iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 **Issue:** III **Month of publication:** March 2019

DOI: http://doi.org/10.22214/ijraset.2019.3098

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 7 Issue III, Mar 2019- Available at www.ijraset.com

Design and Implementation of Automatic Vehicle Control and Accident Avoidance System

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Abstract: ***As driving is starting to be a more and more of a common activity now a day. And there is a continuous increase in the number of cars. Hence to make this experience more better as well as more safe. This system also helps into avoiding the accidents that are caused due to the presence of the fog. These accidents are on a continuous rise since 2015. The main reason that this system shines is due to the fact that it is not so much affected by the fog as much as that a human eye is affected by it while reducing the visibility. As well as provides the ability to stop or slow the vehicle in a timely manner. This allows avoiding accident as well as saving lives.***

Keywords: Arduino, Ultrasonic sensor, LM7805, IR Sensor, Reference

I. INTRODUCTION

As driving is starting to be a more and more of common activity now days. And there is a continuous increase in the number of cars. Hence to make this experience more better as well as more safe. This system also helps into avoiding the accidents that are caused due to the presence of the fog. These accidents are on a continuous rise since 2015. The main reason that this system shines is due to the fact that it is not so much affected by the fog as much as that a human eye is affected by it while reducing the visibility. As well as provides the ability to stop or slow the vehicle in a timely manner. This allows avoiding accident as well as saving lives.

II. BLOCK DIAGRAM

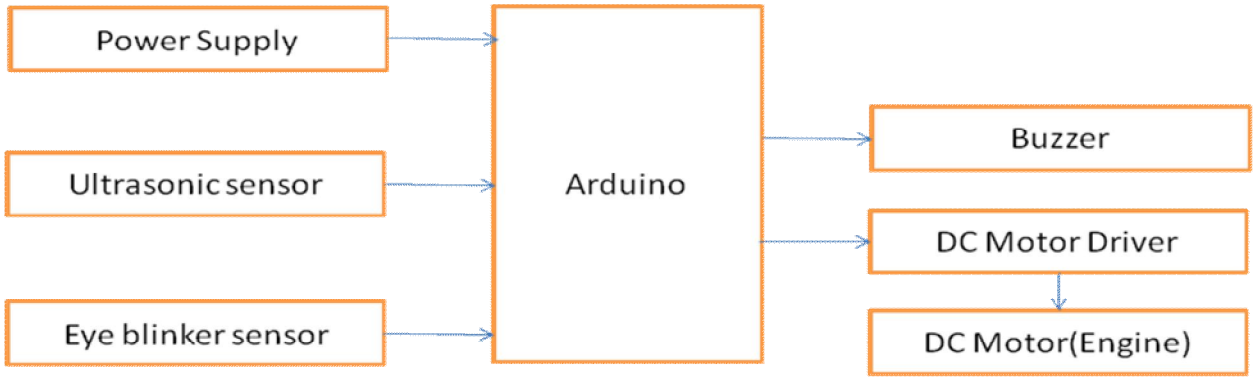

Fig 1: Block Digram

III.COMPONENTS

A. Arduino UNO

Arduino UNO is a single board microcontroller of versatile nature that can be used in multiple numbers of projects. As it is very easy to study as well as configure. The specifications of the Arduino are as follows: -
Microcontroller - Atmega328p (8 bit AVR family microcontroller)
Operating voltage- 5V
Input Voltage -7V to 12V
Analog pins-6
Digital I/O pin-14
Flash memory-32 kB (0.5 kB for boot loader)
SRAM - 2KB
Frequency (clock & speed) -16MHz

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Fig 2: Arduino UNO

B. Arduino NANO

Arduino NANO is also a single board microcontroller of a versatile nature. 43mm x 18mm is the size of the Arduino NANO. Its specifications are:-

Microcontroller – Atmega168
Operating voltage-5V
Input Voltage –7V to 12V
Analog pins-6
Digital I/O pin-14(6provide PWM o/p)
Flash memory-32kB (2kB used for boot loader)
SRAM –2kB
Frequency (clock & speed) -16 MHZ

Fig 3: Arduino NANO

C. LM 7805

This IC is used as a voltage regulator where the number 78 represents that it is a member of voltage regulator ICs. And the 05 represents that the IC has a stable output of positive 5V.

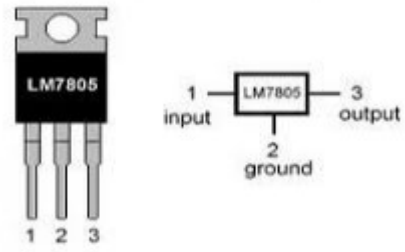

Fig 4: LM 7805

D. Ultrasonic Sensor

HC-SR04 is the ultrasonic sensor used in this system. This ultrasonic sensor has a range of zero to four meters. And uses a single transducer like many other ultrasonic sensors that is used to send a pulse and then receive an echo. The ultrasound emitted is of the range of 40000Hz.

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Fig 5: Ultra Sonic Sensor

E. IR Sensor

The IR sensor works on the principle in which the Infra red light is radiated and then received by the photodiode if they are reflected. If the eyes are closed then the infra red light are reflected otherwise they are not reflected showing that the eyes are not closed.

Fig 6: IR Sensor

IV. ADVANTAGES

A. Reduce accidents in fog.
B. Better as well as safer experience for new user.
C. Saves other people and property from careless drivers.

V. CONCLUSION

The purpose of this project is to reduce the number of accidents that generally occurs due to the reason of careless driving or inexperience user is driving. This is accomplished by using an ultrasonic sensor along with the Arduino. The installation and the maintenance of this system are fairly easy. Also this system allows the users to be safer in the vehicle when encountering the fog. This system as whole saves lives as well as damage to both human and property.

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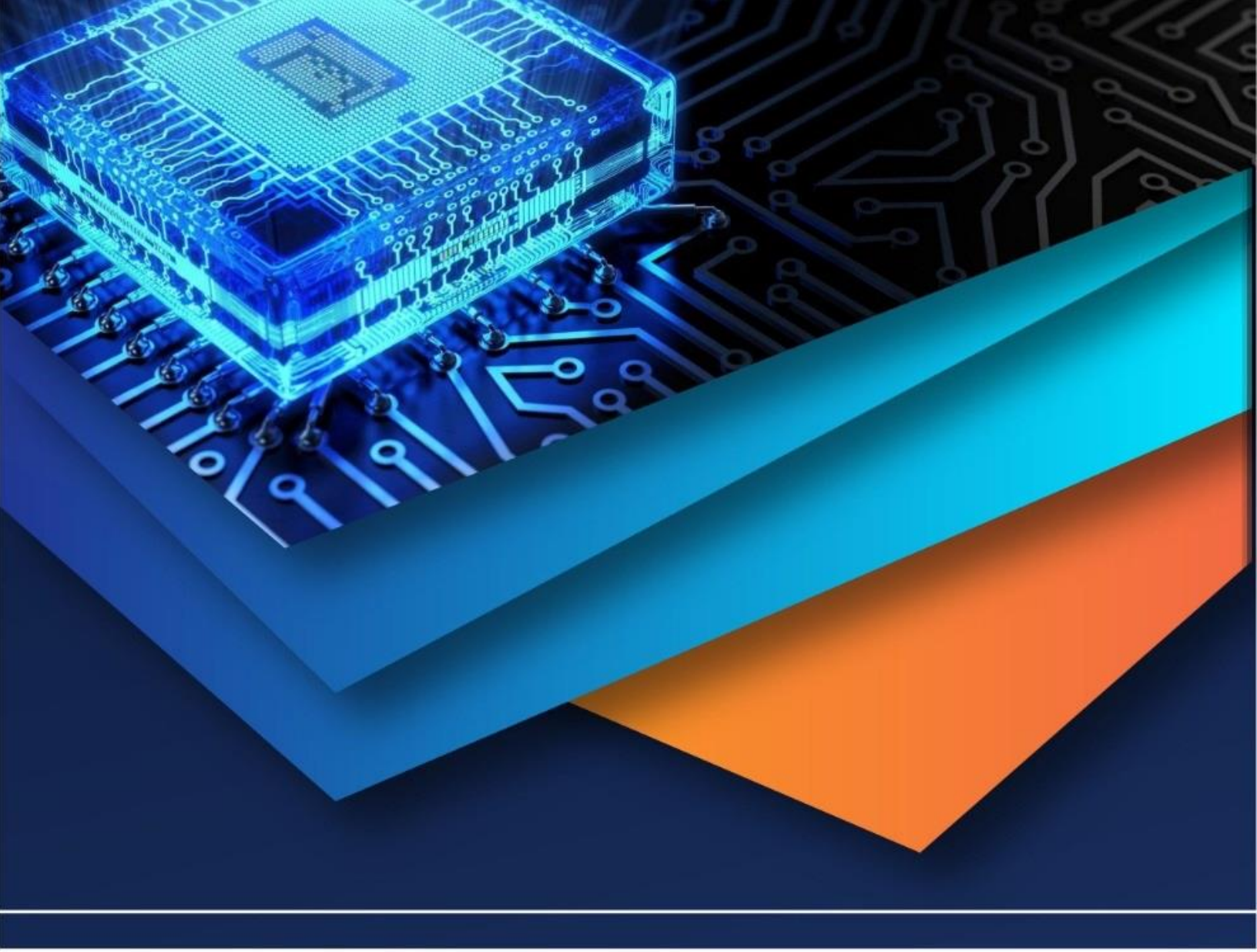

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