Design and Fabrication of Automatic Rain Sensing car Wiper

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ABSTRACT

Driver's safety is of great importance in today's automotive industry. During heavy rainfall, a lack of proper vision is responsible for accidents. In many cases, manual errors like not increasing the speed of the wiper by the driver lead to accidents. In this paper, we proposed that the wiper system detects the rainfall automatically and starts itself. According to this paper, when droplets of rainfall on the sensor, the sensor detect the speed and intensity of water droplets and speeds of the wiper are automated accordingly. For this we use Rain Sensor Module, Micro-controller, LCD Module & Servo motors. The rain sensor senses the water or rain droplets are then proceed to the micro-controller to take desired action.

Keyword : - *Sensing , Micro-Controller, Servo Motor*

1. INTRODUCTION

 The car wiper system proposed to be intelligent and mechanized. Mechanized means that the system predicts rainfall and begin by itself. Intelligent is supposed to be in such a way that the system compute the intensity of rainfall and manage the speed of motor wiper accordingly. At present only extravagant vehicles utilize intelligent rain sensing windshield wiper systems. Our system is shaped to exhibit how fruitful and useful is this system that adapts its speed itself based on the intensity of rainfall. Such an advanced system has improved the safety standards of a ride. A number of accidents occur during heavy rainfall due to the proper visibility. In most of the cases the accidents occur due to the human errors of the drivers. By the use of our system the risk of accidents will reduce in future. This advanced system adapts the speed of wiper according to the rainfall's intensity and therefore increases the safety. The designing of the system consist of mc, Servo motor, Rain sensor module and 16*2LCD module. The rainfall is sensed by the rain sensor module and send the message to the 8051 microcontroller-which is a Atemga8 based micro controller board. The information collected from the rain sensor gets processed by mc and controls the output motors which depend upon the processed information. The 16*2 LCD screen is used to display the status message to the driver such as speed of wiper, intensity of rainfall. Ideally the rain sensor is placed at the side corner of the windshield for getting proper information. The wiper blades are connected to the servo motor. The LCD screen is put inside the car nearby the vision of driver. The three devices are connected together with the help of mc which is kept inside the car near to DC power supply.

2. BLOCK DIAGRAM

Rain sensor Module	8051 Micro-controller	Servo Motor
External Power Supply		16x2 LCD Module
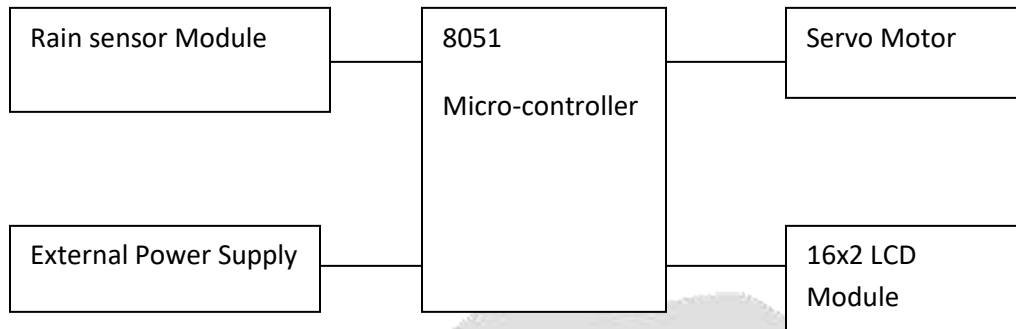
Fig-1 : Block diagram of Rain Sensing Automatic Car Wiper system

A. Rain Sensor Module: It enables us to measure through the analog output pins and it provides the outcome in the digital form when the threshold moisture exceed. The element is based on the LM393 op amp. It consist of electronics of component and a printed circuitry board which collects the drops of rain. Since the raindrops are gathered on the circuitry board it makes the way for parallel resistance which is measured through the op amp. If the resistance is less then the voltage output is also less. As a result of which lowering the water will give higher output voltage on the analog pin. A completely dry board will led to the output of module up to five volts.

Fig-2: Rain sensor

B. Micro Controller: The LCD module used here is JHD162A.It is a 16*2 LCD module which is based on HD44780 driver manufactured by Hitachi. It consist of 16 pins which can be operated in a two mode either in a 4 bit mode and 8 bit mode. Here we are using 8 bit mode.

Fig-3: Micro- Controller

C. LCD Module: The LCD module used here is JHD162A.It is a 16*2 LCD module which is based on HD44780 driver manufactured by Hitachi. It consists of 16 pins which can be operated in a two mode either in a 4 bit mode and 8 bit mode. Here we are using 8 bit mode.

Fig-4: LCD Module

D. Servo Motors: They are in existence for a long time and are used for various applications. They are very small in size but they are highly efficient. They are also being used for many industrial applications ,pharmaceutics, inline manufacturing, robotics and food services .Servos are handled by sending pulse of variable width also known as pulse width modulation using control wire. There is a maximum ,minimum pulse on a repetitive mode. The servo motor can turn in 90° and total of 180° movement. The position where the servo has the same amount of potential rotation in the clockwise and counter anticlockwise direction is called as motor's neutral position.

Fig-5: Servo Motor

3. CONCLUSION

 The mechanized and intelligent car or vehicle wiper system can used to sense rain and start by their own. The wiper can adjust the speed according to the intensity of rainfall.

4. FUTURE ASPECTS:

The automatic wipers are used in four wheeler in both front side as well as rear side on the mirrors. They can also being implemented on the window of the house for cleaning. A little modifications on it leads to the better cleaning

system. It prevents the window glass or bars form being corroded. It can also being used in trains, watercrafts and aircrafts for better visibility.

5. REFERENCES

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