes up to 5V in and regulates it to 3.3V with an output pin.

16*2 LCD Display:

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on.

A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data

GPS Module: This is New Version (V2) of our famous GPS Receiver with Antenna (5VTTL Serial) , with 4pin 2.54mm pitch Berg strip connector option. It is made with third generation POT (Patch Antenna On Top) GPS module. The on board 3V3 to 5V level convertor enables us to directly interface with normal 5V Microcontrollers. Its low pin count (4Pin) will make it easy to interface and it is bread board friendly with 2.54 mm(0.1″) Pitch connector pads. The 4 Pins are 5V, TXD, RXD and GND. Yes, there is no setting required, just plug in to the power (5v), your raw data (NMEA0183) is ready at TX pin!. This is a standalone 5V GPS Module and requires no external components .It is built with internal RTC Back up battery. It can be directly connected to Microcontroller's USART.

capabilities in urban conditions & provides standard NMEA0183 strings in "raw" mode for any microcontroller. The module provides current time, date, latitude, longitude, speed, altitude and travel direction / heading among other data, and can be used in a host of applications, including navigation, tracking systems, fleet management, mapping and robotics.

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The GPS chipsets inside the module are designed by MediaTek Inc.,which isthe world's leading digital media solution provider and largest fab-less IC company in Taiwan. The module can support up to 51 channels. The GPS solution enables small form factor devices. They deliver major advancements in GPS performances, accuracy, integration, computing power and flexibility.They are designed to simplify the embedded system integration process.

(GPS Module dig)

IV. PROJECT PLAN

Week No.	Action plan
1	Searching of Project information
2	Collection of components required for project
3	Designing of PCB, printing ofcopper for interior layer
4	Etching, drilling, layer alignment of PCB
5	Mounting components on PCB asper circuit diagram
6	Soldering components on PCB
7	Software Development for the project
8	Testing circuit is proper or not
9	Troubleshooting for any problems
10	Checking project is properly working or notif not then correct
11	Presentation of report
12	Presentation of PPT
13	Checking project from project Guide
14	Checking report & PPT from project guide
15	Confirmation from project guide, co-ordinator ,HOD
16	Submission of Project model, Project report,PPT

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