

Intelligent Headlight Control System Through Dash Cam

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ABSTRACT:

An intelligent head light controller that automatically controls the vehicle headlight is designed and tested. The microcontroller Atmega328P and LEDs are used to prepare a prototype that switches the high beam of those vehicles to low beam whenever another vehicle approaching with high beam. Due to this road accidents during Night and low visible conditions can be avoided. In this paper a more compatible and cost effective advanced intelligent Head light control system by using a video sequence from dash board camera is presented.

Keywords: *Dash board Camera, Arduino, LCD, Relay, Lense Optics*

I. INTRODUCTION

We live in India a country where it accommodates about 1.20 billion people. The number of vehicles on our roads is growing everyday and from the recent statistics, the number of registered vehicles in India in 2018 is given as 159,199,140. This in turn forced almost all this vehicle manufactures to think about the extra safety instruments and electronic controls to attach with these products for giving the users a safety driving in different road and visibility conditions through mass flow traffic. So naturally to get rid of this problem, an automatic mechanism has to come up to dim the head lamp when ever required. So, Automatic High Beam Control is our prototype which can able to dim the headlamps when it detects an external source of light with great intensity.

This project is about to control high beam or low beam automatically. Hence, all vehicles are equipped with a headlight system to grant a safe lighting for night time driving or at any other situation. Usually the headlight system contains two reflector lamps the low beam and high beam lights. Typically the driver manually switches between the low and high beams. The high beam lights provide better visibility range over the low beam light. The high beam lights generate a dazzling effect on the other driver that encounters it. Thus, the drivers must toggle from high beam to low beam lights in order to overcome dazzling to other drivers moving in the opposite way. On the other hand Low beam lights create less dazzling effect, but with a reduction of quality and range of visibility. Although using the high beam provides more safety margin, drivers use the high beams much less frequently than they need.

The two major reasons for this behavior are the manual switching between the high and low beam, next reason is the fear of dazzling other drivers and therefore causes catastrophic accidents. Therefore, an automatic controller to switch the high beam lights when facing other vehicle is considered necessary. Such feature will make the driving experience more convenient in the night time. Most of the proposed system is based on complex combination of cameras and image processing techniques in order to detect the vehicles and control the high beam light. In an image sensor is used to have picture of the road and then a classifier based modules. This project is about to control high/low beam automatically. This project will make sure that the consumer will save their time and energy also for those who are afraid of driving during night time. This project will not disturbing

any manual function of the beam. Car accidents during night time accidents are higher than that for the day time. This fact may be endorsed to number of parameters, among them, is the poor lighting conditions at night that reduce the visual capability of the driver. For that reason it is harder at night to see the road environment parameters such as warnings, cars, pedestrians and traffic signs. At night it is very difficult to determine the nature of objects by human eye from long distance. This due to the fact that night time diminishes the advantages of the colors and contrasts of objects. Hence, all vehicles are equipped with a headlight system to grant a safe lighting for night time driving or at any other situation.

II. RELATED WORK

Through survey of a bunch of papers and a few other articles makes it evident that intelligent headlight system has a great potential and real time applications.

New Headlight sensors make night driving safer road and travel magazine, 2007 despite the fact that the traffic volume is much lower, 42 percent of all traffic accidents occur after dark, 58 percent are fatal accidents and 67 percent are pedestrian fatalities.

HID headlamp bulbs do not run on low-voltage DC current, so they require ballast with either an internal or external igniter. The ballast controls the current to the bulb. The ignition and ballast operation proceeds in three stages.

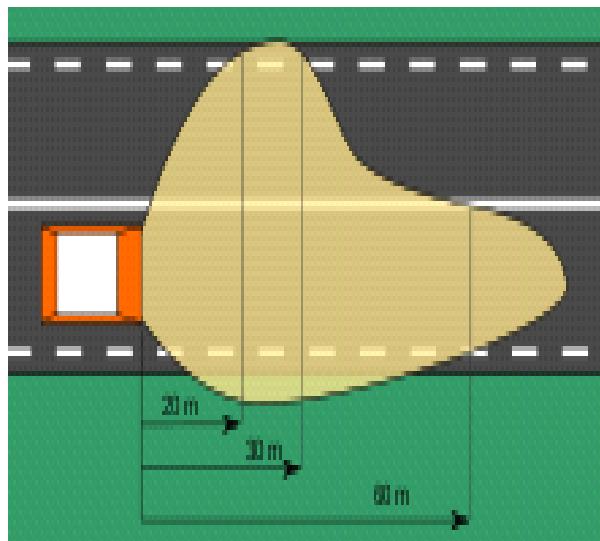
A high voltage pulse is used to produce a spark in a manner similar to a spark plug, which ionizes the Xenon gas, creating a conducting tunnel between the tungsten electrodes. Electrical resistance is reduced in the tunnel, and current flows between the electrodes. The bulb is driven with controlled overload. Because the arc is operated at high power, the temperature in the capsule rises quickly. The metallic salts vaporize, and store arc is intensified and made spectrally more complete. The resistance between the electrodes also falls the electronic ballast control gear registers this and automatically switches to continuous operation.

III. PROPOSED WORK

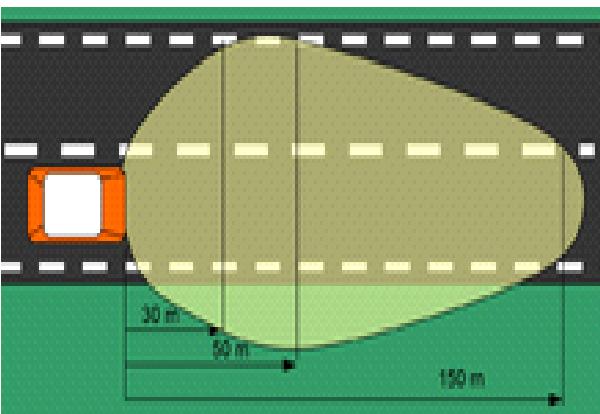
Automobiles uses bulb as a light source and light intensity can be varied according to software or our need. The code will generate the required PWM signal to control the intensity of the light through ATMEGA 328 Microcontroller.

Our hardware sensors are in lighting condition (External) to vary the intensity of light. So, when outside light is low the intensity of light is high and vice versa

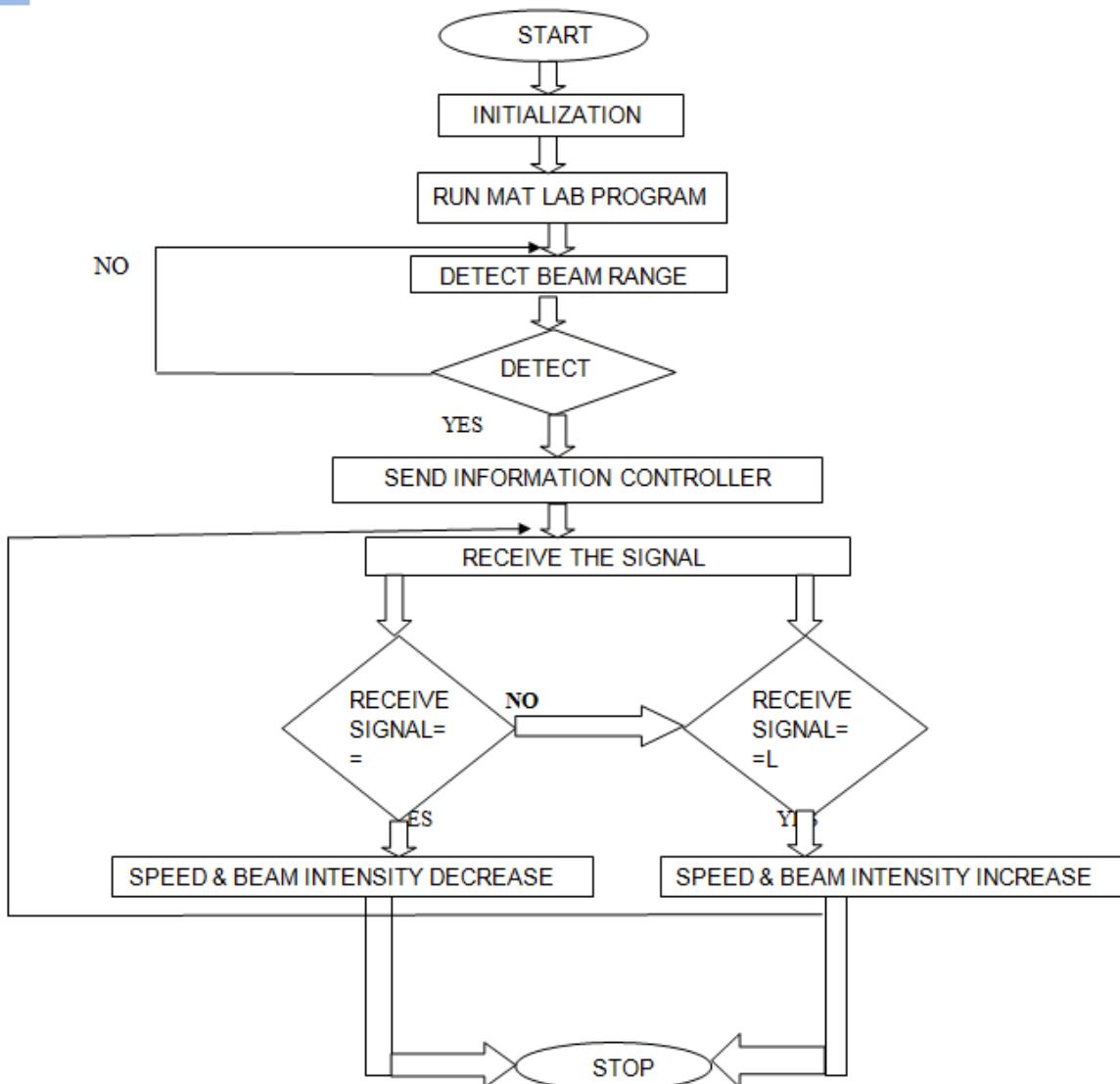
LOW BEAM:



HIGH BEAM:



FLOW CHART:



Camera-based dimmer

The Present systems based on imaging CMOS cameras can detect and respond appropriately to leading and incoming vehicles while disregarding streetlights, road signs, and other spurious signals. Camera-based beam selection was first released in 2005 on the Jeep Grand Cherokee, and has since then been incorporated into comprehensive driver assistance systems by automakers worldwide.

IV. CONCLUSION

Road accident is being increased day by day. Especially in our country most of the drivers don't follow the driving rules and regulations. Even they don't know that high beam headlights 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 prototype 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. As a result the road accident can be decreased rapidly. We can implement the proposed system with different automobiles as the system is compatible and cost effective.

V. ACKNOWLEDGEMENT

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