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Multi featured Automatic Headlight Switching System for Human Safety

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***Abstract*— Headlights of vehicles place a great danger during night driving. The drivers of most vehicles use hight, bright beam while driving at night. In a Period of time Enormous accidents occur due to the disability of the humans to have control over their cars. The person travelling from the opposite direction suddenly experience the glare due high beam. This occurs due to the Opposite Vehicle that has high intense headlight beam towards the opposite vehicle. In this project, an Automatic Headlight Switching System (AHSS) using a Light Dependent Resistor (LDR) detector has been designed to dim and bright the Headlight of our vehicles to avoid human eye from the glare. Specifically, system aims to automatically control a vehicle's beam state (high beam or low beam) during night time drive based on the detection of On-Coming. Reverse parking sensor is added in this project so that it can sense the car when it is near to an object when it is reverse state, it indicates by sound from an particular distance.**

***Keywords*— Arduino Board, LDR, Ultrasonic Sensor**

I. INTRODUCTION

Light is electromagnetic wave within a particular portion of the spectrum. Visible light is sometimes outlined as having wavelengths within the vary of 400–700 nanometres (nm), or 400×10−9 m to 700×10−9 m, between the infrared and the ultraviolet. Light may be frequently produced naturally or by humans. It works virtually a complete day with none rest. There are two varying visions namely scotopic vision and photopic vision. Actually Human eyes behave as differently in variable conditions. In morning bright condition, our eye can resist up to 3 cd/m2 is called as photopic vision [5]. During night or dark conditions, our eye switches to night vision that makes a variation of 30-45 µcd/m2. It takes four seconds for our eye to glare from sight to night sight. This is an example of a Troxler impact. Headlight is essential throughout night travel. High Intensity light beam that causes accidents in the night travel [6]. During coal black conditions where we can not change from the high intensive beam. Other than that we prefer low intensive beam . But during a two way road traffic, there are vehicles moving on both sides of the road. So once the intense light-weight from the light of a vehicle returning from the alternative direction falls on someone, it glares him for a certain amount of time. This causes disorientation to that driver. This discomfort can lead to involuntary closing of the driver's eyes momentarily [1, 13-15]. This fraction of distraction is that the prime explanation for several road accidents. The model that has been designed to scale back this drawback by truly dimming down the bright headlamp of our vehicle to beam mechanically once it senses a vehicle at close proximity approaching from the other direction [2,7]. The entire operating of the variable resistor may be a straightforward electronic equipment arrangement that senses and switches the headlight inline with the conditions needed [3,4].

II. RELATED WORKS

Motorists face a large drawback because of Ray of light that falls directly onto their eyes once driving at night time or throughout foggy conditions. There is medical effect associated with these phenomena. This impact includes temporary vision defect, glare, weakening impact of image and generally inflicting accident resulting in loss of the many lives. This effect contributes to a terminology known as Troxler Effect [4]. Troxler impact is employed to explain a form of temporary vision defect. It is otherwise known as the 'fading effect'. A study shows that if our eyes expose a bright light of around ten thousand lumens, we tend to see the glareness [8,16]. This glare is produced due to over exposure of the rods and cones inside our eye. Even after the source of glare is removed, an after-image remains in our eye that creates a blind spot. This phenomenon is called Troxler effect. This means that the driver's reaction time is increased by 1.4 seconds [9]. As an illustration, let us take a motorist travelling at 60 miles per hour takes 0.5 seconds to respond to a hazard and will stop within 41 feet.

Due to Troxler impact, the same person travelling under the same conditions will take 0.9 seconds longer to react and hence will come to a complete halt only at 123 feet. There is a huge difference of 82 feet. This is quite enough to cause a