

# Multipurpose agriculture robot

## Introduction-

The idea of applying robotic technology in agriculture is very new, the opportunities for robot enhanced productivity immense. The robots performing agriculture operations such as ploughing , seed sowing and water spraying. Allowing farmers to reduce the environmental impact, increase precision and efficiency, and manage individual plants in novel ways.

## The Principle-

The main impact for our project has been to develop a solar operated digging machine, which is solar powered. In this machine, we used a solar panel to capture and convert solar energy into electrical energy which is used to charge a 5v battery. Which gives the necessary power to a DC motor. With the help of Bluetooth, we connect all the commands through our mobile phone. This power is transmitted to the rear wheel through gears. In this project it makes the electric and mechanical systems share their power in efficient way. It reduces the running cost of digging machine.

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## Purpose-

Multipurpose agriculture robot can perform the following functions.

- ❖ Robot vehicle can dig the soil, put the seeds and spray water.
- ❖ To reduce human effort in agricultural field.
- ❖ To perform all 3 operations at single time, hence increases production and saves time.
- ❖ Farmers can operate this robot through smartphone by sitting at a place and can easily operate.
- ❖ The usage to solar can be utilized for battery charging. As robot works in field, the rays of sun can be used for solar power generation.
- ❖ To increase the efficiency , the solar power is used and the power output can be increased.
- ❖ It can be used for small fields.
- ❖ It can see the view of ground with camera.
- ❖ Robot can move automatically in field.

## About Machine-

The robot can dig the soil, put the seeds and spray water, these whole system of the robot works with the battery and the solar power. More than 40% of population in the world

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chooses agriculture as the primary occupation, in recent years the development of the autonomous vehicles in the agriculture has experienced increased interest. The vehicle is controlled by Bluetooth controller (Through mobile phone) and camera is used for seeing the view of ground.

The advantage of this robot :- It is hands-free & controlled with radio waves. In the field of agriculture, a concept been developed to use multiple small machines which could be more efficient than traditional large tractors & human forces.

#### \*Features-

- ❖ Automatic grass cutter
- ❖ Automatic seedling
- ❖ Sprinkling Fertilizer
- ❖ Sprinkling Irrigation
- ❖ Solar power operated
- ❖ Automated with mobile phone
- ❖ Hydraulic Cultivator
- ❖ Live view of ground through camera

#### How it works-

The basic aim of our project is to develop a multipurpose agriculture robot, which is used to digging the soil, sowing

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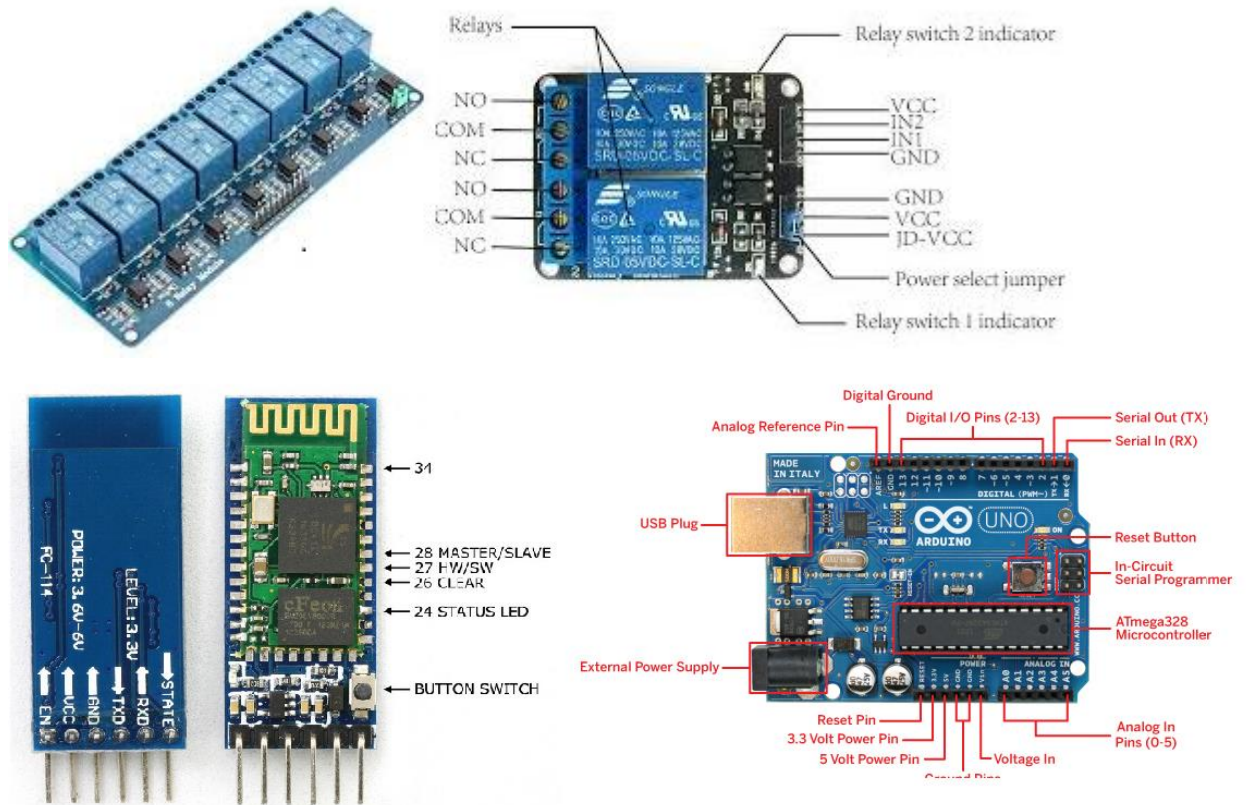
the seeds and spraying the water with least changes in accessories with minimum cost. This whole system of robot works with battery and the solar power.

- ❖ The basic frame is made for the robot with 4 wheels connected and the rear wheels are connected with motor.
- ❖ At one end of the frame, cultivator is fitted which is also driven by DC motor and design is made to dig the soil.
- ❖ Funnel is used to store the seeds and fertilizers, it flows through the funnel by drilled hole on the shaft to the digged soil.
- ❖ On the end sprayer is fitted to spray water.
- ❖ Solar is placed on the top of the robot and is connected to a battery for charging the battery.
- ❖ Front side of the frame Camera is fitted to see the view of ground.
- ❖ Firstly, we can send data through our own app that is developed by us, with the help of Bluetooth connectivity.
- ❖ Bluetooth module receives the data according to our program that is in arduino.
- ❖ Then Arduion sends data to relay module and then switch is put to on/off.

## CONNECTIVITY

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For connecting all functions through Bluetooth to our android phone, we use a principle of electromagnetic switch i.e. Relay and then we use arduino(a microcontroller) which is used to program data.



## Conclusion-

In agriculture, the opportunities for robot enhanced productivity are immense and robots are appearing on farms. The other problems associated with autonomous farm equipment can probably be overcome with technology.

This equipment may be in our future but there are important reasons for thinking that it may not be just replaced by human driver with computer. It may mean a rethinking of how crop production is done. Crop production may be done better and cheaper with a swarm of small machines than with a few large ones.

One of the advantages of the smaller machines is that they may be more acceptable to the non-farm community. The jobs in agriculture are drag, dangerous, require intelligence and quick, thought highly repetitive decision hence robots can be rightly substituted with human operator. The higher quality products can be sensed by machines (color, weight, density, ripeness, size, shape) accurately. Robots can improve the quality of our lives but there are down sides.

The present situation in our country all the agricultural machine is working on manual operation otherwise by petrol engine or tractor is expensive, farmer can't work for long time manually to avoid this problem, we need to have some kind of power source system to operate the digging machine.

## Advantages-

- ❖ To implement a prototype model of drilling and seed sowing machine system within the limited available source and economy.
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- ❖ The system can be subjected to further development using advanced techniques.
  - ❖ It may become a success if our project can be implemented throughout our country.
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