Vehicle Head Light Beam Control Using RF Communication

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Abstract – *During night driving the headlight of vehicles must be switched properly. Mostly while driving vehicle drivers use high beam lights instead of low beam in all situations. The high beam should be used only when there's low visibility or in highways and you should consider the other drivers in mind. While travelling in a dak road if you notice an oncoming vehicle or traffic, it's advisable to switch the headlight to low beam. It can dazzle the driver ahead by reflecting in the rearview mirror and cause lose in visibility and result in accident. In this proposed idea the headlight can be controlled manually as well as automatically if a respective signal is received from approaching vehicle. According to this project when a vehicle wants to communicate with the nearby vehicle, it is done by using the RF wireless communication technology.*

Key Words: **RF, Sensors, AVR, High beam, Low beam**

1.INTRODUCTION

Our roads are jammed. As a result, practically all automakers must consider adding additional safety features and technological controls. Modern automobiles have variable illumination. The low and high beams alternate. At night, low lights illuminate the road ahead. When no other vehicles are present, bright lights are used to guide the car. They're also gaining ground. High lights illuminate silent roadways. So the driver can see obstacles. High beams are also utilized on unlit routes. An automatic high beam sensor. As a result of another high beam, our high beams automatically descend. Nowadays, light beams create numerous mishaps. On the basis of night vision, our study presents an efficient automated vehicle illumination adjustment. Control of high/low beams by robot Save time and energy with this project. This project allows cars to interact through RF without affecting the beam's manual capabilities. CMVR 105 (2) (ii), DMVR 112 (G) and 177 of MVA prohibit the use of headlights, taillights, and high beams (Motor Vehicle Act, 1988). High beams are illegal in certain city limits. On narrow roadways or approaching a car, use low beam. Drivers are required to use sealed beam high and low beam headlights. Quad headlamps with a "Autronic Eye" on each fender were standard on the 1955 Cadillac ELDORADO BROUGHAM. Free highway usage inner lighting AHBCS is already available, but only on high-end cars. Most low-cost automobiles' 60Ah batteries discharge in 10-12 starts. Ape (3W) and Porter (4W). Leaving the headlight on throughout the day causes frequent battery drain. Improper beam management also

raises the danger of a The aim is to provide reliable solutions at low cost.

2. LITERATURE SURVEY

Driving in low light or at night is always difficult especially for elderly people, as the vision of the elderly population tends to decline as age. The potential risks of night driving are due to the glare of very high intensity light from the opposite direction vehicles which cause temporarily blind to the drivers while taking curves or approaching obstacles. A report by Apollo tyres states that 74% of vision bleach caused by the practice of high beam light in the vehicles.

The high beam light from vehicle coming in opposite side irrespective of the lane will lead to misjudgment of road. According to road accidents in India 2015 published by ministry of road, transport, and highways 39.2% of fatal road crashes have occurred in nighttime particularly between 6pm and 5am even though traffic is lesser compared to daytime. We should not use high beams inside city as there will be enough streetlights and if the driver encounters a vehicle it is suggested to switch to low beam before 500 feet. These bright lights should be avoided while driving in hilly areas and curved roads as we do not have any idea about the vehicle from opposite side. Likewise, while driving behind a vehicle use low beam light if the vehicle in front of us is within certain range.

Drivers should switch to low beam when they find a vehicle in opposite direction. In most of the cases they don't do this. One of the major reasons is most of the drivers are not educated about the use of high and low beam lights in vehicles and when to use them. Also, due to insufficient light in roads forces the driver to use high beam light sometimes. So, if a high beam light hits the vision of the driver it leads to photo bleaching effect and takes some time to come out of the bright light impact in eyes.

Drivers can avoid this by staring away from the light from opposite vehicle or just dim/dip the light and indicate the opposite vehicle driver about high beam light but this not going to always help. As if both the vehicles have their light in high beam and drivers look away for long time then it might result in accident because of loss of focus on the road.

3. EXISTING SYSTEM

The existing system switches between high beam and low beam automatically whenever a vehicle is encountered in opposite direction. But this automatic switching might turn out as an issue for the driver itself. This system will react to non-moving vehicle or other light sources from road that hit the sensor installed on the car. This sensor has possibilities to get dirt and fails to work (to function). As a result, the light toggles between high and low beam in undesired conditions. driver may get confused and causes accident. This is a major drawback of the current system. Another system uses IOT to communicate with the other vehicle, but it is not possible to have internet connection at all places.

4. PROPOSED SYSTEM

The number of vehicles on our roads is burgeoning day by day. This is turn forced almost all this vehicle manufacturer
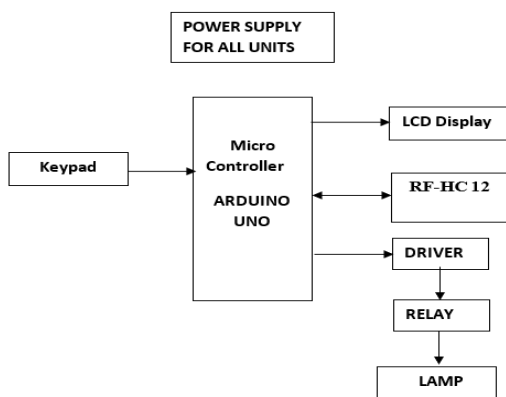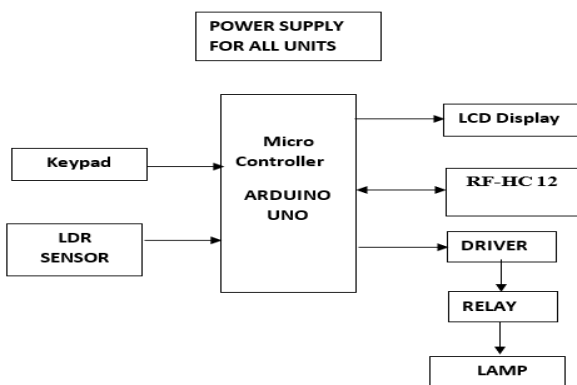

Fig. 1. Vehicle 1 Block diagram

Fig. 2. Vehicle 2 Block diagram

to think about the extra safety instruments and electronic controls to attach with these products for giving the users a safety derived in all road conditions through a mass flow traffic. If asked, one should always mention that the right driving is very cumbersome due to the dazzling light

problems and the frequent dipping of headlights by manual means that often causes fatigue to the driver particularly at the time of peak traffic. So naturally to get rid of this perennial problem, an automatic mechanism has to come up to dip the headlamp automatically whenever required. For keeping a motor vehicle under perfect control and reins of the driver, different types of controls and accessories are provided in an automobile around the driver's seat, on the dashboard and at the footboard. Simply, an automatic high beam controller is a unit, which can automatically judge when the headlight beam needs to be lowered, and which dip the headlamp from which beam to a dipped beam. Our work proposes an effective automatic control of the vehicle headlamps based on the detection of head lights and tail lights under night time road conditions. This project is about to control high beam or low beam automatically. In our project we use two unit one is vehicle1 unit and another one is vehicle 2 unit. Both the units are placed with keypad, RF-HC12, lamp and controller to make the vehicle to vehicle communication much smarter. Keypad is used to send the data if any information's wants to share with the nearby vehicle. Each buttons in the keypad has the unique information which was programmed in the Arduino controller. If any of the switches is pressed then that unique information's like overtake request, emergency intimation, hill station heavy load and low beam high beam request. This data will be received in the vehicle 2 unit and displayed in the LCD module. LDR sensor in the vehicle2 unit is used to measure the light intensity of the opposite vehicle's head lamp.

5. RESULTS

System would sense the intensity of the headlight from the oncoming vehicle in analog form, which would be sent to an analog to digital converter (ADC). The photoresistor is made of a high resistance semiconductor and absorbs light at a high enough frequency. The HC-12 is a capable transceiver with an impressive range (up to 1 km). The range of HC-12 can be varied/reduced by modifying the antenna. The Arduino UART has a 64-byte receive buffer built into the hardware so any data that exceeds that will be discarded. The headlight beam control can be done automatically as well as manually. If manual is chosen the system will consist of four buttons consisting of the controls of Low and High beam requests, Overtake and Emergency request, Overload indication. Suppose if the button 1 is pressed the vehicle will send the request to opposite vehicles via HC-12 to switch to low beam upon receiving the request the controller displays the respective alert message in the display. Button 2 is used for Overtake request. When a driver wants to overtake a vehicle and the driver of vehicle moving in front may not notice the vehicle behind or it may be a blind spot. During that time this overtake request will be useful. The emergency request can be used in case of critical situations. Hill station request is helpful if a vehicle is carrying heavy

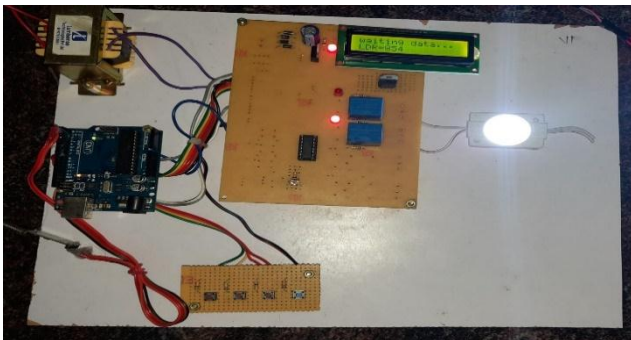load, the driver can press the button and the overload indication is sent to all the nearby vehicles.
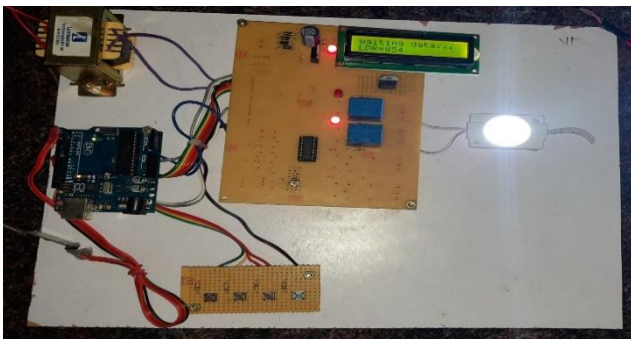

Fig. 3. Vehicle 1 Setup

Fig. 4. Vehicle 2 Setup

6. CONCLUSIONS

In this project vehicle to vehicle communication is done successfully in safe and secure manner. Especially in our country most of the drivers don't follow the driving rules and regulations. Even they don't know that high headlights beam might be the cause of dangerous Road Accident. Thousands of people lost their lives in every year by Road Accident. Matter is that our government is also not concerned about this problem. So, if we can implement this device in all vehicles of our country, the device will switch the high beam of those vehicles to low beam whenever it will get another vehicle coming towards with high beam light.

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