DUALTONE MULTIPLE FREQUENCY BASED SURVEILLANCE ROBOT

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Abstract
Unmanned Ground Vehicles are used for various applications like surveillance, rescue operation and even in defense. They are controlled be various wireless technology which have limited range. Use of DTMF technology to control a robot, will make it controllable in unlimited range. The DTMF based robot is a robotic vehicle which can be used for surveillance has extensive control range at remote area. The robot is suitable to work under highly radioactive conditions. Whenever a key pressed at the transmitter side while making a call, the corresponding DTMF tone is sent to the at the receiver end. This tone is recognised by the receiver end and corresponding control signals are given to the motor of the robot. The main advantage of this robot is it can easily moves in rugged areas as the chassis has six wheels and designed well. The robot is interfaced with the ultrasonic sensor, which is used to detect any obstacle in their way. Mobile applications are used to automatically answer call only to particular contact number which makes the control of robot more secure and another application is used to give live relay of what is happening around the robot.

Introduction

A **robot** is a machine which is programmable by a computer, capable of carrying out a complex series of actions automatically. Robots can be guided by an external control device or the control may be embedded within. Robots may be constructed to take on human form but most robots are machines designed to perform a task with no regard to how they look. Surveillance is major aspect when we are going to secure anything. Eventhough it is a tedious job, people get hesitated to design such robot since, it may be risky to observe all objects. We are going to make a robot which continuously monitors objects. This robot continuously watches and gives live streaming of it to a authorized person. Because of continuous monitoring, the work will be somewhat easy and accurate.However, in nuclear applications, the objective is more to extend the presence of robots or to enable them to reach areas where the thermal or radiation environment limits the presence of a human. Robots do tasks such as handling heavy radioactive loads and performing tricky repair and maintenance operation in contaminated areas. Presently, a number of sophisticated robots have been developed for use in nuclear power plants.This project involves building a robot that can be controlled by sending the instructions to the mobile phone that is connected with it. The robot functions using the DTMF (dual tone multiple frequency) technology to establish the connection. The application of this robot varies from remote monitoring to surveillance.

The robot will be embedded with DTMF decoder/encoder and you will need 2 mobile phones to make this project. One phone will be placed in the robot itself which will be used to receive the signals from the user and another phone will be used to send the signals to the robot using DTMF.obots eliminate dangerous jobs for humans because they are capable of working in hazardous environments.The obstacle avoidance robotics is used for detecting obstacles and avoiding the collision. This is an autonomous robot. The design of obstacle avoidance robot requires the integration of many sensors according to their task.

The chassis is the backbone of the ROBOT. Without a proper chassis the robot is not fit for the tracks. Great emphasis has to be laid on the design of a structurally sound chassis design which will not give in under the extreme pressures an robot has to go through. The chassis we are using here is a six wheel chassis as given in the figure. The wheel mechanism has rocker-bogie suspension. Wider wheels and rubber grip on wheels are provided for great traction. The chassis has enough space and holes to put Arduino, Motor driver, battery, switch, and ultrasonic sensor. The kit includes following items to make your 6WD robotic chassis:
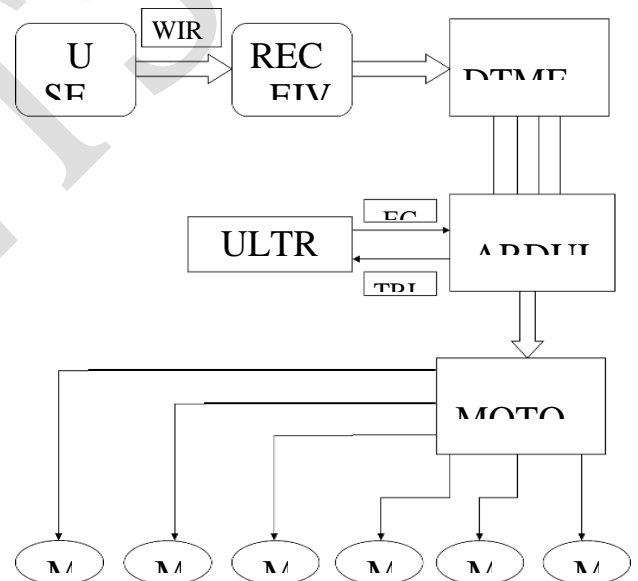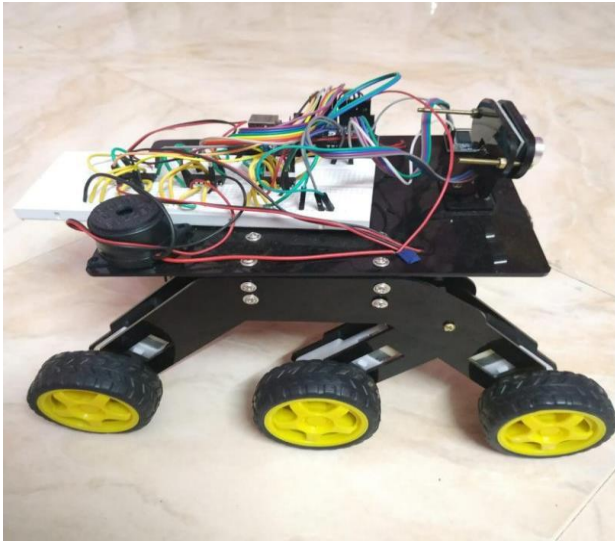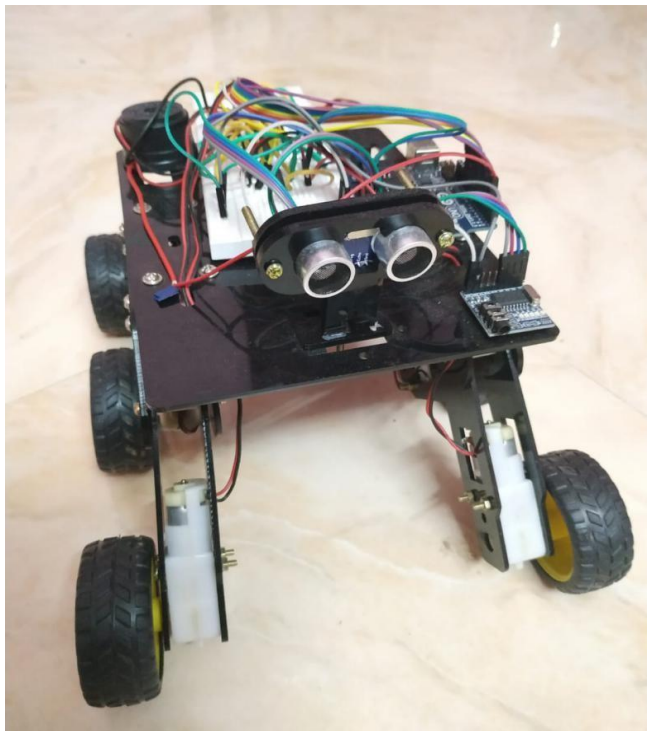
FIG:17.a. SIDE VIEW OF
THE ROBOT

FIG:17.b. FRONT VIEW OF THE ROBOT
CONCLUSION

The proposed system is aimed towards the welfare of our infantry and the surveillance of warzone areas to minimize the causalities to a great extent. It detects all objects opposite to robot by using ultrasonic sensor. Our system will be able to move in rugged terrain and can also clim staircase when higher RPM motors are used. The robot can give live relay of what is happening around it. The robot can be manually controlled but it will be able to take precautionary measures to protect it and remain undetected. Hence, our system is sure to create a revolution in its own field and ensure complete support from people of different societies. So this vehicle if used and built efficiently can be a tremendous asset to the defence forces enabling them to do work with great levels of safety and efficiency millions of lives can be efficiently saved with this powerful machine. With the immense security features it brings along with it, there is no chance that the vehicle can be mishandled or put to wrong use thereby making it a very secure machine to be operated for the production of mankind.

Future Scope

The project is secure with the use of handsfree app as it automatically answers only for the call from numbers mentioned in list. It can be more secure when password protection feature is given to it which is necessary for military applications. The robot can work more efficiently when signal coverage is extended to each and every area where it is roaming.

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