International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 03 Issue: 10 | Oct -2016 www.irjet.net p-ISSN: 2395-0072

EMBEDDED PROTOTYPE FOR AUTOMATIC HEADLIGHT INTENSITY CONTROL

DEDICATED FOR TWO-WHEELERS

I. Abi preethi[1], P. Mohana priya[2],M.Varshini[3]

[123]UG Student, Department of EIE, Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu,India

---

Abstract - The technology has paved our path to sophisticated life .In the automobile sector there has been significant technologies which attributes to ease the driving. The beam intensity of the vehicle plays an important role while driving. This paper proposes an idea of creating an automatic headlight control along with a real time clock for the two-wheelers. During night time when two vehicles approach each other in opposite directions ,the high intensity of the head light creates an effect called "Troxler Effect" .This effect creates a temporary blindness for few seconds which eventually leads to tragic accidents. Thus the beam intensity has to be varied for the safety purposes. This system will sense the light intensity of the ambience and thereby helps in altering the intensity of the vehicle on which it is mounted. It is also equipped with a real time clock that enables to turn on the headlamp of the vehicle according to time of the day. The lamp is turned on even during the day time if the ambient light intensity is below a particular threshold. The light sensor employed takes the lux reading from the surrounding light intensity and check for the threshold value assigned in the coding. Based on the threshold value the beam intensity is varied during the night time.

***Key words**-- Automatic, Real time clock, Arduino , Troxler Effect, Light sensor.*

1.1INTRODUCTION

As per international surveys on road accidents around the world more accidents have been accounted during the night time. Two wheelers also accounts for the highest number of fatal road crashes. This paper proposes an automatic headlamp ON(AHO) system in order to avoid road crashes caused due to glare . It consists of a dedicated embedded controller that changes the headlight intensity based on the surrounding and also based on the headlight intensity of the opposite vehicle. A real time clock (RTC) is implemented in order to switch on the device only during evening time..

1.1 Project Objective

The primary objective of this project is to produce a dedicated embedded cost effective controller to control the intensity of the head light automatically with the help of the inputs given by the light sensor. It also aims in turning on the head light as per time of the day. This is to provide an ease of driving for the driver.

.

2.1LITERARY SURVEY

I. The National Safety Council says Traffic Death rates are three times greater at night than during the day.[1]

II. More than 40 percent of all automobile accidents resulting in death occur at night ,despite the fact that there is up to 80 percent less traffic on road during than during the day.[2]

III. Road accidents are more in night than during day due to low visual conditions.[3]

2.2Statics

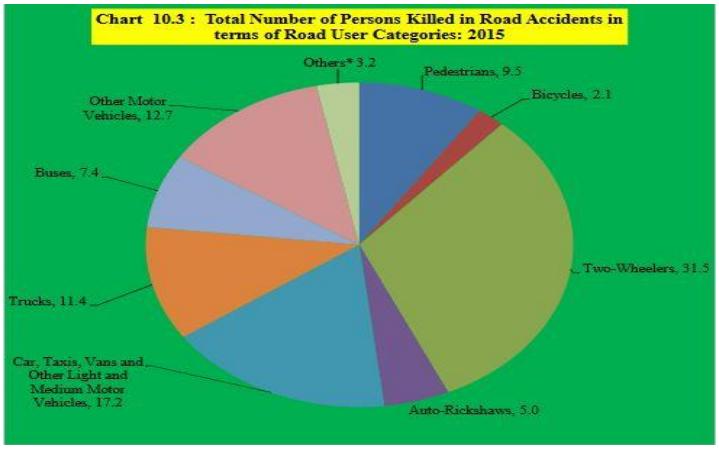


Fig 1. Total Number of Persons Killed in Road Accidents in terms of Road User categories in 2015

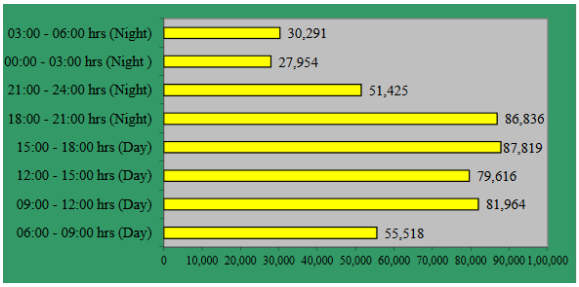


Fig 2. Distribution of Total No. of Road Accidents as per time of Occurrence: 2015

Two wheelers contribute to a large number of accidents last year. Two-wheelers are the most vulnerable and unprotected road users killed in road accidents in the country. Moreover the accidents occur during the night time as per the recent survey.

3.1HARDWARE SPECIFICATION

.

TABLE I.

SI.NO	*COMPONENTS*	*SPECIFICATION*
1	ARDUNIO BOARD	UNO
2	LIGHT SENSOR	BH1750
3	REAL TIME CLOCK	DS1307
4	HEADLIGHTS	12V
5	POWER SOURCE	5V,12V

3.2SPECIAL FEATURES OF BH1750

- Wide range and High resolution. (1 - 65535 lx)
- 1.8V Logic input interface
- No need any external parts
- 50Hz / 60Hz Light noise reject-function

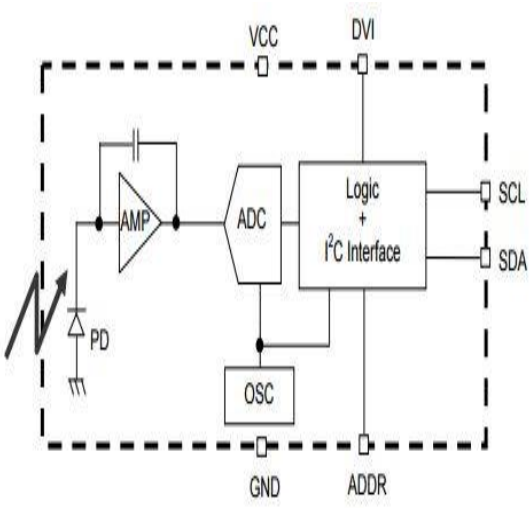
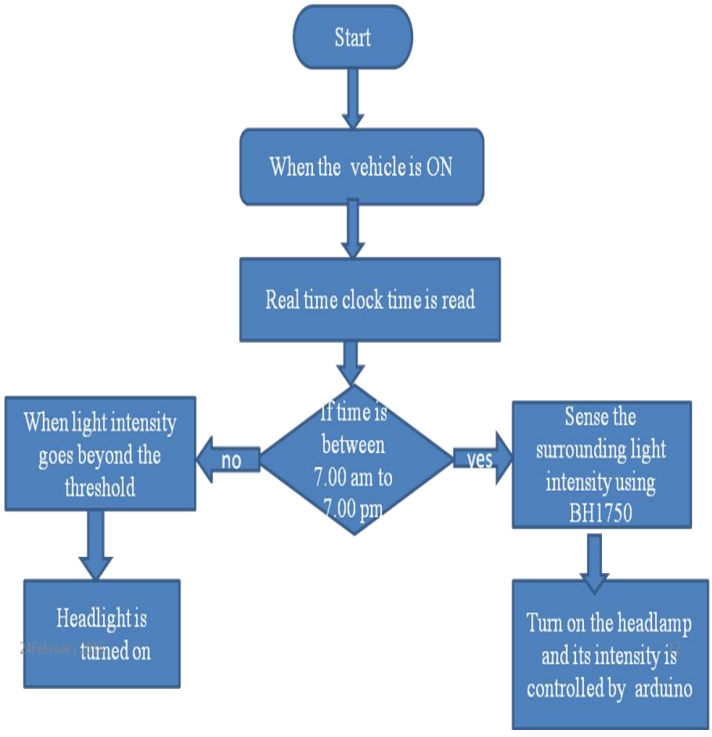


Fig 3.light sensor-BH1750

4.WORKING

The real time clock synchronized with the place timings enable the headlight to switch on during the evening with the help of the arduino. The light sensor samples the ambient light and gives it to arduino which determines the intensity of the headlight. The intensity of the headlight is altered with the help of arduino based on the thresholds levels. The threshold level is set while programming the arduino.

FLOW OF EXECUTION



5. ARDUINO CODE

```
// Date and time functions using just software, based on millis() & timer

SAMPLE CODE INTERFACING BH1750 AND USING INBUILT REAL TIME CLOCK//

#include <Arduino.h>

#include <Wire.h>       // this #include still required because the RTClib depends on it

#include "RTClib.h"

#include <Wire.h>

#include <BH1750FVI.h>



BH1750FVI LightSensor;

RTC_Millis rtc;

int led=13;



void setup ()

    {

     Serial.begin(57600);

    // following line sets the RTC to the date & time this sketch was compiled

     rtc.begin(DateTime(F(__DATE__), F(__TIME__)));

    // This line sets the RTC with an explicit date & time, for example to set

     pinMode(led,OUTPUT);

     Serial.begin(9600);

     LightSensor.begin();

     LightSensor.SetAddress(Device_Address_H);//Address 0x5C

     LightSensor.SetMode(Continuous_H_resolution_Mode);

     Serial.println("Tutorial Sketch Running");



    }



  void loop ()

    {

    uint16_t lux = LightSensor.GetLightIntensity();// Get Lux value

     Serial.print("Light: ");

     Serial.print(lux);

     Serial.println(" lux");

     delay(1000);

     DateTime now = rtc.now();

      Serial.print(now.year(), DEC);

      Serial.print('/');

      Serial.print(now.month(), DEC);

      Serial.print('/');

      Serial.print(now.day(), DEC);

      Serial.print(' ');

      Serial.print(now.hour(), DEC);

      Serial.print(':');

      Serial.print(now.minute(), DEC);

      Serial.print(':');

      Serial.print(now.second(), DEC);

      //intensity control

       if((now.hour()>7)&&(now.hour()<8))

        {

          Serial.print("am");

          if(lux<=50)

          {

          digitalWrite(led,HIGH);

          }

          else

          digitalWrite(led,LOW);

        }

       else

        {

          lux= map(lux,0,500,255,130);

          Serial.print("pm");

          Serial.println(lux);

          analogWrite(led,lux);

          delay(30);

        }



       Serial.println();

       delay(3000);

    }
```

6.FUTURE WORKS

The time clock can be made to function based on the geographic location. We aim at interfacing it with a display which shows the time and exact location of the vehicle .

ACKNOWLEDGEMENT

We would like to thank every staff of our department for aiding us in our project.

REFERENCES

[1].“Automatic Headlight Beam Intensity Switcher”,by Ramya Dhawle and Rohit Anvekar in *Internation Journal of Research in Engineering and Technology.*

[2].“Automatiic Headlight dimmer a protype for vechiles”,by Muralikrishnan in *International Journal of Research in Engineering and Technology.*

[3]. Automatic headlight dimmer a prototype for vehicles Muralikrishnan , B.E, Electrical and Electronics Engineering, Sri Venkateswara College of Engineering, Tamil Nadu, in *IJRET: International Journal of Research in Engineering and Technology eISSN: 2319-1163 | pISSN: 2321-7308*

[4].”Road Accidents in 2015” by *Government Of India Ministry Of Road Transport & Highways Transport Research Wing* .