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ACCIDENT AVOIDANCE SYSTEM USING OBSTACLE DETECTION AND REDUCING THE LIGHT BEAM

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ABSTRACT: Road Traffic Accidents are a major cause of disability and death throughout the world. The control of intelligent vehicles in order to reduce human error and boost ease congestion is not accomplished solely by the aid of human resources. The present article is an attempt to introduce an intelligent control system based on ultrasonic sensor technology. By the help of ultrasonic sensor we are calculating the obstacle distance and depends on the distance we are going to change the intensify of head light beam
Keywords: Ultrasonic sensor, Arm7,light neam

I.INTRODUCTION:The project is designed to build an obstacle detection intelligent vehicle using ultrasonic sensors for its movement. An ARM7 is used to achieve the desired operation Computational intelligence involves the programmed instructions. The project proposes robotic vehicle that has an intelligence built in it such Some typical examples from court cases of dangerous driving are:

- Speeding, Racing, Weaving
- Ignoring traffic lights, road signs
- Overtaking dangerously
- Knowing the vehicle has a dangerous fault or an unsafe load
- Permitting to drive without valid license
- Drove on wrong side of divided highway

A person drives carelessly or inconsiderately when the way they drive falls below the minimum acceptable standard expected of a competent and careful driver. Some examples of careless driving are:

- Overtaking on the inside
- Driving through a red light by mistake
- Cut across driveway to make turn
- Parked in No Parking area
- Leaving vehicle in dangerous position
- Speed under minimum

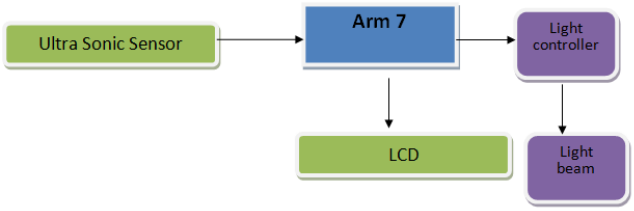

Fig:Block diagram

II. What is an Ultrasonic Sensor?

An Ultrasonic sensor is a device that can measure the distance to an object by using sound waves. It measures distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back. By recording the elapsed time between the sound wave being generated and the sound wave bouncing back, it is possible to calculate the distance between the sonar sensor and the object.

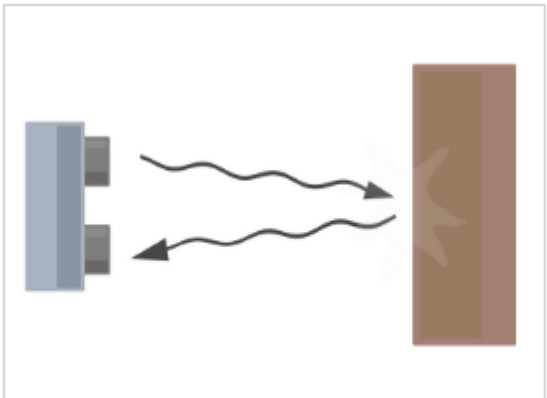

Diagram of the basic ultrasonic sensor operation

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Since it is known that sound travels through air at about 344 m/s (1129 ft/s), you can take the time for the sound wave to return and multiply it by 344 meters (or 1129 feet) to find the total round-trip distance of the sound wave. Round-trip means that the sound wave traveled 2 times the distance to the object before it was detected by the sensor; it includes the 'trip' from the sonar sensor to the object AND the 'trip' from the object to the Ultrasonic sensor (after the sound wave bounced off the object). To find the distance to the object, simply divide the round-trip distance in half.

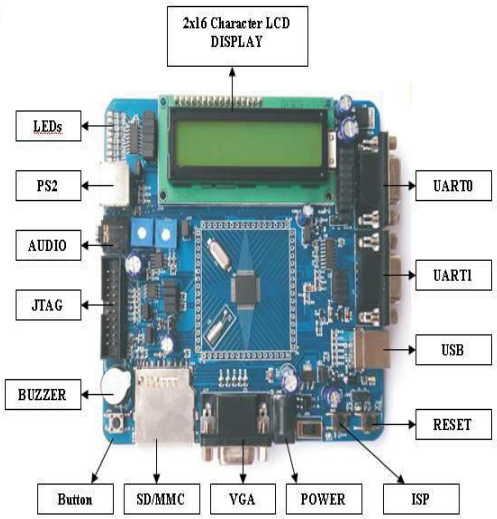
$$distance = \frac{speed\ of\ sound\ \times time\ taken}{2}$$

It is important to understand that some objects might not be detected by ultrasonic sensors. This is because some objects are shaped or positioned in such a way that the sound wave bounces off the object, but are deflected away from the Ultrasonic sensor. It is also possible for the object to be too small to reflect enough of the sound wave back to the sensor to be detected. Other objects can absorb the sound wave all together (cloth, carpeting, etc), which means that there is no way for the sensor to detect them accurately. These are important factors to consider when designing and programming a robot using an ultrasonic sensor.

III.Arm 7 LPC2148

Features

- 32-bit ARM7TDMI-S microcontroller
- 40 kB of on-chip static RAM and 32 kB to 512 kB of on-chip flash memory
- In-System Programming/In-Application Programming (ISP/IAP)
- 8 kB of on-chip RAM accessible to USB by DMA
- Two 10-bit ADCs provide a total of 14 analog inputs
- 10-bit DAC provides variable analog output
- Two 32-bit timers/external event counters (with four capture and four compare channels each)
- PWM unit (six outputs)
- watchdog timer
- Real-Time Clock (RTC) with independent power
- Multiple serial interfaces including
- -- two UARTs,
- -- Two Fast I2C-bus (400 kbit/s),
- -- SPI and SSP with buffering and variable data length capabilities
- Vectored Interrupt Controller (VIC) with configurable priorities and vector addresses
- 45 general purpose I/O pins
- 21 external interrupt pins available
- On-chip integrated oscillator operates with an external crystal from 1 MHz to 25 MHz
-



System Introduction:

he accident avoidance system helps to avoid the regular accidents that will normally occurring on highways and in city traffic. These accidents are mainly happened by distraction, unconsciousness, distance unknown between our vehicles. So let us consider the Indian roads and we will have 2 ultrasonic sensors where one is placed in the front and another one behind the car. Due to this sensor, we can calculate the distance of other automobiles nearing us. Thus we can locate other cars and we can protect ourselves from accidents. The diagrammatic representation of the scenario is explained as

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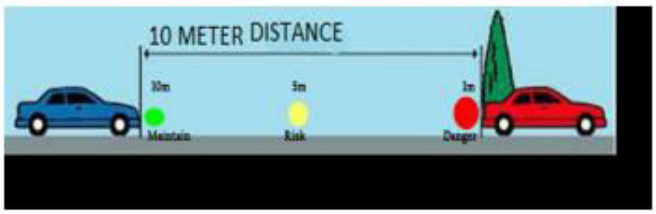


Algorithm:

a. Connections are made to the LPC2148

b. LCD, ultrasonic sensor, LED. Ultrasonic sensor fixed in our car and it normally senses the car which is nearest to us on both front and back side At the distance of 10 meter the green

c. color light will show the notification When the car reaches 8meter the yellow

d. color light alerts us When the car reaches 5meter the red

e. color light alerts us we are in danger zone The distance between one vehicle and

f. another vehicle was displayed in LCD

g. There is no notification takes thus it denotes we are in safer side

h. END

FUTURE SCOPE

a. Work for an extended period of time without intervention from human or a need for power supply.

b. Avoid situations that are harmful.

c. The designed device will be able to avoid obstacle perfectly like programmed.

d. If the current project is interfaced with a camera robot can be driven beyond line of sight
& range become practically unlimited as networks have very large range.

e. By adding temperature sensor, water tank and making some change in programming we can use

Working:

The basic idea behind this project is to avoid acciendents. It is a precautionary measure that alerts the driver .the initial stage begins from the ultrasonic sensor that identifies the vehicle in the front and back side. If the car reaches 10 meter, green color light will glow that will show the notification. At 8 meter distance yellow color light will alerts us. When it reaches 5 meter distance red color light will alerts us we are in danger zone.At the same time the distance between one vehicle and another vehicle was displayed in LCD. Wire connections are made from the bread board to the LCD.aurdino kit to the ultrasonic sensors and finally bread board to the aurdino kit. This project will make easy calculation of an distance between one vehicle and another vehicle for the driver

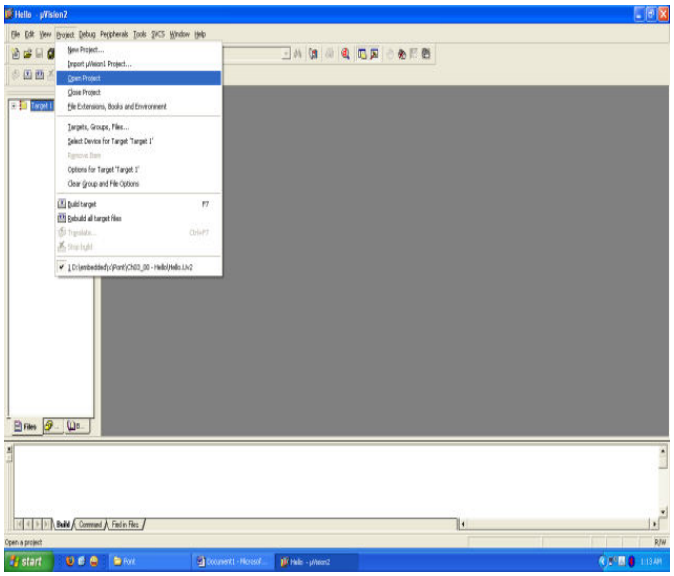
Software :

KeilSoftware

Installing the Keil software on a Windows PC

- Insert the CD-ROM in your computer's CD drive
- On most computers, the CD will "auto run", and you will see the Keil installation menu. If the menu does not appear, manually double click on the Setup icon, in the root directory: you will then see the Keil menu.
- On the Keil menu, please select "Install Evaluation Software". (You will not require a license number to install this software).
- Follow the installation instructions as they appear.

Go to Project – Open Project and browse for Hello in Ch03_00 in Pont and open it.



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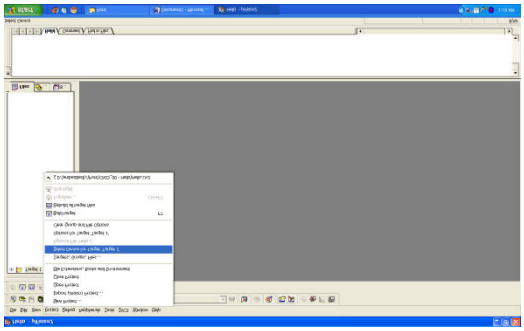
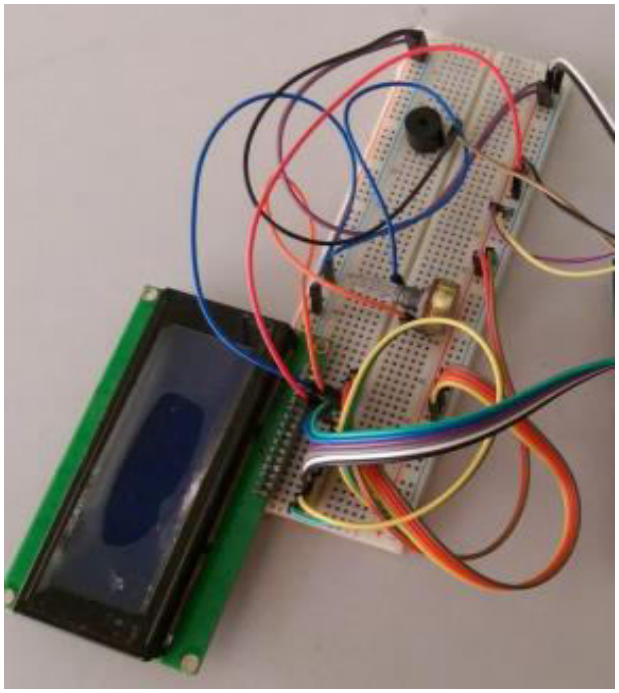
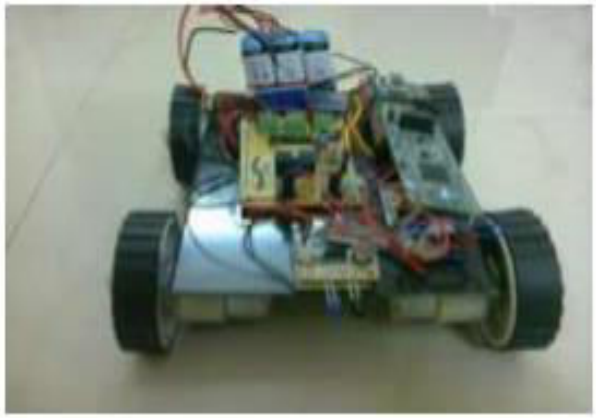
Go to Project – Select Device for Target 'Target1'



VI.RESULT

The Screenshots for software and Hardware Implementation is shown below.





V.CONCLUSION

Conducting the above project, the following data is being sent to the data centreRed light crossingWrong routeToday, in most parts of the world, anticipating the future and pre-programming leads to the augmentation of the efficiency and placing the necessary equipment in the necessary places. With paying little attention, it becomes known that this method has less delay in comparison to JIT method. For this purpose, through using the history of the past and locating, the most of the future events can be predicted. Consequently, by decreasing the time of delay, the efficiency will certainly increase.

Some of the advantages of using this system are as the following:

• Increasing traffic's safety

• Decreasing the cost: such as traffic fatalities, financial damages and fossil fuels

• Decreasing delay time while entering and leaving the highway

• Decreasing traffic crimes

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