SEED PLANTATION USING ROBOTS

Activity Overview

Agriculture is the backbone of Indonesia. A majority of the population depends on agriculture for a living. Despite of having land for farming it is not fully used because :

- Lack of sufficient people to work on large areas in the farms.
- Lack of advanced technological for higher yields.

The plantations and yields could be doubled if we had manpower and technology to plant seeds automatically.
In this activity we are going to create an Seed planting robot. The robot will plant seeds along with a lump of soil in the farm. Making the work of farmers easier than ever.

SUBJECTS

Science

Computing

TIME REQUIRED

2 Hours

AGE LEVEL

11 - 18 Years

What Shall We Learn?

- How to connect a Wheelbot using Genuino 101
- Connecting our Wheelbot to the Blynk App
- How Motor works movement, Forward Backward and turning
- Bluetooth based operation
- Seed Dropping mechanism

Activity Objective

The main objective of the activity is to automate the process of seed plantation in farms and save the farmers time and efforts.
A Smart Seed Planting Robot will automatically plant seeds at across a mobile controlled path and fill it with lump of soil.

Components Needed

To create our Earthquake detector we will need the following components :

Genuino 101

The brain of our device. It shall connect the wheelbot to the Blynk mobile App.

Wheel Bot

It will plant seeds and move around the farm as per the commands from the Genuino 101.

Motor Driver Shield : It connects to motors and work according to commands..

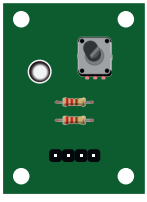
Motor and Chassis : It drives the wheel bot with 2 motor chassis.

Servo Motor

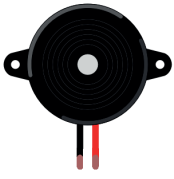
It will let you know if your detector is on.

Power Supply

So much computing needs energy to work upon right.

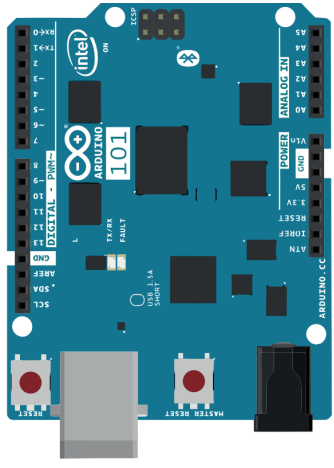


LED / PUSH BUTTON



BUZZER MODULE

POWER SUPPLY



GENUINO 101

Understanding The Robot Mechanisms

Our Robot is called a Wheelbot - A robot whose movement is based on two separately driven wheels placed on either side of the robot body. It can change its direction by varying the rate of rotation of its wheels and hence does not require an additional steering motion.

Our Wheelbot is a 2 gear robot which is driven through the chassis. The Wheelbot is connected to a Servo Motor which drops seeds at regular intervals.

We shall then connect our Wheelbot to the Genuino 101 which will allows us to control the Wheelbot and the Seed plantation mechanism.
We shall connect our Wheelbot to the Genuino 101 as shown in the image below:

Once we have the Wheelbot connected with the Genuino 101 we shall program, to control it using our Blynk App.

Using the Blink App we can now give steer our robot across the surface while the seeds are dropped from bowl.

Connecting Your Sensors

Download and open the code from *bit.ly/SmartPlantationRobot* and now you will have to upload the code on your Genuino 101 Click the upload button and once your code has been uploaded you have successfully programmed your device.

Upload Button
(Top Left)

Output

Once Model is assembled and program is uploaded, let use this Wheelbot.
Open your Blynk app and click on bluetooth button. Connect with the bluetooth of our model. Now try to run the robot using up-down-left-right buttons. Now click on the seed button and check if seeds are coming out from robot as designed?

Yay! We just created a Smart Plantation Robot which operates through our Mobile App.

MAKE SURE THE BLUETOOTH OF YOUR MOBILE PHONE IS ON AT ALL TIMES

Impact Analysis

Every year more than 100,000 people lose their lives due to Earthquakes. Now imagine if every city and town had an earthquake detector and it would alert the people before an earthquake by detecting the foreshocks we could save so many lives.

If every town had an earthquake detector we can alert a lot of people to move to safer places whenever there is a possibility of a massive earthquake.

Future Scope

The Smart Plantation Robot has several other use cases as well. We can use it for various applications like:

- Plant seeds for tree plantation across a large area to promote afforestation.
- Plant seeds in a nursery and have plenty of plants in a short span of time.

Try to think what else can you do with your Smart Plantation Robot to make it smarter and more efficient.