Semi-Automatic Signalling Mechanism For Automobiles

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Abstract

A car has several signaling devices indicators, brake light, hazard warning light, headlights, reversing light and the car horn. These signaling devices are used by a driver to communicate to other road users what they intend to do. They help drivers "read the road". Signals give advance warning to other road users that you intend to perform a movement. Giving appropriate signals at the correct time and place and correctly interpreting the signals of other road users are important for the safety of all road users. Your signals must be given in good time before you start your movement and for long enough for their meaning to be clear to other road users. Don't signal too soon as this could cause confusion.

Proposed system presents a novel approach for semi-automatic signalling in automobiles to ease the navigation. We are using standard microcontroller platform and various sensors, data storing elements as well as commercially used display sign boards for achieving the goal.

I. Introduction

Driving a vehicle involves many skills such as visual search, perception, and judgment. In order to minimize the risk of an accident, the driver has to continually process new information, react to the environmental demands and make proper decisions [6]. In this section, the focus is on the drivers' understanding of different left-turning signals, drivers' response to pedestrians, and information processing [1]. For the same reason, we are proposing a novel approach of semi-automatic signalling for automobiles which is supposed to replace the traditional manual signalling mechanism, which uses sensor for warning and controlling purpose [2,3].

II. Idea Proposed

In this particular application we mainly focus on three parameter that consider to be the complete working of this project. The first one is the sensor, various sensor are used for sensing or reading the input from various point such as the ultrasonic sensor the sensor sense the distance from the obstacle these signal is going for the second important unit that is microcontroller[3]. The ARM7 based microcontroller are used to accept the input signal from the sensor, and do the appropriate action taken at the output side that is the actuator side for the ultrasonic sensor input the actuator is the warning alarm speaker (buzzer) that warn the driver that the obstacle is ahead and driver will stop the vehicle. There are many more sensor are used in this project such as accelerometer, LM358 as the moisture sensor. [4]

III. Block Diagram



Fig.1 : Block Diagram

IV. Working

Here we have interfaced many sensors which help in detecting the conditions which can lead to accident .We have accelerometer, moisture and ultrasonic sensors which continuously sense for direction, moisture and distance respectively. As soon as any of the above parameters exceed the set point the μ C will turn on the buzzer when less distance on ultrasonic sensor and white LED on [3].

Using accelerometer forward than car speed increase. Reverse decrease car speed and red LED on. For indication (left and right) yellow LED on. If moisture high the wiper on automatically [5]. To avoid the accident. accelerometer are using for automatic signaling of the indicator which is used to be show the turning direction of the vehicle the accelerometer are kept inside the steering while when the driver wants to take turn then the steering position is capture by the accelerometer and which is directly proportional to the indicator signal as well as display sing born which is place near the number plate of the vehicle [1]. Along with that we have ARM interfaced motor through the motor driver IC L293D when the any water or the moisture is detected on the front glass of the car then the moisture sensor are activated and get interrupt to the controller and controller then respond this with the motor moving action and it work as a automatic wiper system for the automobile.

V. Sensors Used

1. Accelorometer

The accelerometer is used to sense the pedal position of the break if break is pressed then the message is display on LCD is driver is slow down so that the rear driver will understand these message and he will be also slow down his vehicle. For this project we are using two accelerometer one for brake pedal and another for steering wheel position sensor so that according to the steering wheel position the message will display on LCD is Driver taking left or right and along with this message the two LEDs will also glow to identify the driver clearly.[1]



Fig. 2 : Accelerometer

2. Ultrasonic

The main purpose of these sensor in our project is to worn the driver while parking the vehicle [3]. The driver will know if there is obstacle in the parking area the ultrasonic sensor will trigger the microcontroller if there is obstacle and buzzer will blow to warn the driver [7].



Fig. 3 : Ultrasonic sensor

3. Moisture Sensor

LM358 is used as moisture sensor for this application, the lm358 is placed near the front glass of the car if the rain drop is detected then the LM358 gets the input this input is process by the microcontroller and the wiper motor will trigger form 0-180 degree so these mechanism perform the automatic wiper for the vehicle [5].

VI. Accuators Used

DC Motor

The DC motor is used as actuator for the wiper movement control and wheel speed .DC motor is used along with the driver L293D that can drive 2 motors.



Fig. 4 : DC Motor

Buzzer

The buzzer is used to warn the driver if there is any obstacle in the parking so the driver is able to detect the obstacle and avoid it.



Fig. 5 : Buzzer

VII. Project Requriment

HARDWARE REQUIREMENTS: Standard 8 /16/32 bit Microcontroller, Accelerometers, Display Sign Boards, Joystick / Interactive keypad SOFTWARE REQUIREMENTS: Compiler IDE Proteus Simulator MS Office Concept Draw Language used: Embedded C.

VIII. Flowchart



IX. Application

- For heavy traffic area it is used as automatic signaling mechanism.
- Controlling traffic. By advance signaling model that is LCD display at the Number plate.
- Avoid accidence by giving privileged warning to the rear driver.

X. Conclusion

This project deal with the vary generic road safety and traffic control problem which can be arise at every point on the road while driving the vehicle we can lead this project to avoid these two problem and adding the extra features to this project module.

Here we started with the sensor as the input for the ARM controller and then accordingly we do the operations which will be display on the LCD panel placed near to the vehicle number plate. So that the vehicle behind the car will be aware and accident can be prevented. Another fact of this project is that we are adding more advance model which will definitely helpful to the road safety purpose like automatic wiper control, alcohol sensor to avoid drink and drive, in future the GSM mode can be interface to detect the over speeding of car.

References Research parce

Research paper

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