A Project Report
on

SMART AGRICULTURAL ROBOT

Submitted for partial fulfillment of the requirements for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND TELECOMMUNICATIONS ENGINEERING

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CERTIFICATE

This is to certify that the project work entitled "**SMART AGRICULTURAL ROBOT"** is a bonafide work carried out by **Mr. Chaitanya Umeshji Somani (1921321372011) Ms. Vaishnavi Badrinarayan Gughe (1921321372120) Mr. Saurabh Maroti Jagdambe (1921321372124)** in partial fulfillment of their requirements for the award of degree of **BACHELOR OF TECHNOLOGY IN ELECTRONICS AND TELECOMMUNICATIONS ENGINEERING** by the Dr.B.A.T. **UNIVERSITY**, Lonere under our guidance and supervision of **Dr.S.N.Pawar** .The results embodied in this report have not been submitted to any other university or institute for the award of any degree or diploma.

Guide HOD Principal

DECLARATION

This is to certify that the work reported in the present project entitled **"SMART AGRICULTURAL ROBOT"** is a record of work done by us in the Department of Electronics and Telecommunications Engineering, JNEC, Dr.B.A.T. University. The reports are based on the project work done entirely by us and not copied from any other source.

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ABSTRACT

The project aims on the design, development and the fabrication of the robot which can dig the soil, put the seeds, leveler to close the mud and sprayer to spray water, these whole systems of the robot works with the battery and the solar power. More than 40% of the population in the world chooses agriculture as the primary occupation, in recent years the development of the autonomous vehicles in the agriculture has experienced increased interest. The robot is controlled by mobile handset through wifi module . The language input allows a user to interact with the robot which is familiar to most of the people. The advantages of these robots are hands-free and fast data input operations. Keeping the above ideology in mind, a unit with the following feature is designed: Ploughing is one of the first steps in farming.During this process we till the land and make it ready for the seed sowing. By tilling we mean that a plough will be used which will have teeth like structure at the end and will be able to turn the top layer of soil down and vice-versa. Seed sowing comes next where the seeds need to be put in ground at regular intervals and these needs to be controlled automatically. Limiting The flow of seeds from the seeds chamber is typically doing this. Mud leveler is fitted to close the seeds to the soil and to level the ground. Water pump sprayer is used to spray the water

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CHAPTER I

INTRODUCTION

1.1 Objectives

The growth or development of any nation within the world is solely depends up on the agriculture production. If proper machinery is employed during this field, accuracy within the forming and quality within the production will be achieved. Traditional methods of sowing seeds manually and other activities like ploughing, water pouring, pesticide spraying, etc are done manually that consume lot of your time and it should not be accurate due to human errors. Therefore, here a 4 in-one machine is intended for doing above jobs automatically. With the assistance of a distant controlled unit designed with wifi module and therefore the one who is working this machine needn't to urge in to the sector. Maintaining uniformity in seed planting can increase the sowing efficiency, thereby it's essential to adapt latest agricultural machines for various applications, during this relation to overcome manual problems, and to save lots of time, additionally to take care of accuracy, human involvement must be reduced and every one of these activities must be left-over to the machines. The most purpose of developing this machine is to reinforce the technology within the field of agriculture, to prove the theme practically a prototype module is constructed for demo purpose. The machine designed here is kind of useful for the massive cultivated areas, since it's a prototype module, the machine is intended to plant seeds one after another in one row, but when it's converted into an engineering module, the machine can plant multiple seeds in multiple locations simultaneously. Similarly, other activities also can be implemented simultaneously, there by many acres will be planted with seeds within less time. The applications of instrumental robotics are spreading on a daily basis to hide further domains, because the opportunity of replacing human operators provides effective solutions with return on investment. This is often especially important when the duties, that require be performed, are potentially harmful for the protection or the health of the workers, or when more conservative issues are granted by robotics. Heavy chemicals or drugs dispensers, manure or fertilizers spreaders, are activities more and more concerned by the deployment of unmanned options.

1.2 . Problem specification

Taking into consideration the ever increasing pollution levels and the stringent pollution norm and since the fossil fuels are depleting, probably may last within the decades to come or earlier, and to reduce the running cost of the digging machine, to reduce human efforts and to improve the efficiency of farming we are in an attempt to incorporate the above mentioned features in our multipurpose agriculture robot. There are concerns over the amount of labour the agricultural sector needs. With an aging population, Japan is unable to meet the demands of the agricultural labour market. Similarly, the United States currently depends on a large number of immigrant workers, but between the decrease in seasonal farmworkers and increased efforts to stop immigration by the government, they too are unable to meet the demand. Businesses are often forced to let crops rot due to an inability to pick them all by the end of the season. Additionally, there are concerns over the growing population that will need to be fed over the next years. Because of this, there is a large desire to improve agricultural machinery to make it 2 more cost efficient and viable for continued use.

CHAPTER II

2.1 LITERATURE SURVEY

2.1.1Solar Powered Autonomous Multipurpose Agricultural Robot Using Bluetooth/Android App [ICECA 2019]

Ranjitha B, Nikhitha M N, Aruna K, Afreen S have developed a project which is an autonomous multipurpose agricultural robot which is designed to perform the complex farming tasks like seed sowing, grass cutting and pesticide spraying. This work is designed to perform sowing of two different sized seeds[1]. The benefits of robot are reduced human intervention and efficient resources utilization. Instructions are passed to the system using bluetooth which ensures no direct contact with human and thus safety of operator is ensured. The robot is solar powered hence it is renewable energy source[1].

2.1.2 Wireless Agricultural Weeding Robot 2019 5th International Conference on Advanced Computing & Communication Systems (ICACCS)

S. Gokul, R.Dhiksith, S. Ajith ,Sundaresh, M. Gopinath have developed a project .The agricultural weeding robot was built and tested under normal external field like conditions for demonstration. The working of the arm is repetitive and so the rover moves and removes the weed in the field. The device designed is designed to remove the weeds from the ploughed land automatically in an easy manner i.e. no manpower required[3]. The project consists of two setups the first one consist a Rover which will move in crop lines and another one is an Arm those are controlled by two efficient methods. This proposed paper mainly aims to improve the yield of the agricultural products and to minimize the cost and time of operation

2.1.3 An Intelligent Report Generator for Efficient Farming 2017 International Conference on Electrical, Electronics, Communication, Computer and Optimization Techniques (ICEECCOT)

Shiny Rajendra kumar, Rajashekarappa,V K Parvati have developed a project Advances in the field of technology have taken agriculture sector by a storm. Moreover, Internet of Things has its stage set for involvement into anything that exists. Researches and works have been going on to make full use of IoT in agriculture sector. Multiple systems either are in research phase or are in development phase using IoT[2]. Temperature, humidity, pH, moisture are such characteristics which can be exploited to give results in a familiar manner. Suitability of crop has to play an important role if a good cultivation season is expected so only this system.

2.1.4 Designing an Autonomous Soil Monitoring Robot (IEEE - 2017) Patric M. Piper,Jacob S. Vogel

Patrick M. Piper and Jacobs. Vega designed un autonomous soil monitoring rover to predict data collection. The rover will be able to autonomously navigate through a field and avoid obstacles. It will gather data on soil moisture and temperatures at a set of given points and relay the information back to the farm manager[2]. The vehicle is equipped with a Stevens hydra probe Is used to sense the soil moisture and temperature. GPS is used to navigate through the field.

2.1.5 Agribot (International Journal of Advanced Research in Computer andCommunication Engineering-2015) Ankit Singh, Abhishek Gupta

Ankit Singh, Abhishek Gupta presented an idea that agribot is a robot designed for agricultural purposes This Bot perfumes basic elementary functions like picking. harvesting, weeding. pruning. planting grafting. It is designed to minimize the labor of farmers in addition to increasing the speed and surface of the work. The main feat treat the robot is the ability to find the grass in the field using image processing for this a special purpose web cam which will take photos inside the field and if the grass is found then the user will inform the robot to cut the grass in the crop field and also the user will pick the grass which has been cut by the robot[10]. The image processing is also used for analyzing the height of the plant. If the height of the crop is larger than the reference height, then the cutting mechanism will be used by the robot to cut the crop. A vision-based row guidance method is presented to guide the Robot platform driven along crops planted in tow[8].

2.2 Agriculture technology

Agricultural technology refers to technology for the production of machines used on a farm to help with farming. Agricultural machines have been designed for practically every stage of the agricultural process. They include machines for tilling the soil, planting seeds, irrigating the land, cultivating crops, protecting them from pests and weeds, harvesting, threshing grain, livestock feeding, and sorting and packaging the products. People who are trained to design agricultural machinery equipment, and structures are known as agriculture engineers.

Agricultural technology is among the most revolutionary and impactful areas of modern technology, driven by the fundamental need for food and for feeding an ever-growing population. It has opened an era in which powered machinery does the work formerly performed by people and animals (such as oxen and horses). These machines have massively increased farm output and dramatically changed the way people are employed and produce food worldwide. A well-known example of agricultural machinery is the tractor. Currently, mechanized agriculture also involves the use of airplanes and helicopters.

The first people to turn from the hunting and gathering lifestyle to farming probably relied on their bare hands, perhaps aided by sticks and stones, during this time, most people worked in agriculture, because each family could barely raise enough food for themselves with the limited technology of the day. With the coming of the Industrial Revolution and the development of more complicated machines, farming methods took a great leap forward. Instead of harvesting grain by hand with a sharp blade, wheeled machines cut a continuous swath. Instead of threshing the grain by beating it with sticks, threshing machines separated the seeds from the heads and stalks.

These machines required a lot of power, which was originally supplied by horses or other domesticated animals. With the invention of steam power came the steam-powered tractor a multipurpose, mobile energy source that was the ground crawling cousin of the steam locomotive Agricultural steam engines took over the heavy pulling work of horses. They were also equipped with a pulley that could power stationary machines via the use of a long belt. The steam-powered behemoths could provide a tremendous amount of power, because of both their size and their low gear ratios.

The next generation of tractors was powered by gasoline (and later) diesel engines. These engines also contributed to the development of the self-propelled, combined harvester and thresher or combine, for short Instead of cutting the grain stalks and

transporting them to a stationary threshing machine, these combines could cut, thresh, and separate the grain while moving continuously through the field.

CHAPTER III

SYSTEM DESIGN

The purpose of this project is to reduce man power and solving the problems of farmers with this technical prototype model. The block diagram and different technical details of each component used in the model are given in the chapter. The ESP8266 is being used and the components are selected as per the requirement and by the technical specifications and availability in the market .

3.1 Block diagram

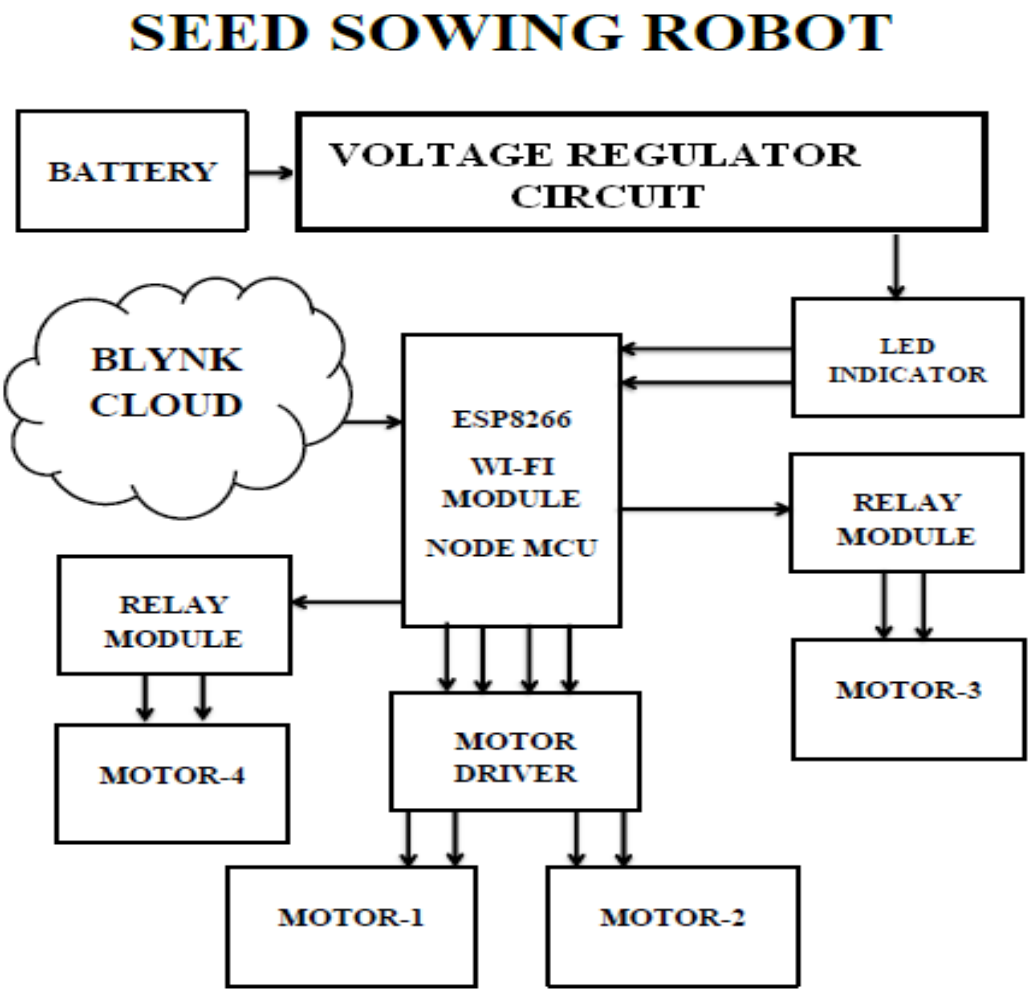

Fig 3.1 Block Diagram

3.2 Working

The designed robot gets power from solar panel which converts sunlight into electricity. This electrical energy is given to the charging circuit in order to charge the battery to 12V. This battery gives power to controller, motor driver and other mechanisms. Robot activates automatically as we connect with its Wifi range. As we instruct it either for ploughing or for cropping from smart phone by Internet Of Things[15].

The Wifi Module ESP8266 serial communication as soon as it receives some sort of message through phone. The module further follow the instructions which are programmed for respective protocols. Then the module interfaces with motor driver IC to drive the corresponding sectional motors. If the ROBOT receives no command, then it automatically turns on standby MODE and remains ideal till no command receives. Solar panel which gives power to the battery and entire circuit.

3.3 System Components

Wifi module (ESP8266)
DC Motors
Motor Driver
Relay Module
Solar Panel

3.4 System Operation

3.4.1 Wifi Module

The ESP8266 WiFi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Each ESP8266 module comes pre-programmed with an AT command set firmware, meaning, you can simply hook this up to your Arduino device and get about as much WiFi-ability as a WiFi Shield offers (and that's just out of the box)! The ESP8266 module is an extremely cost effective board with a huge, and ever growing, community.

Fig 3.4.1 Wifi Module

This module has a powerful enough on-board processing and storage capability that allows it to be integrated with the sensors and other application specific devices through its GPIOs with minimal development up-front and minimal loading during runtime. Its high degree of on-chip integration allows for minimal external circuitry, including the front-end module, is designed to occupy minimal PCB area. The ESP8266 supports APSD for VoIP applications and Bluetooth coexistence interfaces, it contains a

self-calibrated RF allowing it to work under all operating conditions, and requires no external RF parts.

3.4.2 DC Motor

A DC motor is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic to periodically change the direction of current flow in part of the motor.

Fig4.4.2 DC Motor

DC motors were the first type widely used, since they could be powered from existing direct current lighting power distribution systems. A DC motor's speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances. The universal motor can operate on direct current but is a lightweight motor used for portable power tools and appliances Larger DC motors are used in propulsion of electric vehicles, elevator and hoists, or in drives for steel rolling mills. The advent of power electronics has made replacement of DC motors with AC motors possible in many applications.

3.4.3 Motor Driver

The motor driver IC is an integrated circuit chip used as a motor controlling device in autonomous robots and embedded circuits. L293D and ULN2003 are the most commonly used motor Driver IC that is used in simple robots and RC cars. A motor driver is undoubtedly something that makes the motor move as per the given instructions or the inputs (high and low). It listens to the low voltage from the controller/processor and control an actual motor which needs high input voltage. In simple words, a motor driver IC controls the direction of the motor based on the commands or instructions it receives from the controller. Many motor drivers follow different topology, in this article we will focus on the popular H-bridge topology which is used in the L293D motor driver IC.

Fig 3.4.3 Motor Driver

As the world is witnessing new technology every day, autonomous robots are one of them. We use these ICs in autonomous robots mainly to control them. Microprocessors operate on low-level voltage/current, unlike motors. For example the popular Arduino microcontrollers or PIC microcontroller has an operating voltage of 5V or 3.3V, but a decent DC motor requires 5V or 12V to operate.

Fig 3.4.4 Motor-Driver-Block-Diagram

In this case if we want to supply the power to the motor, we need a high voltage. But we know that microprocessor output is low, and it cannot give enough power from its I/O pin to drive a motor. To supply this voltage/current from microprocessor to the motor, we need this Motor driver IC in between our motor and controller.

3.4.4 Relay Module

A power relay module is an electrical switch that is operated by an electromagnet. The electromagnet is activated by a separate low-power signal from a micro controller. When activated, the electromagnet pulls to either open or close an electrical circuit.

A simple relay consists of wire coil wrapped around a soft iron core, or solenoid, an iron yoke that delivers a low reluctance path for magnetic flux, a movable iron armature and one or more sets of contacts. The movable armature is hinged to the yoke and linked to one or more set of the moving contacts. Held in place by a spring, the armature leaves a gap in the magnetic circuit when the relay is de-energized. While in this position, one of the two sets of contacts is closed while the other set remains open.

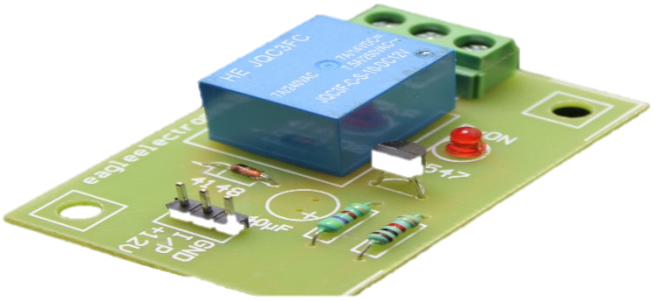

Fig 3.4.5 Relay Module

When electrical current is passed through a coil, it generates a magnetic field that in turn activates the armature. This movement of the movable contacts makes or breaks a connection with the fixed contact. When the relay is de-energized, the sets of contacts that were closed, open and breaks the connection and vice versa if the contacts were open. When switching off the current to the coil, the armature is returned, by force, to its relaxed position. This force is usually provided by a spring, but gravity can also be used in certain applications. Most power relays are manufactured to operate in a quick manner.

3.4.3 Solar Panel

Solar energy begins with the sun. Solar panels (also known as "PV panels") are used to convert light from the sun, which is composed of particles of energy called "photons", into electricity that can be used to power electrical loads. Solar panels can be used for a wide variety of applications including remote power systems for cabins, telecommunications equipment, remote sensing, and of course for the production of electricity by residential and commercial solar electric systems.

Fig 4.4.6 Solar Panel

3.5Circuit Diagram: -

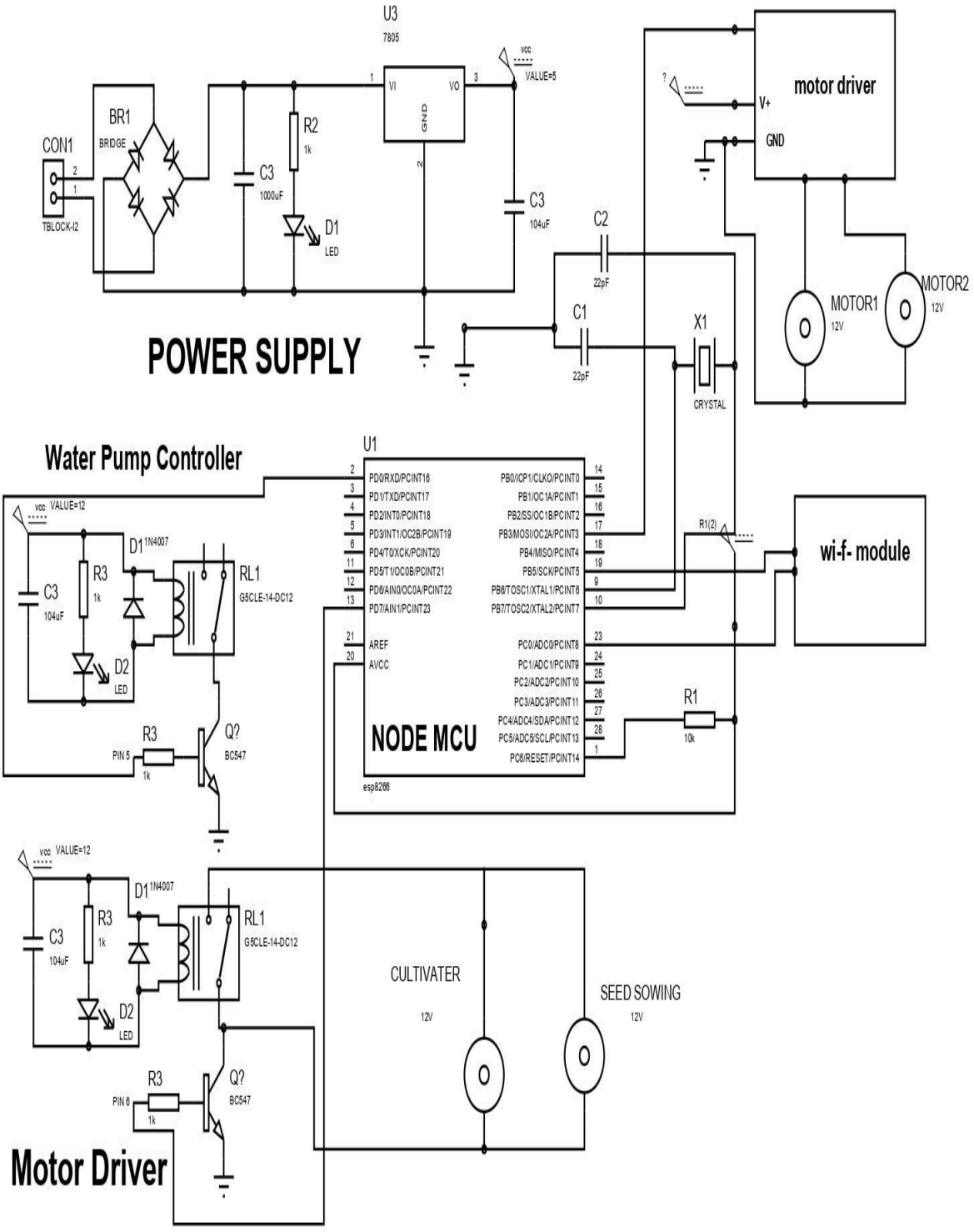

Fig 3.5 Circuit Diagram

CHAPTER IV

IMPLEMENTATION

4.1 System Specification:

Agro Robot is designed to do ploughing, seeding and planing operations simultaneously in the field. It is inbuilt with solar panel to to receive energy and do above work.

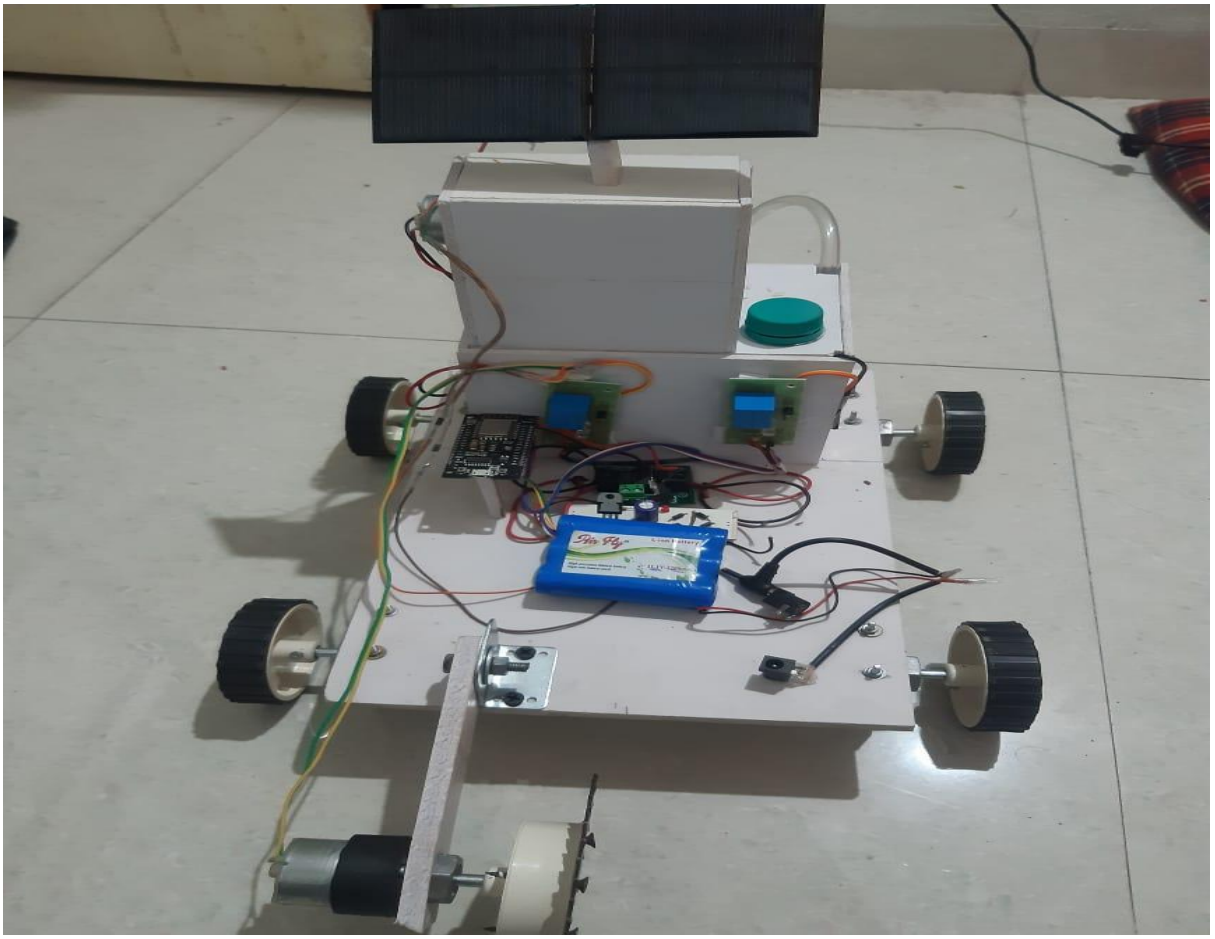

Fig 4.1Final project photo

4.1.1 Mud Closing and Leveling Operation

A sheet is used as mud closer and leveler which is located at the back end of the final project. It's main work is to close the space and level the land as it was.

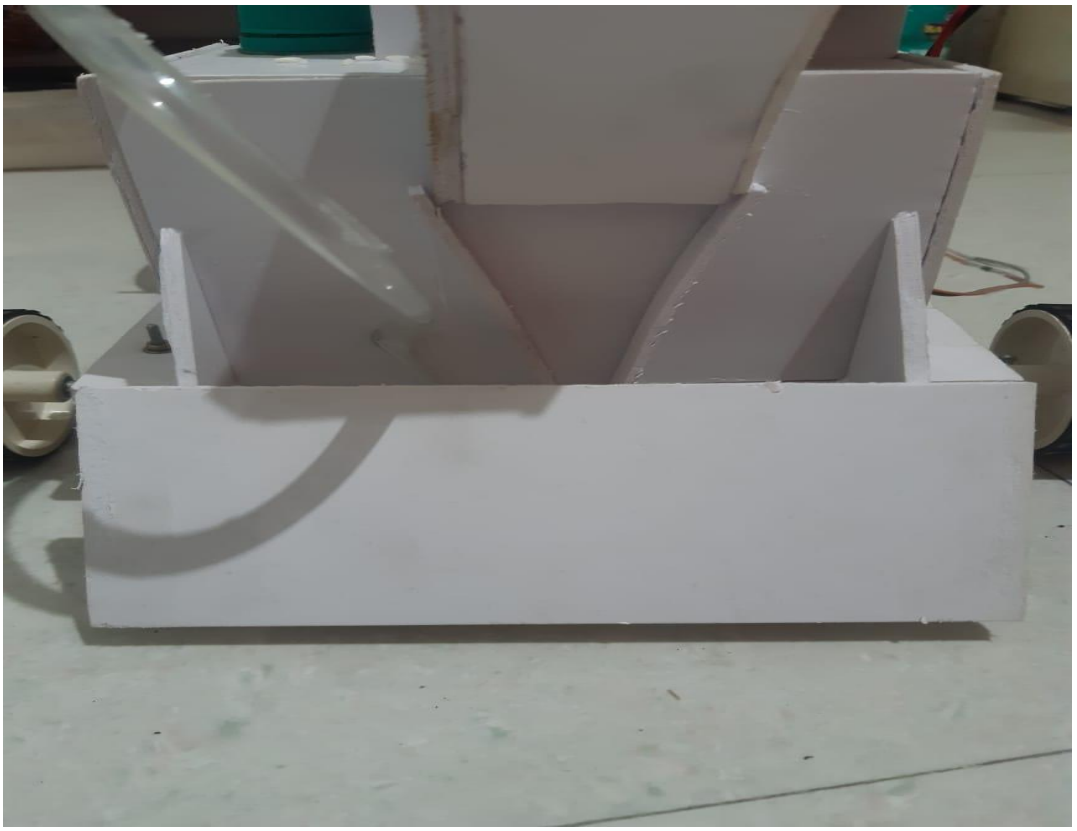

Fig 4.1.1 : Mud closing and leveling operation

4.1.2 Digging

The seed tank is attached to the dropping mechanism which performs the sceding process. The mechanism is designed in such a way that only one seed should drop at once. Seed Dropping Mechanism.

The mechanism is a servo dropping mechanism which takes the seed from the tank when in vertical position and turns 90 degrees to horizontal position and releases the seed into the pipe though which the seed is expelled to the soil. This is a high precision mechanism.. It is done manually by dibbler. This method is followed in crops like Groundnut, Castor ,and Cotton, etc. which are having bold size and high value. The driller is attached below the surface of structure. The frontal part of the driller is a sharp spade that is attached to a de motor with a shaft and performs the digging operation by the robot. The up-down motion of the driller is associated with the limbs of the bot. The digging varies from crop to crop. In this method seed is sown by seed drill or ferti-seed drill.

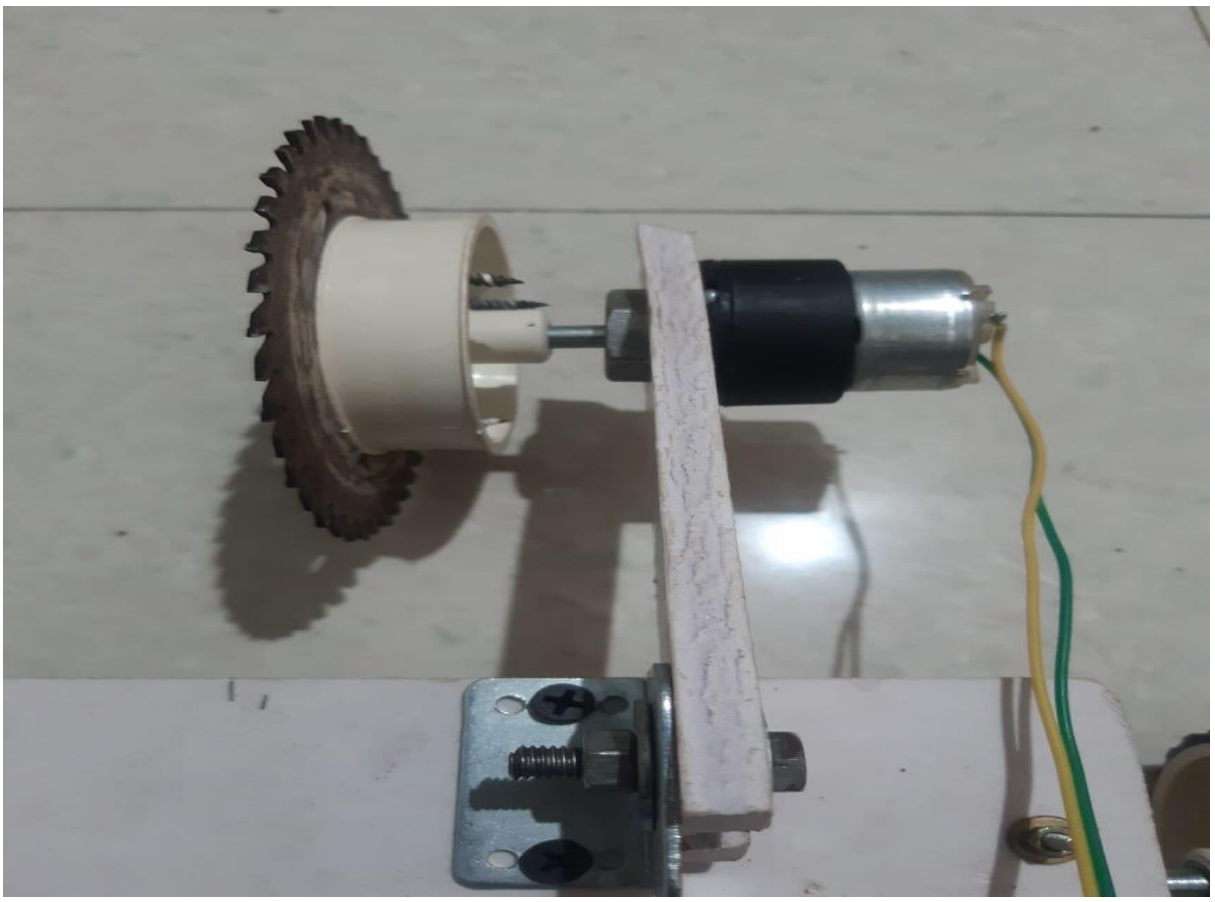

Fig. 4.1.2 : Digging

With the help of this implement seeds drop at uniform depth and results in uniform germination and regular stand. Seed bed should be fine and well leveled free from clods and weeds for the use of seed drill or ferti-seed drill. Seed drills are easily available in the market. The may be either bullock driven or tractor driven. Ferti-seed drill should be used wherever possible to ensure uniform depth of sowing, proper placement of fertilizers and good germination.

4.1.3 Seeding

A majority of farmers use this method. This method con-sists of dropping the seeds by hand into the furrows that have been opened with local plough. When seed is dropped in furrows by hand, it is called 'Kera' method and when it is dropped through a “Pora” or “Nai” or Hazara a special attachment with local plough it is called “Pora” method. In this method seeds are dropped at a depth of 5-6 centi-meter and germination is satisfactory. Manual sowing has the problem of not giving adequate spacing between row to row and plant to plant leading to less population of crops than recommended by the agronomists. Also there is the problem of placing the seeds at correct depth and correct soil coverage. Manual sowing is time consuming and costly.

Hence, there is a need for appropriate seed drill for sowing. The aim of the present study is to develop a seed sowing mechanism to suit the varied topographic condition of Indian agriculture. The specific objective of the study is to develop an auto-mated seed sower and test the performance. It is also com-pared with manual seeding for its benefit cost analysis.

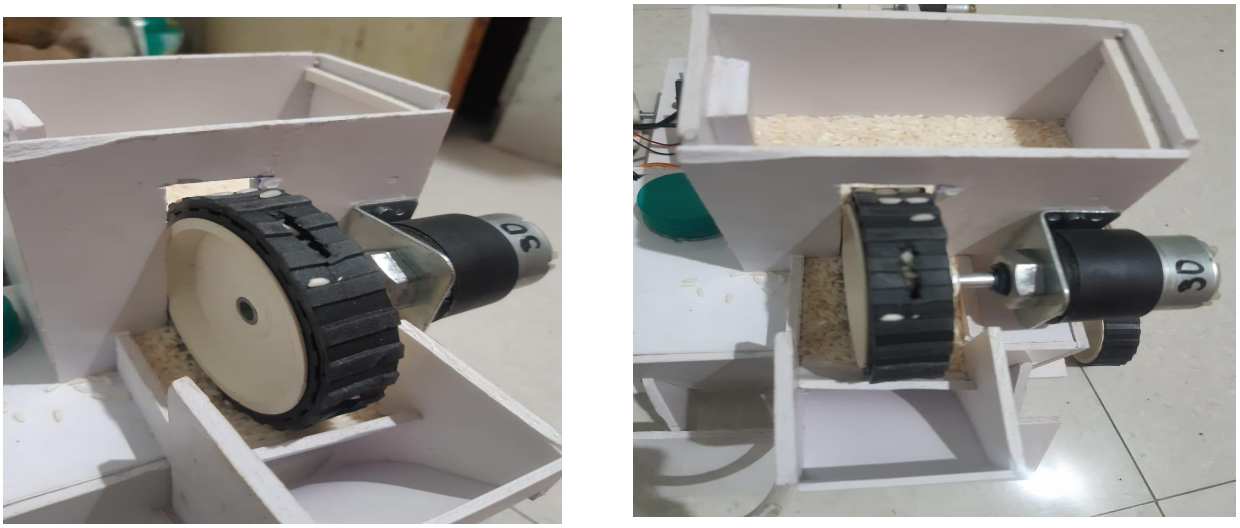

Fig. 4.1.3 : Seed Sowing

CHAPTER V

CONCLUSION & FUTURE SCOPE

5.1CONCLUSION

Through this work, we are proposing a agriculture robot used for various agriculture processes such as soiling, digging, spraying. This prototype gives deep insight of the opportunities for robot enhancement which are immense. Though this equipment may develop in future but there are many reasons for thinking that it may not just replacing human driver with a robot but it will improve the ideas for the farming.

5.2 FUTURE SCOPE

The scope of the system, especially in metro cities, is located in places where people are unaware of farming. Agriculture is more valuable compared to others fields for occupation. The utility of technology with agriculture consider for automation. The Farming System is a suitable system which adds to sure that it has wide scope for improvement, which in tur cases the agricultural system for the farmers and ultimately helps in effective crop productivity. With fully-automated farms in the future, robots can perform all the tasks like mowing, fertilizing, monitoring of pests and diseases, harvesting, tilling, etc.

This also enables the farmers to just supervise the robots without the need to operate them. Today's agriculture has transformed into a high-tech enterprise that most 20th century farmers might barely recognize. After all, it was only around 100 years ago that farming in the US transitioned from animal power to robotic power. Over the past 20 years the global positioning system (GPS), electronic sensors and other new tools have moved farming even further into a technological wonderland.

Automatic guidance, whereby a GPS-based system steers the tractor in a much more precise pattern than the driver is capable of is a tremendous success story. Safety concerns currently limit completely driverless capability to smaller machines. Fully autonomous or robotic field machines will begin to be employed in small-scale high profit-margin agriculture such as wine grapes, nursery plants and Some fruits and vegetables.

5.3 REFERENCE

1. Solar Powered Autonomous Multipurpose Agricultural Robot Using Bluetooth/Android App Proceedings of the Third International Conference on Electronics Communication and Aerospace Technology [ICECA 2019] IEEE
2. “Automated Seed Sowing Agribot using Arduino," in IEEE Conference on Communication and Signal Processing, April 2016, pp. 1379-1383.
3. M.D.I. Sujon, R. Nasir, M.M.I. Habib, M.I. Nomaan J. Baidya and M.R. Islam “Agribot: Arduino Controlled Autonomous Multipurpose Farm Machinery Robot for Small to medium scale cultivation," in IEEE conference
4. H. Pota, R. Eaton, J. Katapriya and S. D. Pathirana, “Agricultural robotics: A streamlined approach to realization autonomous farming,” in IEEE conference on industrial and information systems
5. “Autonomous seed sowing agricultural robot,” in IEEE Conference on advances in computing, communications and informatics (ICACCI), 2018,
6. [Online].Available:http://www.fao.com/india/faoin-india/india-at-a-glance/en/ [Accessed Nov 2019].
7. “Sensor and vision based autonomous agribot for sowing seeds,” in IEEE International conference on energy communication, data analysis and soft computing(ICECDS), 2017
8. [Online].Available: http://blog.robotiq.com/top10-robotic-application-in-agriculturalindustry. [Accessed December 2019].
9. [Online].Available:https://components101.com/wi reless/hc-05-bluetoothmodule. [Accessed Nov 2019].
10. S. Konam, N. Srinivasa Rao and K. Mohan Krishna, “Design encompassing mechanical aspects of ROTAAI: Robot to aid agricultural industry,” in IEEE International conference on soft computing and machine intelligence, 2014.
11. A. Srinivastava, S.Vijay, A. Negi, P.Shrivastva, A.Singh, “DTMF based intelligent farming robot vehicle: An ease to farmers, “in IEEE International conference on embedded systems, 2014
12. M.U. Hassan, M. Ullah and J. Iqbal, “Towards autonomy in agriculture: Design and prototyping of a robotic vehicle with seed selector,” in IEEE International conference on robotics and artificial intelligence (ICRAI), 2016
13. P.V. Santhi, N. Kapileswar, V.K.R.Chenchela and C.H.V.S Prasad, “Sensor and vision based autonomous agribot for sowing seeds,” in IEEE International conference on energy communication, data analysis and soft computing(ICECDS), 2017
14. S. Umarkar and A. Karwankar , “Automated Seed Sowing Agribot using Arduino," in IEEE Conference on Communication and Signal Processing, April 2016
15. https://www.youtube.com/watch?v=GUUneOyfevs

CHAPTER VI

SAMPLE CODE SEGMENTS

```
#define BLYNK_TEMPLATE_ID           "TMPLhp4fFOJA"
#define BLYNK_DEVICE_NAME           "Quickstart Device"
#define BLYNK_AUTH_TOKEN            "ATvj5ELHEjxYN-96efFnNGNL04OFHhA_"
#define BLYNK_PRINT Serial
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
char auth[] = BLYNK_AUTH_TOKEN;
char ssid[] = "Agri Robo";
char pass[] = "Agri12345";

int pinValue0;
int pinValue1;
int pinValue2;
int pinValue3;
int pinValue4;
int pinValue5;
int pinValue6;
#define rly1 D0
#define rly2 D1
#define M11 D5
#define M12 D6
#define M21 D7
#define M22 D8
BLYNK_WRITE(V0)
{
  pinValue0 = param.asInt();
  Serial.println("FW");
  Serial.println(pinValue0);
}
BLYNK_WRITE(V1)
{
  pinValue1 = param.asInt();
  Serial.println("RW");
  Serial.println(pinValue1);
}
BLYNK_WRITE(V2)
{
  pinValue2 = param.asInt();
  Serial.println("RT");
  Serial.println(pinValue2);
}
BLYNK_WRITE(V3)
{
```

```
 pinValue3 = param.asInt();
 Serial.println("LT");
 Serial.println(pinValue3);
}
BLYNK_WRITE(V4)
{
 pinValue4 = param.asInt();
 Serial.println("ST");
 Serial.println(pinValue4);
}
BLYNK_WRITE(V5)
{
 pinValue5 = param.asInt();
 Serial.println("rly1");
 Serial.println(pinValue5);
}
BLYNK_WRITE(V6)
{
 pinValue6 = param.asInt();
 Serial.println("rly2");
 Serial.println(pinValue6);
 if (pinValue6 == 1)
 {
  Serial.println(7);
  digitalWrite(rly2, HIGH);
 }
 else
 {
  digitalWrite(rly2, LOW);
 }
}
void setup()
{
 Serial.begin(115200);
 Blynk.begin(auth, ssid, pass);
 pinMode(M11, OUTPUT);
 pinMode(M12, OUTPUT);
 pinMode(M21, OUTPUT);
 pinMode(M22, OUTPUT);
 pinMode(rly1, OUTPUT);
 pinMode(rly2, OUTPUT);
 digitalWrite(rly1, LOW);
 digitalWrite(rly2, LOW);
}

void loop()
{
 if (pinValue0 == 1)
 {
  Serial.println(1);
```

```
  digitalWrite(M11, HIGH);
  digitalWrite(M12, LOW);
  digitalWrite(M21, HIGH);
  digitalWrite(M22, LOW);
 }
 if (pinValue1 == 1)
 {
  Serial.println(2);
  digitalWrite(M11, LOW);
  digitalWrite(M12, HIGH);
  digitalWrite(M21, LOW);
  digitalWrite(M22, HIGH);
 }
 if (pinValue2 == 1)
 {
  Serial.println(3);
  digitalWrite(M11, HIGH);
  digitalWrite(M12, LOW);
  digitalWrite(M21, LOW);
  digitalWrite(M22, HIGH);
 }
 if (pinValue3 == 1)
 {
  Serial.println(4);
  digitalWrite(M11, LOW);
  digitalWrite(M12, HIGH);
  digitalWrite(M21, HIGH);
  digitalWrite(M22, LOW);
 }
 if (pinValue4 == 1)
 {
  Serial.println(5);
  digitalWrite(M11, LOW);
  digitalWrite(M12, LOW);
  digitalWrite(M21, LOW);
  digitalWrite(M22, LOW);
 }
 if (pinValue5 == 1)
 {
  Serial.println(6);
  digitalWrite(rly1, HIGH);
 }
 else
 {
  digitalWrite(rly1, LOW);
 }
}
```