

Automatic Light Polarizer and Traffic Density Controller

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Abstract: Now a day’s accident rates are increasing due to excess intensity of light from the opposite vehicle during late night rides. There is the need of reducing the level of accidents by reducing the intensity of light from the opposite vehicle. The first section of this project aims to develop an Automatic light polarizer that reduces the intensity of light from the opposite vehicle. This system works on the principle of operation of light polarizer’s. That is, when two polarizing plates are arranged parallel to each other it becomes transparent and when they are arranged perpendicular it becomes opaque to the light. The second section of this project is Traffic density controller. The traffic density control system aims at reducing the traffic in the main town area by making the vehicles to pass through the bypass junction whenever heavy traffic is detected in the town area. The system includes a transmitter and a receiver. The traffic density is sensed at the transmitter side. At the receiver section, a display is used that displays the information about the density and give instruction for the vehicles to take diversion. The main objective of this project is to minimize the accident levels and to ensure life security.

Index Terms—Automatic light polarizer, Traffic density controller

I. INTRODUCTION

The Electronics Engineers are making various inventions to increase the traffic security. One of such innovation is our main project. Our project mainly aims to increase the traffic security. We have two sections in this project -an automatic light polarizer and the traffic density controller which helps to reduce accident levels and the traffic jams. The first part of our project is mainly focused on reducing the accident levels during the late night rides. As the name suggests, the second part of our project helps to control the traffic density to a great extent and thereby reduce the accident levels.

The objective of this project is to increase the traffic security and thereby reducing the accident levels. The automatic light polarizer polarizes the high intensity of light from the opposite vehicle automatically. This uses a light sensor to sense the intensity of light and the sensed data is given to the microcontroller. Based on the intensity, the microcontroller rotates the stepper motor which is in turn connected to a polarizing glass.

The traffic density control system aims at reducing the traffic in the main town area by making the vehicles to pass through the bypass junction whenever heavy traffic is detected in the town area. The system includes a transmitter

and a receiver. The transmitting section consists of a density sensor. A pair of IR sensor is used to detect the traffic density. Data modem is used for transmitting the signal. At the receiver section, which is placed near any bypass roads before the junction, a display is used that displays the information about the density and give instruction for the vehicles to take diversion. That is, the receiving section will display “HEAVY TRAFFIC-TAKE DIVERSION” and then the vehicles can go through the bypass road without facing the traffic jam.

II. AUTOMATIC LIGHT POLARIZER

2.1 BLOCK DIAGRAM

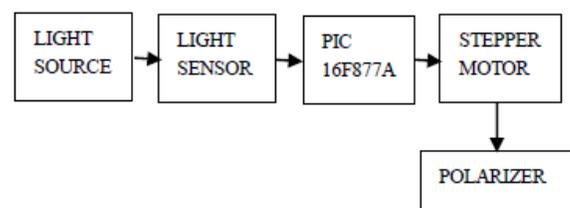


Fig1:Block Diagram of Automatic Light Polarizer

Automatic light polarizer works based on the principle of operation of polarizer. When two polarizing plates are arranged parallel to each other, it becomes transparent and when they are arranged perpendicular to each other, it becomes opaque. This system works on the basis of intensity of light from the opposite vehicles. An LDR is used in this system to sense the light from the opposite vehicle. This output of the LDR will be digital and analog. The analog output is connected to the PIC microcontroller. The PIC microcontroller works on the basis of threshold value that we already set. It compares the sensed value with the threshold value and if this value is above the threshold value, microcontroller rotates the stepper motor. Before the stepper motor, the output from the microcontroller is connected to the driver IC ULN2003A. It amplifies the received voltage level and gives it to the stepper motor. The polarizing glass is attached to the stepper motor and if a high voltage is obtained, stepper motor will rotate the polarizing glass, which is placed in a parallel position with the front glass of the vehicle. On rotating the stepper motor, an inclination will occur in this position. This reduces the intensity of light reaching the vision of driver and thus reducing the accidents due to the high intensity of light.

III. TRAFFIC DENSITY CONTROLLER

3.1 BLOCK DIAGRAM-TRANSMITTING SECTION

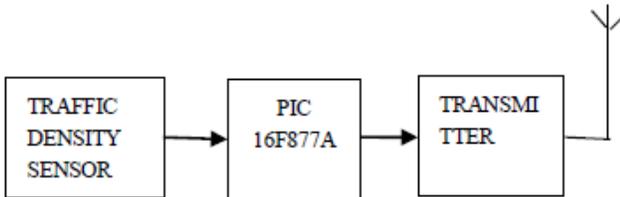


Fig2:Block Diagram of Traffic density controller-transmitter section

3.2 BLOCK DIAGRAM -RECEIVING SECTION

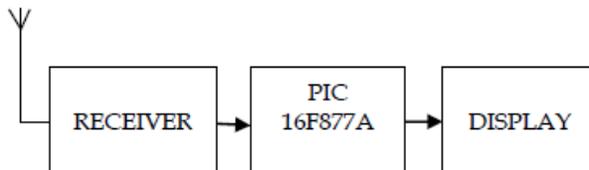


Fig3:Block Diagram of Traffic density controller-receiver section.

This system includes a pair of IR transmitters and receivers which are together help to detect the traffic

density. When the power supply is ON, the transmitters will continuously transmit the signal and receivers will receive the signal. When the vehicles come across the transmitter and receiver, it will cut the signal in between the transmitter and the receiver. Then a high voltage will reach the comparator LM339. It compares the signal and given to the microcontroller. The microcontroller counts the signal. If this count is above the preset threshold value a message will be displayed in LCD mentioning about the traffic jam at the main junction.

IV. CONCLUSION

The Automatic Light Polarizer can bring the road accidents down to a very low rate. Installation of the circuit to vehicle is easier. The circuit has comparable low cost, thus it's viable to everyone. Since the circuit is installed inside the vehicle, the chance of wear and tear is low. The one main drawback of this system is its response time. The circuit should make polarization at the correct mean time. This project can be further extended by a single glass where polarization takes place by applying electric field. This system has advantage over response time and wear and tear. The Traffic Density Controller reduces the road traffic to a great extent. The main advantage of this project is that it reduces the traffic jam to a great extent. And also it ensures the life security of people that is when an emergency drive has to be taken; if traffic jam is there it makes it impossible. Thus by this project it makes it easy for emergency drive. The one main drawback is when an accident block is happened in the bypass road, and in the same mean time if traffic occurs at the town, there is no system for making decision in such situation. The further expansion of this project is the intelligent traffic control system.

Thus by our project, Automatic light polarizer and Traffic density controller, we ensure life security by reducing traffic accidents and traffic jam to a great extent.

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