Public Bus Transportation With Accidental Prevention & Location Monitoring System.

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Abstract- This project presents a new Monitoring system for public transportation in which the accidents due to drowsy driving is avoided by using heart beat sensors to monitor the heart beat of diver thereby controlling the speed of the bus. The location of the bus and time of its reaching at bus terminus is also informed to the passengers through GSM module by enabling GPS at the bus Unit. RFID system is used for Automatic toll collection that ensures fast and secure commuting to the passenger. The hardware prototype of the proposed
System is developed using Arduino Uno based on the ATmega328
Index Terms -Arduino Uno, heart beat sensor, GPS, GSM

1. INTRODUCTION

Almost all the places, the automation plays a vital role. Embedded system plays a vital role in the automation. Since it is low cost and high reliable, it is widely used all over. This project consists of three units they are: 1. Bus stop, 2. Bus station and 3. Bus. Our project is to monitor Public Bus transportation System and avoid accidents. A new smart technology bus transportation system designed as the information about Heart Beat Sensor, location, Automatic Toll Collection, message system. Send and receive messages to the Passengers from any-where and every-where. Tracking location of the bus from bus terminus through module and displayed. In the heart beat sensor is to avoid accidents in the public bus transportation system. The automated toll collection system is to automate the toll collection process and save time and avoid traffic. The details of bus are registered at bus terminus automatically through RF module.

2. GLOBAL SYSTEM FOR MOBILE COMMUNICATION (GSM):

GSM, which stands for Global System for Mobile communications, reigns as the world's most widely used cell phone technology. Cell phones use a cell phone service carrier's GSM network by searching for cell phone towers in the nearby area.

3. GLOBAL POSITIONING SYSTEM (GPS)

The Global Positioning System (GPS) is a USA based navigation system that was developed for defense applications by the American department of Defense. This system consists of 24 satellite positioned in the geosynchronous orbit these satellite navigation system works for 24 hours a day in all weather conditions and at any part of this world. .since its availability for civilians from 1980 it has been used as a default navigation system in all countries .Now a days this navigation system is mainly used in automobiles for the transportation and in ships for navigation guidelines.

4. PULSE SENSOR

Heart rate data can be really useful whether you're designing an exercise routine, studying your activity or anxiety levels or just want your shirt to blink with your heart beat. It works on the principle of photo phelthysmography. According to which The heart rate can be measured by change in the light intensity of an organ due to changes in volume of the blood it uses a LED as the light source and a detector resistor the reflected light is received and a electrical signal is produced accordingly which is proportional to the heart beat rate .It can be used by students, artists, athletes, makers, and game & mobile developers who want to easily incorporate live heart-rate data into their projects.. Also, it sips power with just 4mA current draw at 5V so it's great for mobile applications. Simply clip the Pulse Sensor to your earlobe or finger tip and plug it into your 3 *or* 5 Volt Arduino and you're ready to read heart rate! The 24" cable on the Pulse Sensor is terminated with standard male headers so there's no soldering required. Processing sketch for visualizing heart beat rate is easily available. Hence it Will be very suitable for our system in achieving our
Objective.

5. ARDUINO UNO

It is an ATmega328(Data sheet) based microcontroller board with 14 digital pins for input and output devices such as crystal oscillator, USB, power jack and reset button. It can be simply connected to computer using USB cable or to a battery for power source. It is different from all the other boards as it does not use FTD USB to serial driver chip instead it uses Atmega16U2 of the uno board. Revision 2 of the Uno board has a resistor pulling the 8U2 HWB line to ground, making it easier to put into DFU mode. Revision 3 of the board has the following new features:1.0 pin out: added SDA and SCL pins that are near to the AREF pin and two other new pins are placed near to RESET pin . In future, shields will be compatible both with the board that uses the AVR, which operate with 5V and with the Arduino Due that operate with 3.3V. The pin 2 is not connected to any devices as it is reserved for future purposes. Stronger RESET circuit. Atmega 16U2 replaces the 8U2."Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0.The Uno is the latest version and it is the reference version of Arduino.

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6. OBJECTIVES

The main objective of this project is to know where the bus is been located and so that passengers can make better travel decisions and also to make user friendly system to track location and get location and time of the bus from our mobile and also displayed through module at bus terminus. To avoid accidents the heart beat sensor. The automated toll collection system is to automate the toll collection process and eliminate the long queues at tollbooths RF Module is faster and secure compared with other systems the bus details is automatically registered at bus terminus.

7. PROPOSED SYSTEM

In the heart beat sensor the main idea behind implementing can avoid accidents. Tracking location of the bus from bus terminus through module and displayed. Send and receive messages to the Passengers from any-where and ever-where. RF Module is faster and secure compared with other systems the bus details are automatically registered at bus terminus. The automated toll collection system is to automate the toll collection process and thus eliminating the long queues at toll booths. The block diagram of the proposed system explains the purpose and working of our system.
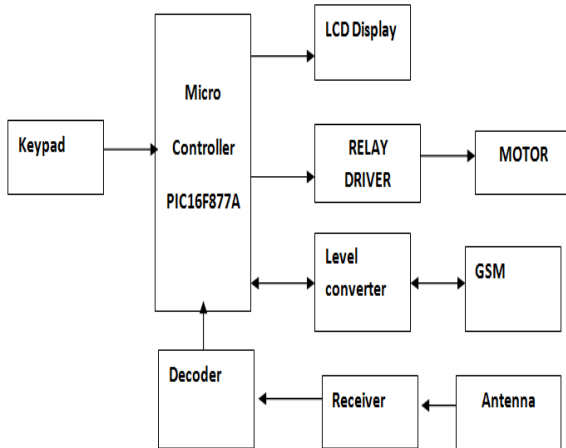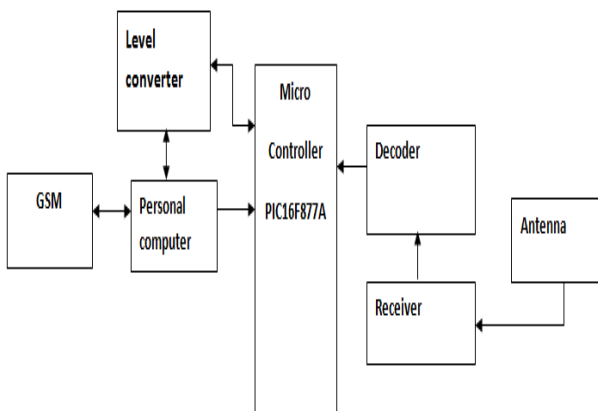

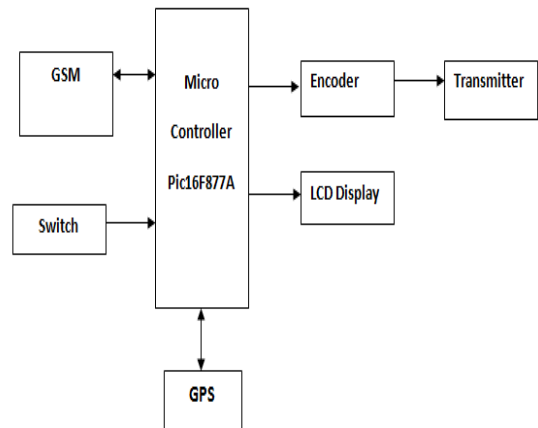Fig 1. Proposed Block Diagram
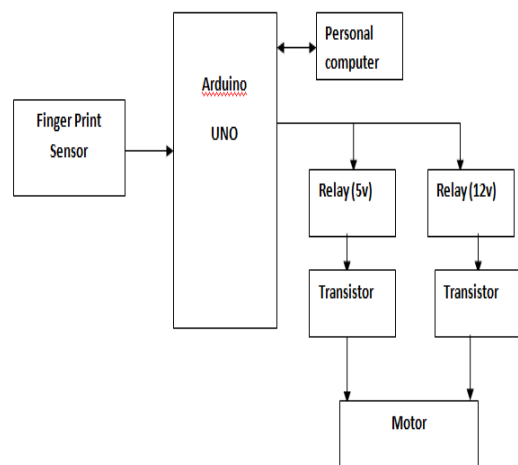

Fig 2. Receiver Unit

Fig 3. Controller Unit

Fig 4. Transmitter Unit

8. WORKING

Almost all the places, the automation plays a vital role. Embedded system plays a vital role in the automation. Since it is low cost and high reliable, it is widely used all over. Given below is the block diagram of the project. It consists of three units they are: 1. Bus stop, 2. Bus station and 3. Bus. We are using a programmable IC(PIC16F877A), with a RAM memory 368bytes and ROM 8K which is of Flash type, to control the operations. Our project is Bus Identification System we are going to find where bus is located and when it will be arrived to the bus stop.

Our proposed project is based on four applications. Firstly, we are standing in a bus stop and we need to find any particular bus and then we have to entry that bus number using keypad. This is connected with microcontroller. After that the microcontroller unit sends the signal or bus number to the bus and then the controller receives the bus location with help of GSM and GPS modem. The received signal will be displayed in the LCD display.

Second one, if we need to know the bus details personally where the bus is located similarly from the first concept it sends a request to bus and then the bus Fig location is received as a SMS to user mobile number. Third one is, by using RF communication the bus timing will be

automatically read from the bus unit when it is arrived and leaving from the station instead of signing. Fourth concept - when any bus is arrived to the bus stop, voice recognition is obtained by bus to know the bus details for blind persons.

In the heart beat sensor the main idea behind it is to avoid Accidents in the public bus transportation system. The automated toll Collection system is to automate the toll collection process and eliminate the Long queues at tollbooths currently available Toll Systems uses manual Methods. It causes Traffic and time consumption. To overcome this problem Automatic Toll Collection is introduced.
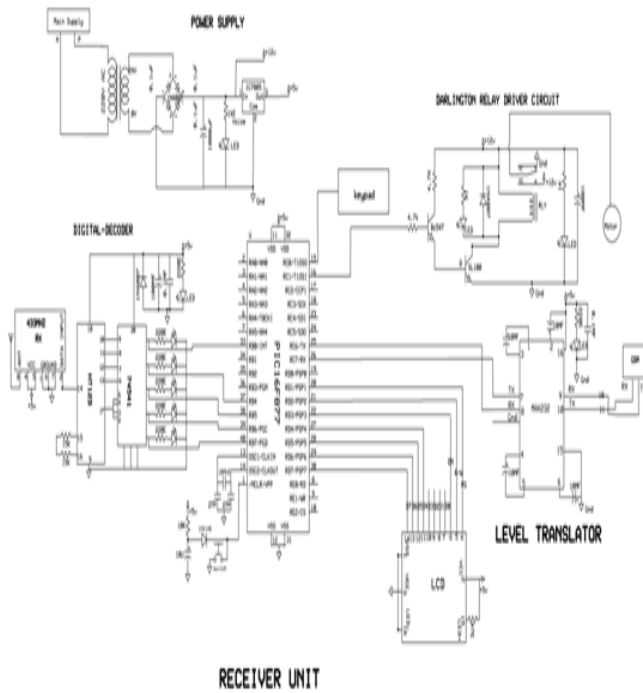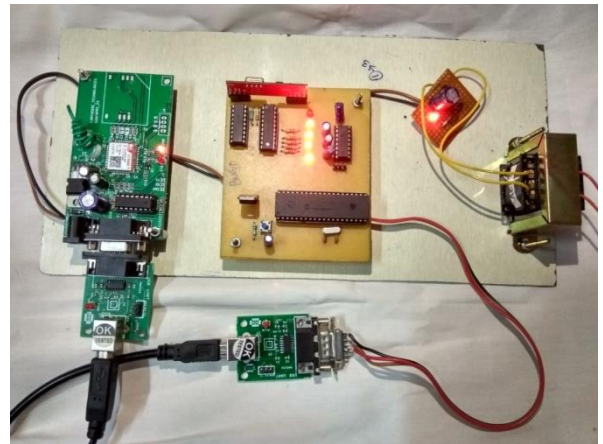

Fig 5. Circuit Diagram

9. HARDWARE PROTOTYPE

R   Fig 6.Receiver Unit
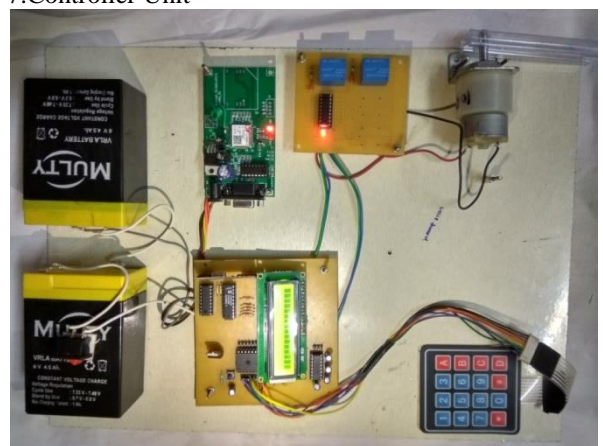

Fig 7.Controller Unit
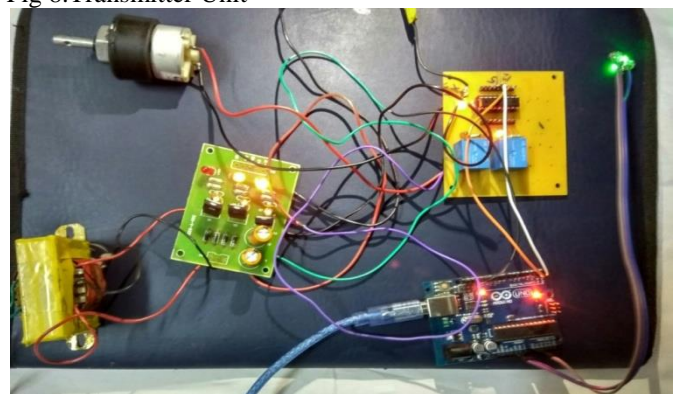

Fig 8.Transmitter Unit

Fig 9.Heart Beat Pulse Sensor:

10. CONCLUSION

Thus the proposed Monitoring system for public transportation ensures the safety of the passengers by avoiding accidents due to drowsy driving using heart beat sensors and the traffic due to long Queues in the toll is eliminated by RFID system enabling automatic toll collection. The information about the bus location and reaching time at the terminus is located by the GS system in the bus enabling the passengers to track the bus timing .The hardware prototype of this system shows that this monitoring system is offers safe and comfort commuting to the passengers.

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