

# An Analytical Approach for Seed Sowing AGBOT

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**Abstract:** Automation is considered to be the backbone of today's era and in today's technological era automation takes a leading role in every sector. Agro field is also not an exception. Every country is trying to make them fully automated with the latest trend in technology. In India, agriculture is a major contributor to the economy of India, so it has to make it more strong. We have to take an initiative and change the routine trends of agriculture farming, so keeping that thought in mind we have designed an automated seed sowing robot for the agriculture domain. The essential objective of sowing operation is to put the seed and fertilizer in desired depth and provide required spacing between them and cover the seed with soil. We can achieve yield by proper compaction. This design defiantly helps to minimize the effort of farmer and little contribution to be part of Atma Nirbhar Bharat and Make in India.

**Keywords:** Agriculture, Robot, arm processor, Bluetooth.

## I. INTRODUCTION

In the field of agriculture, plantation begins with ploughing the land and sowing seeds. The old traditional method plough attached to an OX and tractors needs human involvement to carry the process. The driving force behind this work is to reduce the human interference in the field of agriculture and to make it cost effective. In this work, apart of the land is taken into consideration and the robot introduced localizes the path and can navigate itself without human action. For ploughing, this robot is provided with tentacles attached with saw blades. The sowing mechanism initiates with long toothed gears actuated with motors. The complete body is divided into two parts the tail part acts as a container for seeds. The successor holds on all the electronics used for automating and actuation. The locomotion is provided with wheels covered under conveyor belts. Gears at the back of the robot rotate in equal speed with respect to each other with the saw blades. The objective of the project is to develop a microcontroller-based system in on-farm operation which reduce time of plantation, cost of labour and enhance production and also the pre designing system. As we know economy dependency of our country is on agriculture. As India is an agricultural country about 65 percent of people are farmers. In recent scenario number of changes is occurring in agriculture methodology like seed sowing, pesticides and irrigation.

## II. PROPOSED METHODOLOGY

Proposed system is based on Mechatronics. It is an automated multipurpose robot. re seed sowing, insecticide sprinkler and humidity detector. The control section as well as robotic station possess the amenities with temperature sensor, humidity sensor, pH sensor, soil moisture sensor, seed dispenser, seed storage, fertilizer storage, fertilizer dispense, robotics system with motors, microcontroller and power supply. It consumes less time and other as well as light weighted. It is more efficient than other system, which can dedicate the order of suggestions received to all networks and sensible factors processed by their corresponding embedded program. According to the received signal the robot will move in the given direction and will place the seed and fertilizers on field with equal spacing and specified distance. When robot stops, the microcontroller sends the signal to the seed sowing mechanism to sow the seed at required pitch. After the process of sowing the robot will move forward and the microcontroller sends the signal to the motor which is assigned for leveling the surface. During fertilizing process the fertilizer section will spray fertilizers on the field when required. Seed storage and fertilizer container are used to store the seed and fertilizer respectively for seeding and fertilizing. Level detector is used to indicate amount of seeds and fertilizer in storage container. There is a probe to determine the soil moisture contained which can be inserted when required to determine the moisture of the soil and can be displayed on the display provided on the robot.

### III. HARDWARE IMPLIMENTATION AND WORKING

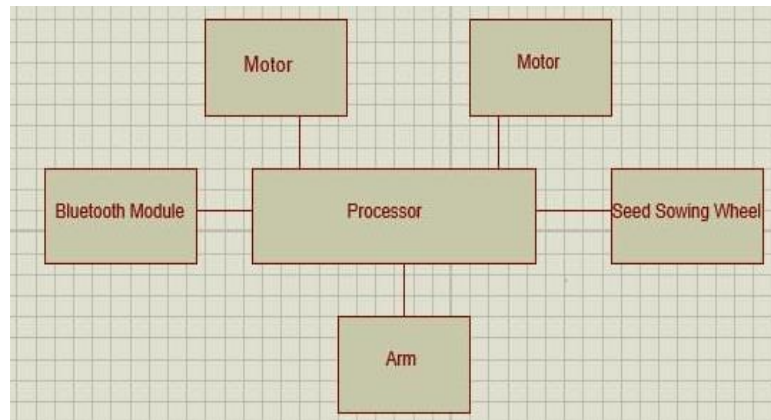


Fig. 1 Block Diagram

Here we have used the two motor for rotation of wheel and Bluetooth module for data transmission. ARM processor is used for working protocol. The two wheels of robot are connected to the DC motors and other two wheels connected at the front without DC motors. These all are connected to the chases. For the proper growth of the plants moisture has to be maintained. This is done by using the soil moisture sensor (YL-38). Agriculture robot is started with giving the supply and input is given from the computer. Input given to the robot are L (left), R (right), F (forward), B (reverse). According to these commands robot moves in left, right, forward or reverse direction. When it is moving in the forward direction it moves for three seconds then servomotor activates and the seed falls on the ground. Thus the seed sowing is done. UART is used for sending the data.

The seed meter rotates, seed drop in the seed pipe, which is connected to the furrow closer for covering the seeds by soil. There is another connection of front wheel which is guided by ARM processor unit with the help of Bluetooth devices via mobile phone. its works on simple mechanism battery operated dc motor is used transmitted the rotary motion to the shaft with the help of chain drive, and there is another connection of sprocket and chain to the seed meter for the rotary motion. when the farmer puts seeds into the hopper, seed drops into the seed meters which is control by the rack and pinion arrangement mounted on the c++.



Fig. 2 Actual Implementation

- **ARM PROSESSER:** ARM processors are extensively used in consumer electronic devices such as smart phones, tablets, multimedia players and other mobile devices, such as wearables. Because of their reduced instruction set, they require fewer transistors, which enables a smaller die size for the integrated circuitry.
- **L293D DRIVER IC:** L293D IC is a typical Motor Driver IC which allows the DC motor to drive on any direction. This IC consists of 16-pins which are used to control a set of two DC motor instantaneously in any direction.
- **DC MOTORE:** The Direct Current motor or the DC motor helps to convert electrical energy into mechanical energy.
- **4 WHEELS:** In the simplest terms it is a machine to reduce effort to lift or transport objects or load. Wheels along with axle holds up the load so the moving force for that object is easier as the motive force is only needed to overcome friction and angle of the transverse and not carrying the actual load.
- **BLUETOOTH MODEL:** a short-range wireless communications technology to replace the cables connecting electronic devices, allowing a person to have a phone conversation via a headset, use a wireless mouse and synchronize information from a mobile
- **BATTERY:** it is provide a dc power supply (9v, 12v).



## **IV. ADVANTAGE**

- Improved efficiency in planting.
- Increased speed of seed planting.
- Seed planting with maximum accuracy.
- Durable and cheap as low cost materials are used.
- Less Maintenance cost.
- No extra manpower required.

## **V. APPLICATIONS**

- Farming.
- Gardening
- Sport's Stadium
- Agricultural Universities

## **VI. CONCLUSION**

In this project we design a system to overcome the problems faced by the farmer in his/her day to day routine. The conventional method of farming requires more people and still accuracy is less. Using this system, the accuracy is increases with less/no man power. The time required with system to do the work done is very less compared to conventional method which yield the productivity of crop and helps farmer to make more money.

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