Accident Prevention Car and Theft Locking System

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Abstract

This paper discusses the process of developing a accident prevention and theft locking system using short message services. With the growing population the use of car has became superfluous and this has led to increase in the number of accidents at the alarm rate. This project aims at detecting the obstacle in the path while driver feels asleep and automatically stops the car and when car is at rest and a thief is trying to unlock the car, a message will be send to the number via phone connected to the car reporting that someone tries to unlock the car. This helps in an accident prevention of car and protects the car from theif. When accelerometer is triggered, it helps in detecting the obstacle and sending the signal to the Arduino of the system. This further helps in stopping the car automatically. When eyeblink sensor is triggered, it works against drowsiness and makes the driver aware of obstacle.

Keywords:- *Arduino, Energy Generating Dynamo, IRsensor, Accelerometer.*

I. INTRODUCTION

We often come across the fact that when someone travelling in night,they often come across accidents due to falling asleep while driving.Most of the road accidents occurred due to this problem.So to overcome this problem we use the IR sensor and eyeblink sensorin car which senses the driver condition and if the driver falls asleep it will detect automatically and will stop the car immediately.Also if there is an attempt of theft on the car,the IR sensor will immediately message to the owners phone which will give the warning that there is an Unauthorised access to the car.

This will also solve the problem of duplicate key as most of the thiefs today use special keys which can unlock many locks so in order to overcome this the IR sensor will help to prevent it and also it will decrease the theft rate which will make car safety at optimum level. Solar Panels are also used to charge the battery of the car.The Efficiency of our machine is some where 0.4 to 0.5 percent.it seems a very small number but if we think in terms of number of vehicles and time it will be a huge amount of Energy saved.

II. METHODOLOGY

The main elements of the prototype model of an automatic accident prevention car with theft locking system. The working of this model will be made in the following steps:

A. An eyeblink sensor is used to measure and controls the eye blink using IR sensor. If the eyes are closed it means the output of IR receiver is high otherwise the IR receiver output is low. If it is high then buzzer will be ON else the buzzer will be OFF.

B. The IR sensor senses the obstacle and passes the signal to the microcontroller which stops the car automatically.

C. The another IR sensor in the car senses the unlocking of the car and passes signal to microcontroller which immediately message to the owners phone which will give the warning that there is an Unauthorised access to the car.

III. BLOCK DIAGRAM OF THE SYSTEM

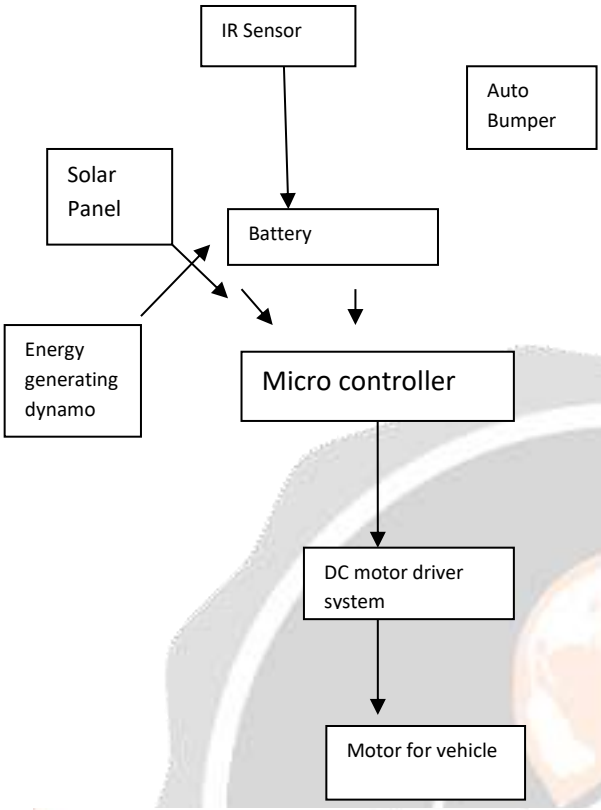

Fig 1:- block diagram of the system

IV.HARDWARE COMPONENTS AND DESIGN

A. Arduino UNO

Arduino UNO is a micro-controller board based on the ATmega328P.It has 14 digital input/output pins, out of which 6 can be used as PWM outputs, 6 analog inputs,16MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. The Arduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically. The board can operate on an external supply of 6 to 20 volts thought the recommended range is 7 to 12 volts. 3,5,6,9,10 and 11. Provide 8-bit PWM output with the analog write() function. External (non-USB) Power can come either from an AC to DC adapter (wall-wart) or battery. The adapter can be connected by plugging a 2.1 mm center-positive plug into the board's power jack. Leads from a battery can be inserted in the Gnd and Vin pin headers of the POWER connector.

B. *Eye Blink Sensor*

Here, we have used the infrared sensor CNY 70. It consists of Infrared transmitter which is one type of LED, which emits infrared rays generally called as IR Transmitter. Similarly, IR Receiver is used to receive the IR rays transmitted by the IR transmitter. One important point is both IR transmitter and receiver should be placed straight line to each other. The transmitted signal is given to IR transmitter whenever the signal is high, the IR transmitter LED is conducting it passes the IR rays to the receiver. The IR receiver is connected with comparator. The comparator is constructed with LM 2903 operational amplifier. In the comparator circuit the reference voltage is given to inverting input terminal. The non-inverting input terminal is connected IR receiver. When interrupt the IR rays between the IR transmitter and receiver, the IR receiver is not conducting. So the

comparator non inverting input terminal voltage is higher than inverting input. Now the comparator output is in the range of +5V. This voltage is given to microcontroller or PC and so led will glow. When IR transmitter passes the rays to receiver, the IR receiver is conducting due to that non inverting input voltage is lower than inverting input. Now the comparator output is GND so the output is given to microcontroller or PC.

C.Accelerometer

We have used a small, thin, low power, complete 3-axis accelerometer with signal conditioned voltage outputs. The product measures acceleration with a minimum full-scale range of ±3 g. It can measure the static acceleration of gravity in tilt-sensing applications, as well as dynamic acceleration resulting from motion, shock, or vibration. User can select the bandwidth of the accelerometer using the CX, CY, and CZ capacitors at the XOUT, YOUT, and ZOUT pins. Bandwidth scan be selected to suit the application, with a range of 0.5 Hz to 1600 Hz for the X and Y axes, and a range of 0.5 Hz 550Hz for the Z axis. As like flex sensor, output of accelerometer is also analog one. It should be converted into digital before using it for further processing. Such accelerometer is used in many applications like mobile devices, gaming system, image stabilization, tilt sensing applications etc.

D.Buzzer

The Buzzer used is 1-8S LiPo Battery Voltage Tester low volt alarm buzzer and LED. It is used for testing 1-8S Lipo/Li-ION/LiMn/Li-Fe. The voltage display range :0.5-4.5V. The 1S Test Mode voltage range:3.7-30V and there is a low voltage alarm mode for 2-8S. The Alarm set value rang is OFF-2.7-3.8V.

E.Potentiometer

A potentiometer is a three-terminal resistor with a sliding or rotating contact that forms an adjustable voltage divider If only two terminals are used, one end and the wiper, it acts as a variable resistor or rheostat. The measuring instrument called a potentiometer is essentially a voltage divider used for measuring electric potential (voltage); the component is an implementation of the same principle, hence its name. Potentiometer are commonly used to control electrical devices such as volume controls on audio equipment. Potentiometers operated by a mechanism can be used as position transducers, for example, in a joystick. Potentiometers are rarely used to directly control significant power (more than a watt), since the power dissipated in the potentiometer would be comparable to the power in the controlled load.

F.LED

A light emitting diode is a two lead semiconductor light source. It is a p-n junction diode that emits lght when activated. When a suitable current is applied to the loads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons.This effect is called electroluminescence, and the color of the light(corresponding to the energy of the photon) is determined by the energy band gap of the semiconductor. LEDs are typically small(less than 1squaremm) and integerated optical components may be used to shape the radiation pattern.

V. SOFTWARE USED

Arduino Integrated Development Environment (IDE)

In order to program the Arduino Uno microcontroller, the Arduino Integrated Development Environment (IDE), a cross platform application written in Java that is self-installable, is used. The Arduino programs are written in C/C++. The Arduino IDE provides a powerful yet user-friendly programming environment. It allows compilation and uploading programs to the board through a USB connection the program for this project initializes and checks for a valid coordinate from the NEO-6Q GPS receiver and display on LCD. It then sends this coordinate to the LEON-G 100 GSM module to be transmitted through the SMS.

VI. ALGORITHM

Step 1: Start.

Step 2: Car starts and the eyeblink sensor gets triggered.

Step 3:If blinking rate is 0 then

buzzer turns on else goto step4

Step 4: Set threshold value for accelerometer.

Step 5: Read the acceleration value from the accelerometer.

Step 6:Display the message someone unlocked your car.

Step 7:Send text message to the pre-saved numbers.

Step 8:Stop.

VII. RESULT

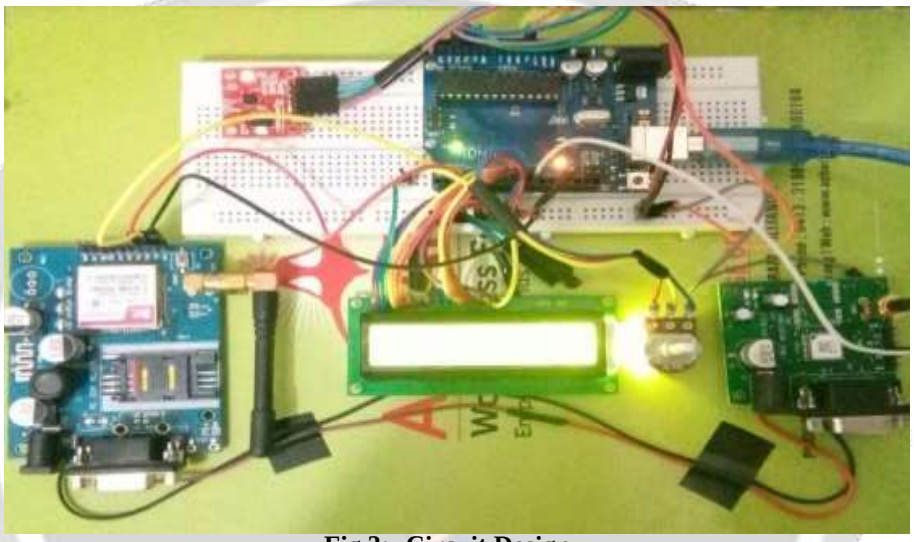

Fig 3:- Circuit Design

CONCLUSION

Since the relay and other devices are working and giving the required outputto drive the handmade tractor,it is quite expected that it is going to work when the circuit will be implemented on the actual car. We just need to make sure that we get the appropriate solar panel,take the voltage current power rating accurately, make the proper connection with the proper chip(IC) and other circuitry.In fact,it can be said that to cope up with the increasing demand of the fuel, it is quite necessary to alter our demand into solar energy.It is cheap,efficient,supplied by an endless source of energy- the sun and of course free from any environmental damage.So, finally,we hope,it is not very far away that day when a great percentage of worlds people will use the discussed technology and turn their car into or get their own ‘ Environment Friendly Accident Protection Car’.

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