

Automatic Vehicle Beam Control System

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Abstract - This paper describes a real-time means of accident prevention by using sensor that senses the incoming beam of the incoming vehicle. Here sensor is interfaced by using programming of the arduino by using programming software that senses the incoming vehicle beam. It features a robust, reliable and accurate technique to detect incoming vehicle beam by continuously monitoring the incoming falling light of vehicles. The vehicle responds by lowering the beam of the incoming vehicle and then again enabling the beam high by using a timer of generally 2 seconds.

Key Words: Driver's inconvenience (when light falls on his/her face), sensor sensing incoming light.

1. INTRODUCTION

Accidents are exaggerating at a large pace, and various technologies are being used to prevent them. In context to this scenario, driver's reduced vision when light falls on his/her face is one of the many factors responsible for shortcomings. Driver's drowsiness is being neglected and is not considered as a major cause for accidents. But according to a survey, 60% of the accidents at night happens due to inconvenience in seeing on the road when light from the incoming vehicle falls on their face and eyes. The National Highway Traffic Administration conservatively estimates that 100,000 police reported crashes are the direct result of driver fatigue each year. This results in an estimated 1550 deaths, 71,000 injuries and \$12.5 billion in monetary losses. In order to reduce the number of accidents many efforts have been acknowledged for developing an effective safety system.

With increasing rate of vehicles on the road; road accidents are also increasing which are caused due to various reasons among which Driver's drowsiness during long hours of continuous driving is one of the major issues. We categorized vehicle beam control system into following:

- Sensing of light from vehicles
- Sending signal between vehicles
- Lowering the beam of vehicle

Sensing of light from incoming vehicles is the most accurate and reliable technique which can be implemented in following ways:

- The light sensor is turned ON at night while travelling and the sensor senses whether light falls on it or not, if light falls then it takes necessary response.

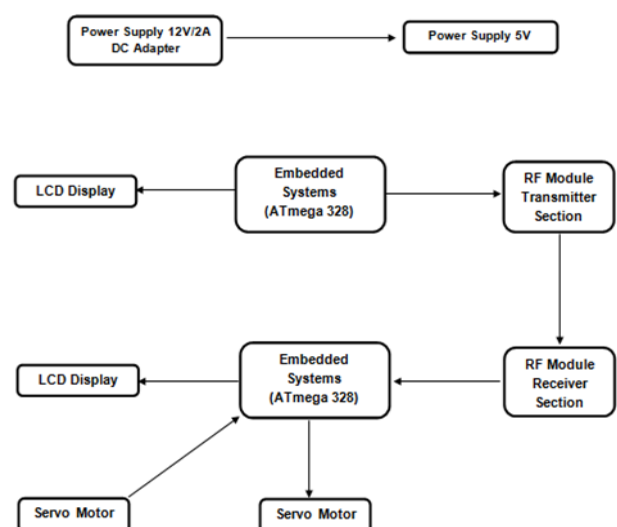
There are various researches going on how we can reduce accidents at night due to light which falls on the incoming drivers. The idea presented here takes into account the use of software to detect the light falling on driver's face and then lowering the light of incoming vehicle by sending a signal to the incoming vehicle by using RF module. The light sensor is mounted on the car where the driver's face exist while driving a vehicle and is turned on as soon as light falls on the vehicle from incoming vehicle. Then if the sensor detects light then it sends a signal to the microcontroller (ATMEGA 328 microcontroller), then the microcontroller reads the data from the microcontroller and then sends a signal to the incoming vehicle using RF module. The incoming vehicle then accepts the signal of the RF module and then lowers the light beam of the vehicle. After a certain time interval, the vehicle (whose light beam was lowered) will again switch its light beam to high.

2. COMPONENT DESCRIPTION

We have used following components:

- i) ATMEGA 328 microcontroller
- ii) RF module
- iii) Servo motor
- iv) LCD
- v) Light sensor (LDR)

BLOCK DIAGRAM



ADVANTAGES

- Reduction in accidents
- This device is very useful while driving in night on a one way road.
- Automobiles.
- Due to this number of deaths will be reduced due to accidents.

APPLICATIONS

- This technique was not suitable as it won't work in daylight.
- This device can also be used in rickshaws, and other travelling vehicles and can be used for their safety as well.
- This device is very simple in use and very reliable.

FUTURE SCOPE

- By using better sensor than LDR we can enhance the accuracy and range of the sensor.
- We can use automatic braking system which will slow down the car and turn on the parking light of the car.
- By using a better equipment for sending the data between vehicles can be used (other than RF module).

RESULT AND DISCUSSION

- The result of this using this device in vehicles is that our driving experience in nights will be much more better and the number in accidents at night on a one way road will be reduced to a small number.
- This device can also be used in be used in bikes and other two wheelers and can be used for their safety as two wheelers are in more danger than other vehicles.

The Result obtained is based on the following parameters:

- Light detection
- Sending signal between modules
- Lowering the light beam

CONCLUSION

The system proposed in this paper is acceptable level of performance and an average accuracy of 93.18%. High causality of road accidents is primarily occurred due to falling of light on driver's face and justifies the use of this system to alarm drivers at the time of driving.. Several risky operations can be easily accomplished with this type of system and further research and development in these areas will open gates to new tendency of interacting with machines. The development and enhancement of the system can save millions of lives annually.

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