

MOLAR: Multi Operational Land Rover

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Abstract: The purpose of this project is to combine several existing technologies, wireless internet and hardware controllers, into a system that can perform the security purpose jobs as well as agriculture purpose. In this project we are going to assemble a radio controlled car. It will be having high speed. When we suspect about a terrorist, the car will follow the suspect with a very high speed. It will consist of 2 arms. First arm is picking arm and the second one is for cutting. It will be useful in diffusing bombs as well. We will be using camera for tracing the terrorist and will be getting the live telecast on our display. Since it is multi operational therefore it will also serve the purpose of agriculture. We will be using our car in the ploughing of land and sowing the seeds with the help of pipes connected to the tank. This project will save the time as well as the energy of the farmers.

Keywords- Camera, remote controlled car, seed tank, ploughing tool, RF module.

1. Introduction

When we talk about robots, what we are really talking about is machines that will do what human beings would normally be expected to do. These machines mimic the operation of the human being or at least certain parts of it. Their motors are the muscles. We combine these various elements in different ways to create the robot that we require. The most common robot used in industry today is the robot arm. These arms are used to weld, package, paint, position and assemble a host of products that we use daily. Basically a robot arm is a series of linkages that are connected in such a way that a servo motor can be used to control each joint. The controlling computer, the brain of the robot, is programmed to control the various motors on the robot in a way that allows it to perform specific tasks. Recently there was an attack in Uri by four heavily armed terrorists. It was reported as "the deadliest attack on security forces in Kashmir in two decades". Many army men were killed in the attack. In our project instead of employing soldiers on the border, we can make our robot do their duty. For this we are designing a high speed multi operational robot car. Once we get to know who the terrorist is, we will make our robot run behind it. Our robot will have a shooting arm which will shoot when we feel that the terrorist is going out of our

range of chasing. The car will also have a cutting and drilling arm to overcome the obstacles. It will have a camera whose display will be seen on our screen such as phones, laptops etc. Since our robot is multi operational it can also be used in agriculture purpose. In agriculture it takes lot of human efforts. This human effort required in ploughing, fertilizing, sowing seeds can be made easy with our robot. In winter, summer, rainy season it becomes difficult for the farmers to do all these works. So our robot can be used for all these purpose and since it is working on radio wave frequency therefore it can be operated from far away distance thereby making the work of farmers easy as compared to the conventional methods.

2. IMPLEMENTATION AND BLOCK DIAGRAM

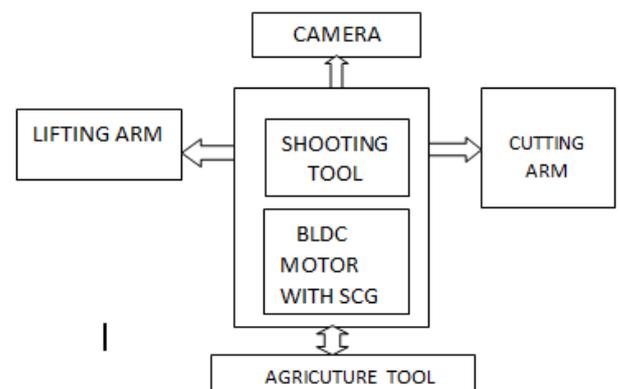


FIG -1. Block diagram of MOLAR

This is the block diagram of the whole car. In our project we are going to assemble a car. It will have two arms. The first arm i.e. lifting arm will be used to lift the materials or the obstacles. The second arm is used for cutting. It will cut the obstacles which will come in the way. On top of the car we will be placing the camera which will give the live telecast of wherever the terrorist is going. The live videos of the camera will be seen on our screen.

At the back side of the car we will be serving the purpose of the agriculture. We will be employing the ploughing tool which will plough the land for the farmers. There will be a tank on the car at the back side. The tank will

consist of the seeds. The seeds will be sowed into the land with the help of pipes connected to the tank.

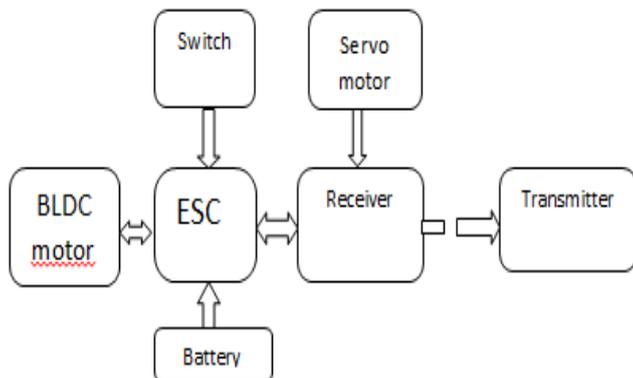


FIG-2 Block diagram of car

Transmitters send radio waves or electromagnetic frequencies to an RC car. The operator moves the controls on his remote control radio. The transmitter talks to the receiver via the radio carrier wave. The receiver can be a circuit board with internal antennas or a larger antenna on the exterior of the remote controlled car. Any radio signals coming from the transmitter end up at the receiver. The receiver then converts these signals for the servo motor. The receiver transforms all radio signal broadcasts received from the transmitter into the suitable electronic signals that are required for all other components within the control system. The radio is wired up to either electronic speed controls or servomechanisms which perform actions such as throttle control, braking, steering, and on some cars, engaging either forward or reverse gears. Electronic speed controls and servos are commanded by the receiver through pulse width modulation; pulse duration sets either the amount of current that an electronic speed control allows flowing into the electric motor or sets the angle of the servo. On the models the servo is attached to at least the steering mechanism, rotation of the servo is mechanically changed into a force which steers the wheels on the model.

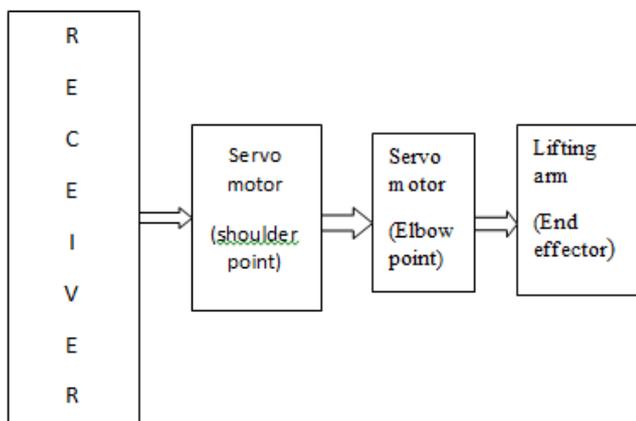


FIG- 3. Block diagram of robotic arm

The robotic arm resembles the arm of a human. It consist of servomotors. With the help of the arm we will cut and pick up the objects. The base part, elbow joint and wrist of robotic arm will have a servomotor connected to it. Servomotor will give 180 degree rotations.

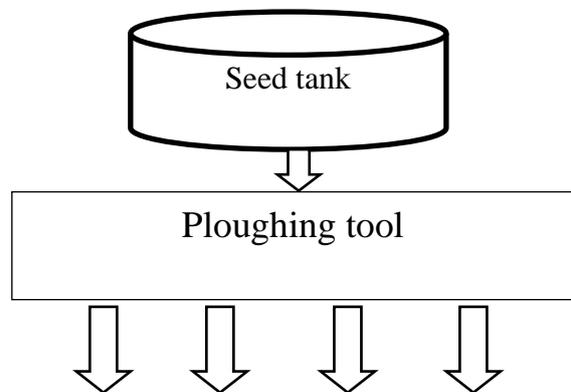


FIG -4. Block diagram of agriculture tool box

In the agricultural part, we will be using the car in ploughing of land, spraying of seeds. On the car we will be having tank. The tank will have seeds in it and spraying of seeds will be done through the pipes connected to the tank. The other function will be of ploughing. This will be done with the help of ploughing tool welded at the back side.

3. WORKING DESCRIPTION

3.1 For Defence purpose

Our car consists of two receivers. One is for car functioning like throttle, braking, steering etc and the second receiver is for other functions like shooting tool, arms, motors, camera etc.

As soon as we will switch on the receiver, the car will start moving and the camera will give the live telecast of the surrounding. With the help of the camera we will trace the suspect and shoot if required.

3.2 For Agriculture Purpose

As the car starts moving, the ploughing tool will plough the field and the seeds will be sprayed from the tank via pipes. The vibrator will help the seeds in the tank to move up and flow through the pipes to the ground. The vibrator will be operated using the servomotor thus giving it up down motion.

4. CONCLUSION

Our design of MOLAR uses camera to give the live telecast of whatever it is seeing onto the screen. The RC car is operated using RF module which gives a large distance for communication of signals. It has a shooting tool to take instantaneous action on the field.

It also meets the agriculture requirements of a farmer like spraying of seeds, ploughing of field from a faraway distance. This will help the farmers in summer season. Farmers can sit in a shed and operate the vehicle from there, thus saving his energy.

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