

OBSTACLE DETECTION CAR

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Abstract

In the current world there are lot of accidents taking place, these accidents occur with intention or without intention. To overcome this small problem many industries are putting in extra money which goes waste and it even decreases profits for the company. This equipment which has been constructed uses simple concepts and overcome bigger and major accidents. The

accuracy of safety is very high and there is negligible loss of money in this technology. The complexity is not much and

Domain: Automobile Safety in cars

List of Issues: 85% of road accidents taking place are when cars do not apply brakes at the right time. There is a lot of misunderstanding in the current world and it is a minor fault of misunderstanding between people that such big accidents take place where one loses life or body organ.

Issue in focus : To resolve these kind of accidents To resolve this I made a equipment with minimum cost which will resolve this issue. This can be bought with less amount so need not waste so much money in advanced equipments.

Reference recent work :

REFERENCE WORK-1:

using the Inverse Discrete Cosine Transform and a threshold algorithm, the center of the obstacle is obtained. Furthermore, a pinhole camera model is used to estimate the relative angle between the UAV and the obstacle, this angle is used with a PD controller to control the heading of the UAV for obstacle avoidance.

REFERENCE WORK-2

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An expansion segmentation method was used in which a .conditional Markov Random Field is used to distinguish if the frontal object may represent a collision or not. Additionally, an inertial system is used to estimate the collision time.

REFERENCE WORK-3

SIFT descriptor and Multi-scale Oriented-Patches are combined to show 3D information of the obstacles. At which, the edges and corners of the object are extracted using MOPS by obtaining and matching the MOPS feature points of the corners, then the 3D spatial information of the MOPS points is extracted

Advantages of current technology :

This technology can equipped in many vehicles and even ships as it overcomes major problem.

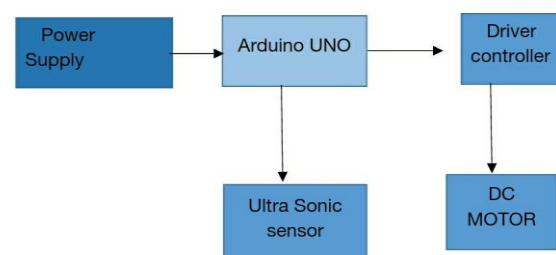
It can be controlled remotely.

It can work in any conditions.

It does not require human effort.

Proposed work - I made a equipment with minimum cost which will resolve this issue. This can be bought with less amount so need not waste so much money in advanced equipments.

Expected results (Qualitative and Quantitative)-



Keywords – Arduino Board, Bread Board, Driver controller, Battery

Introduction

Introduction to the domain – In this world there is lot of chaos and confusion in roadways. Many companies tried to come up with solutions but they were in vain as they took too much effort to build or this consumed a lot of money.

Challenges in the domain –

The current industries have come up with the better solutions as per their profits kept in mind, which means that they did not fully implement as some models of safety equipments cross the profit margins.

work had been done so far - In foreign countries many cars have started using this technology as a basic requirement in cars as they understood the problems faced. This need was understood by the people and hence made people buy this car although it was a bit pricy.

why the focused issue is so important - Many big players like the Audi, BMW have provided this security but this is at much a higher rate where the common man cannot afford, only the ones who are too rich can only afford.

How the currently focused technology in this paper will help for solving the issue better

The equipments used in this project are not costly, which leads to better market share. The best part is that company people are satisfied as they can reach profit margins easily and the people are happy as they are satisfied with security.

literature Survey / related work advantages of the current technology and how it suits to solve the issue which is focused

Literature survey-1:

It has an infrared sensor which are used to sense the obstacles coming in between the path of Robot. Autonomous Intelligent Robots which will perform desired tasks in unstructured environments without continuous human guidance.

Literature survey-2

Author having the different technology used for making obstacle avoidance robot includes arduino development board next which device controller is placed. Arduino board is connected with DC motor through motor driver board which provide power to the actuators.

Literature survey-3

Obstacle Avoidance Robot by Applying Fuzzy Control System.

In this project primarily addresses the design and implementation of fuzzy logic based controller for obstacles avoidance robot. Some techniques, sensors and controller have been applied to fulfill the requirements of the robot

Literature survey-4

Obstacle Avoidance of Autonomous Mobile Robot using Stereo Vision Sensor.

An obstacle detection method was proposed. It is based on the stereo measurement without any search of the corresponding points to match them.

Literature survey-5

Fuzzy-layered mobile robot navigation system in unknown environment is used in different stages for execution. Information from global data and long range perceived data is used by first layer to identify way points as well as trapping. The second layer is useful for local information or short range sensors data.

Background and related work (quote in reference section) on the issue in focus

Farmer develops tractor control:

By using the obstacle avoidance technique farmers can use this technique for yielding the crops and cutting the crops for their harvesting and for good crops, which will be a very useful technique for future work.

Even ships can use this mechanism in water to overcome big icebergs and stones in water.

Compare the related work with the current proposed method and contrast

In India it is clearly seen that the cars are not using this simple concept and it is sad to know that the death rate is more due to accidents.

In this one need to need to put in human effort in thinking which way to go the machine detects the obstacle and takes it's decision.

About the Issue

what

To prevent the collision between vehicles by using obstacle avoidance technique and with the help of ultrasonic sensor

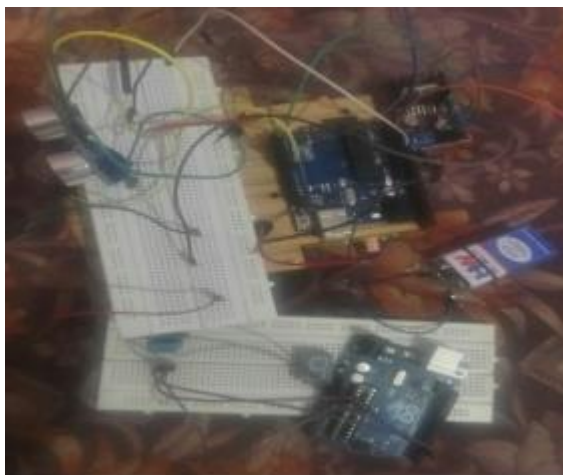
Why

Because of too many accidents in land

how

By using bread board we connect bluetooth module , ultrasonic sensor,driver controller and arduino board together.

samples



Design and implementation

Components

Arudino board

Driver controller

2-Dc motors

2-batteries

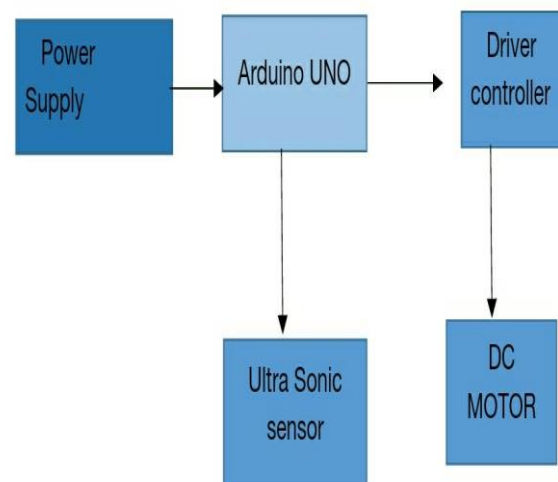
servo motor

1-bread board

Jumper wires

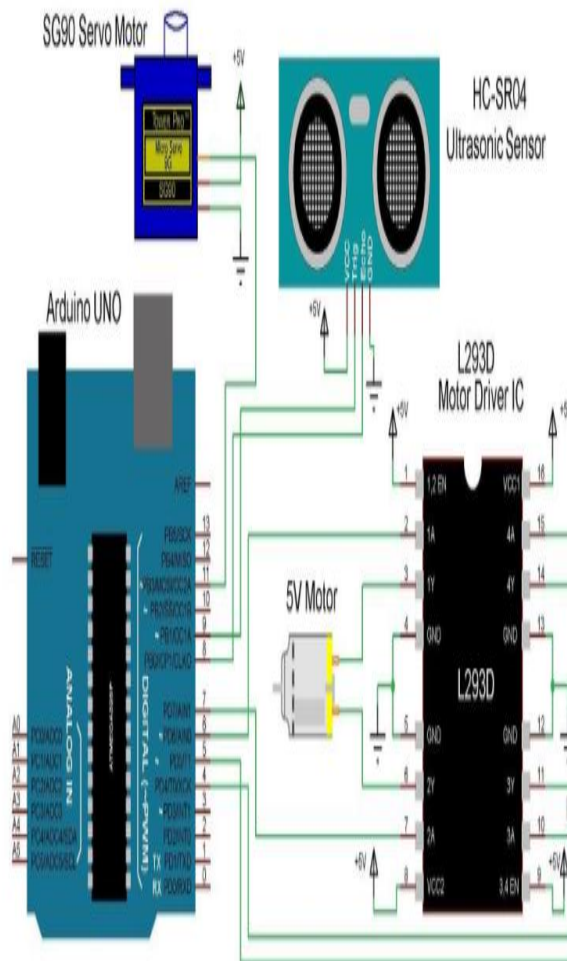
Ultrasonic sensors

Block diagram

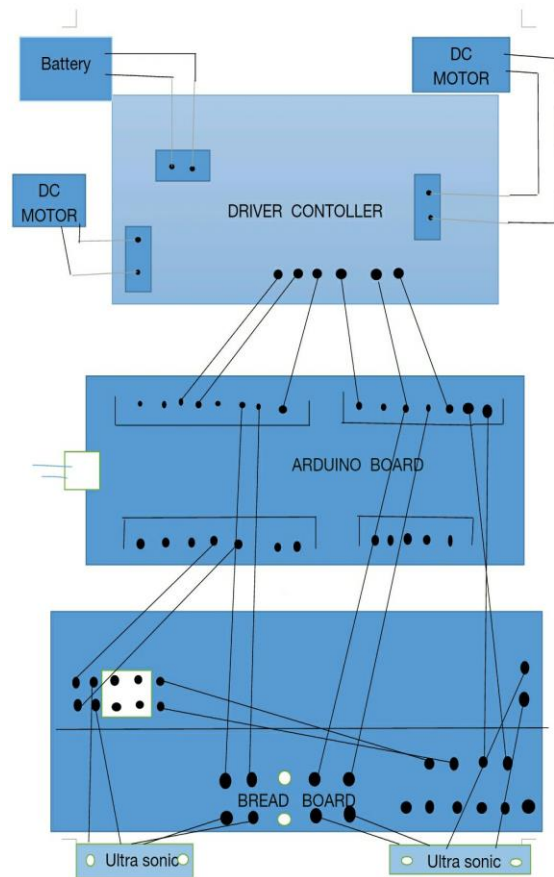


Hardware diagram

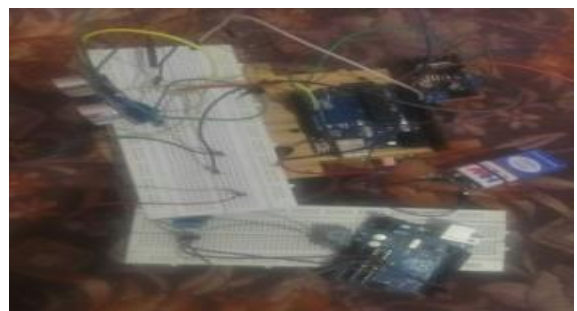
Circuit Diagram



Overall System Architecture



IO components snapshot

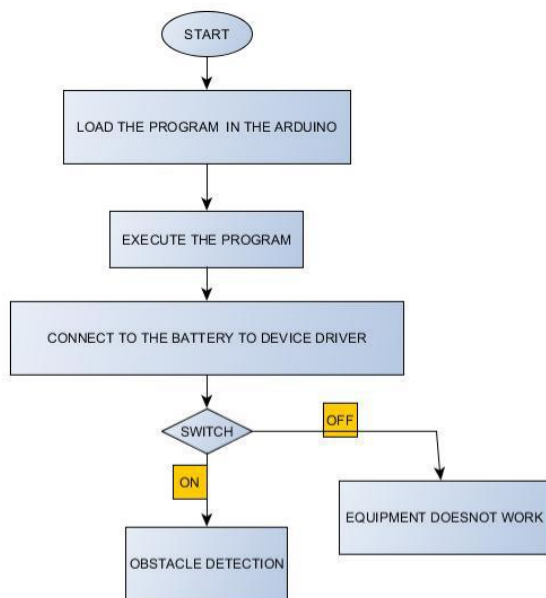




IO working principle

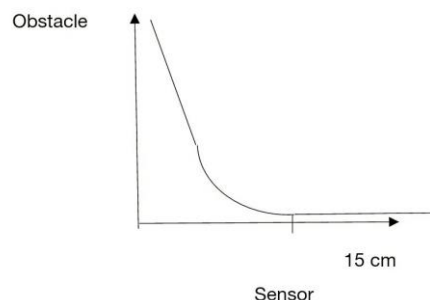
The input is the power supply by the battery and code loaded in the arduino board. Obstacle detection is taken care by ultra sonic sensor.

Flow chart



Result analysis

Graph



Test case table

Test Case	Distance(cm)	Detection	Direction Change
Case 1	< 15	No	Continue same path
Case 2	>15	Yes	Change path
Case 3	>15	Yes	Go right
Case 4	>15	Yes	Go left

Conclusion and future work

The project has been successfully implemented and completed. This project shows how simple concept can give the best and biggest change. Many companies are now approaching these simple ideas as they are easy to make cash and safety the customer requirements. We need to work more on this domain as we can improve the functionality and make it more useful for the people.

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