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ADAPTIVE HEADLIGHT SYSTEM AND BLIND SPOT DETECTION SYSTEM

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ABSTRACT

Most of the road accidents are occur at night on the of curve roads and because of glare caused from the light intensity from headlights of incoming vehicles. Night time driving with normal existing headlights is particularly unsafe: only 25% of the driving is done at night but 55% of the driving accidents occur during this period. The existing normal head light system does not provide illumination in the correct direction in the precise angle. Due to this constrain, we need to an advanced technology solution. Adaptive front lighting system (AFS) helps to improve driver's visibility at night time hence is useful to reduce the number of accidents in night times. It is found that the proposed solution of AFS system in this paper, swings headlights in left and right direction by sensing steering angle. Another part of the system is blind spot detection, in this system we can detect the vehicle which can not seen in side mirrors and front mirror.BSD is used when vehicle is changing the lens. Hence this system is used to reduce the accidents.

Keyword:-AFS (Adaptive Front Light System), BSD (Blind Spot Detection System).

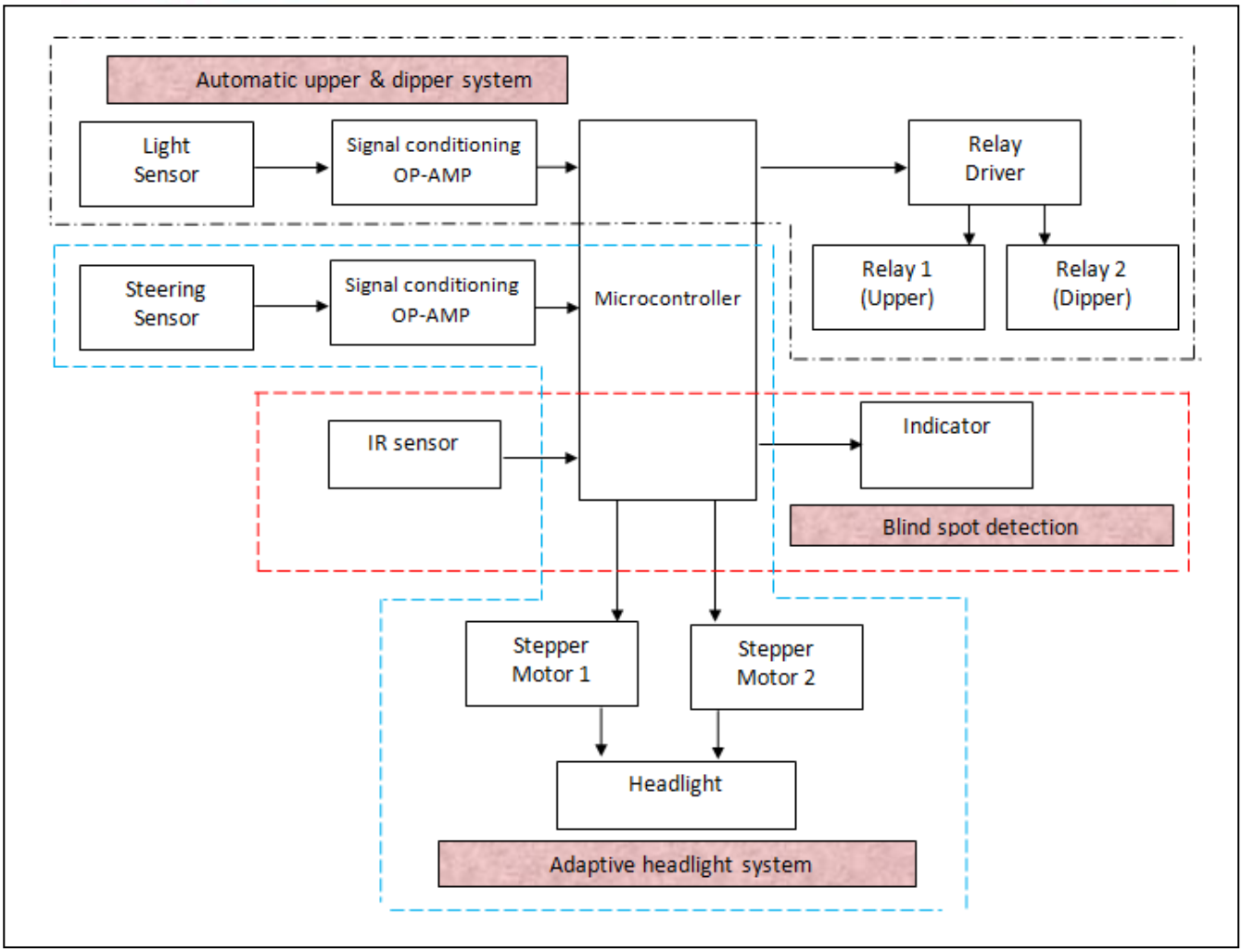
I.INTRODUCTION

The most of the accidents are takes place at the night time due to the high intensity light of upcoming car or vehicle. That light are directly strikes to the driver eye so driver cannot see the proper view of rod so the accidents are happen. So to reduce that we can develop the automatic upper and dipper light system. The most of the accidents are also happen on to the curved rod at day time and night time also. In that system the direction of the headlight are changed as direction of the steering is changes so driver can easily see the objects on the curved rod so this system is develop to reduce the accidents on the curved rods.The BSM system alerts to driver that another vehicle is present in adjacent lane and to use precaution if planning to change lane. So these systems features installed to enhance drivability and safety.

II.BLOCK DIAGRAM

We are design adaptive front light system and blind spot detection system to avoid accidents in rods, in our project there are three main parts:-

1) Automatic upper & dipper system.
2) Adaptive headlight system.
3) Blind spot detection system.



1) Automatic upper & dipper system:-The most of the accidents are takes place at the night time due to the high intensity light of upcoming car or vehicle. That light are directly strikes to the driver eye so driver cannot see the proper view of rod so the accidents are happen. So to reduce that we can develop the automatic upper and dipper light system

In that system we can use LDR as light sensor, as upcoming car has light intensity is high then LDR sense that and it gives the signal to the controller via ADC, ADC is use to convert that signal sense by LDR into the digital signal and then it gives that digital signal to the controller. Controller process that signal and gives to the relay driver, driver it use as a relay is an electrically operated switch. Relay is used to control a circuit by a low-power signal. Then the output of relay driver is gives to relay 1 and relay 2. The relay 1 is used for upper the headlight and relay 2 is used to deeper the headlight automatically.

2)Adaptive headlight system:-The most of the accidents are also happen on to the curved rod at day time and night time also. In that system the direction of the headlight are changed as direction of the steering is changes so driver can easily see the objects on the curved rod so this system is develop to reduce the accidents on the curved rods.

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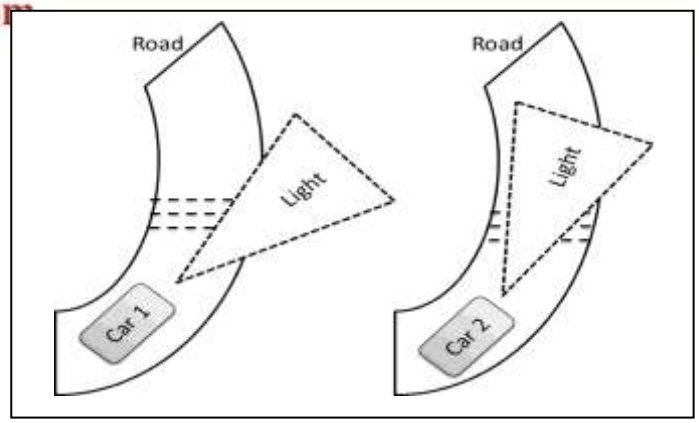

Figure 2: Car 1 without AFS and Car 2 with AFS

In the adaptive headlight system potentiometer is used as the steering sensor, potentiometer is connected A potentiometer was mounted on the steering shaft giving variable inputs. As the steering shaft turns, it turns the potentiometer. The potentiometer then gives an analog input into the controller unit.

The controller unit processes the input and gives the exact output current to turn the servomotor an initially programmed. To move the headlight 15 degrees from left to right proportionally with car steering requires a motor and microcontroller. For example, as the car turns right, the headlight will turn right also, therefore illuminating more on right hand side of the road. The projector light was removed and modified so that it can be attached to the servomotor. , as the car turns left, the headlight will turn left also, therefore illuminating more on left hand side of the road .

3) Blind spot detection system: -Blind spot monitoring system (BSD) use IR sensor to detect vehicles in adjacent lanes that may not be directly observed by the driver in side mirrors.The BSM system alerts to driver that another vehicle is present in adjacent lane and to use precaution if planning to change lane. So these systems features installed to enhance drivability and safety. BSMs use sensors to detect one or more vehicles in adjacent lanes that may not be directly observable by the driver.

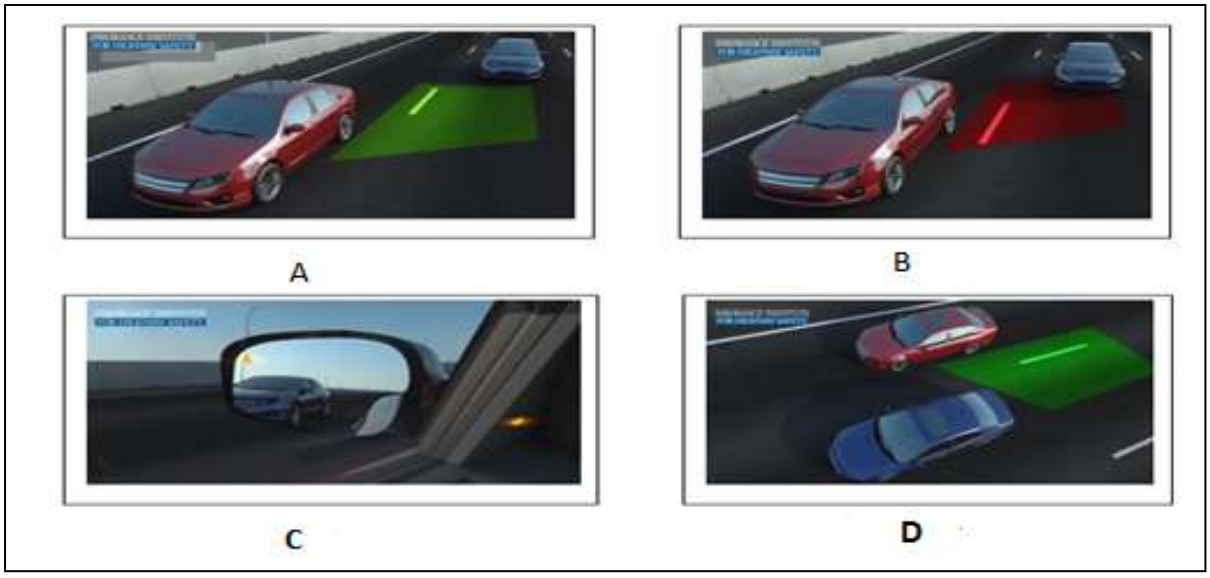

Figure 3: Blind Spot Detection, Fig A] Car is not in blind spot area B] Car enters in blind spot area C] Car is in blind spot area so indication to driver D]Car passes blind spot area

The system warns the driver that vehicle is present in blind spot so it helps to changes lens safely. A small number of these systems are also equipped to intervene by applying brakes and guiding the vehicle back into the unobstructed lane if the warnings are ignored. BSM system is most effective to reduce the accidents on rods.Some systems warn when the BSM sensors detect that one or more vehicles have entered either of the driver's two rear blind zones, and some warn only. When any vehicle is present in a driver's blind zone at that time the LED on driver side is turn ON.

Blind spot detection system use sensors that monitor nearby lanes and determine when other vehicles approach or enter a vehicles blind spot. When this occurs, the system warns the driver with a visual alert which usually appears either in or near the side view mirror. If the driver signals a turn or lane change the alert changes. It may become brighter or flash or an audible warning may sound. Some system also may activate break or steering controls to keep the vehicle in its lane. The alert stops when the adjacent vehicle is no longer in the blind spot.

III.CONCLUSION

The Adaptive Front Lighting System is a system which is used to reduce the accidents in night time. A specific control algorithm is developed for different driving conditions – curve roads and incoming vehicle's. So the AFS can provide a advanced features and enhance the safety of the driver and it give clear vision so it can drive the car easily. Due to the Blind spot detection system which is useful for driver to changing the lanes.

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