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Seed Sowing Robo

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Abstract: *Extensive horticultural activities require the use of advanced irrigation, cultivation and seeding techniques. Agricultural growth is therefore the first important step towards an integrated way of life. The development of agricultural tools is an important direction of changes in rural life. Advances in this technology increase the efficiency of agricultural production while preserving the natural characteristics of the soil. Currently, the employment situation of farmers is quite problematic. Seeding, seeding and watering robots visit and dig different soil surfaces to spread seeds and create an environment conducive to healthy growth.*

Keywords: Sowing seeds, agriculture, spacing, sowing methods

I. INTRODUCTION

In most of the countries that have an impact on developing country growth, agriculture is currently understaffed. For that reason, farmers must take advantage of modern technologies in order to carry out their work on farming for example digging, sowing, fertilizing andwatering crops. This means that the sector must now be computerized in order to deal with this problem. This wouldalso eliminate the need for laborers and stop the wastage of seeds, despite the attempts based on electronics. By including a delay on the original code, we'll be able to control the speed of DC motors which are an electric component. Because it is an autonomous agricultural-based project and will let us work with the controller, which communicates with the dc motors and IR sensor, we are driven to complete it. Using this linear actuator, the valve needed to distribute seeds and other materials is opened and closed. More and more agricultural research will be required to address local problems that have an impact on communities, but systems will also need to adapt to a more competitive environment in order to develop and adopt cutting-edge technologies to solve the problems that the vast majority of resource-poor farmers face. In virtually every aspect of society, commerce, and industry, robotic systems are employed extensively. The project's objective isto develop a microcontroller-based system that provides all the essential assistance for on-farm tasks like sowing at pre-specified depths and distances.

II. CURRENT RESEARCH

Kyada, A. R, Patel, D. B.[2014]: This research paper is about a planter. Here we discuss the purpose of the plant design, the elements that affect seed germination and some mechanisms. The main purpose of sowing is to place the seed and fertilizer in the rows at the correctdepth and seed spacing, cover the seeds with soil and compact the seed properly. From this we can conclude that seed germination is influenced by mechanical parameters such as the regularity of seed placement androw spacing. This transmission mechanism uses a semometer, piston and other mechanisms.

D.Ramesh, H.P. Girishkumar [2014]: This primarily focuses on the basic goals of sowing, i.e. placing seed andfertilizer in rows at the required depth and seed spacing, covering the seeds with soil and properly compacting the seeds. To achieve the best yields, we recommend different recommended row spacing, seeding rates, seed- to-seed spacing, and seed planting depths for different crops. These recommendations also depend on agro- climatic conditions. Equipment for sowing seeds is widely used in agriculture.

A. P. Rathod, A. V. Gorde, R. K. Gondane [2015]: Thisstudy describes a multipurpose sowing machine design change. In this, they argue that we import machinery that is large and expensive for sowing purposes. To avoid this,they created a multipurpose sowing machine with a hopper, seed distributor, ground wheel, power transmission system and tiller. A disc with scoops is within a hopper on a main shaft. With the aid of the power transmission system, the main shaft also rotates when the ground wheel does. In the seed distributor, the scoops remove the seed from the hopper. The tiller is in excellent contact with the soil.

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Amer,G;Mudassir, S.M.M;Malik, M.A. All development is always visible on the web server and Android app. In the future, this work may be extended to include not only obstacle detection, but obstacle avoidance without affecting the framework's main flow

III. COMPONENTS

Hardware Requirement

- Arduino UNO
- Motor Driver L293D
- 12V DC Motor
- Servo motor
- Water pump R385
- IR Sensor LM393
- Power supply 12V/5V
- Bluetooth Module

Software:

- Language: C
- IDE: Arduino ID

Block Diagram

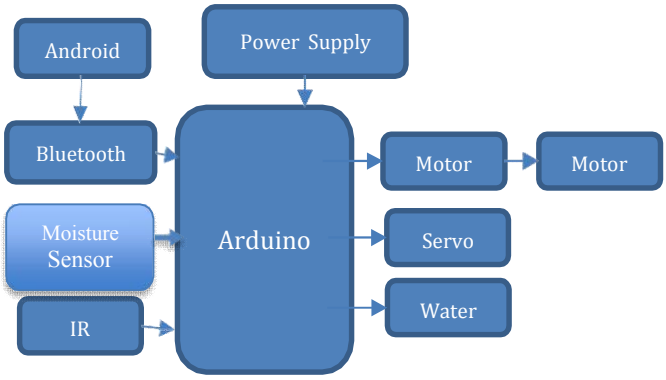

Fig .Block Diagram

Explanation

The Block diagram consists of one for automatic (robot)mode. The mechanical part integrates the power supply (12V), Arduino, IR sensors, etc. The brains of this system, an Arduino, which runs on 5V electricity, are in charge of all activities. The adoption of Arduino is due to its superior qualities, such as its low power, high-performance microcontroller. IR sensors are used to detect obstacles.

Let's say an object manifests itself robotically. In that case, the IR sensor detects the object and sends a signal to microcontroller. The robot changes the lane automatically and starts the sowing operation again. 2 motors are used to drive the wheels, and DC motors are used to drive the robot.The operation of the proposed system is explained below.

First, power on the circuit by pushing the start button, and the system will be ON. All peripherals of the bot get a power supply from the battery. In the automatic mode, the bot will move forward by turning ON the motors in the forward direction. The motor will move forward until the front IR detects the object. If the front IR detects the object, it will check for right and left IR. If the left IR is cut with the front IR, all motors stop and then move in the reverse direction for 2 seconds and take a right by turning on the suitable motors in the forward direction. In another condition. If the proper IR is cut with front IR, it sends the signal to the Microcontroller. Then all motors stop and move in the reverse direction for 2 seconds and take a rightby turning on the left motors in the forward direction. The motor driver controls

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the operation of the movement of the motor. This way, the bot will move in a zig-zag manner until all IR cuts. The sowing motor is continuously On and OFF for 5 seconds to make a drill in the soil at some distance. At the same time, the servo motor and water pump will be on when the drilled motor is on. The seed servo motor puts the seed in the drilled place, and water will be dropped simultaneously.

Robot Parameters

	Parameters	*Value*
1	*Ground Clearance*	*6 cm*
2	*Diameters ofwheels*	*6.7cm*
3	*Total distancecovered in one charge*	*300 m*
4	*Weight of robot*	*930 gm*

Circuit Diagram

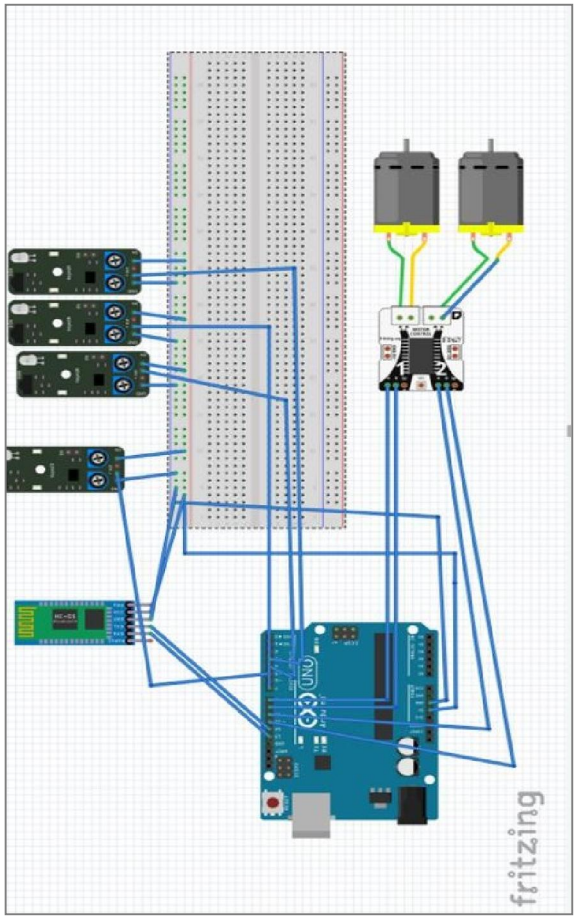

Fig. Circuit Diagram

Algorithm

Step1. Start
Step 2. Initialization of controller and peripherals.Step 3. Scan one sensor at a time sequentially.
Step 4. Start the DC motors and move the botStep 5. Check the status of the IR sensor
Step 6. If there is an obstacle at the front sensor
Stop the motor

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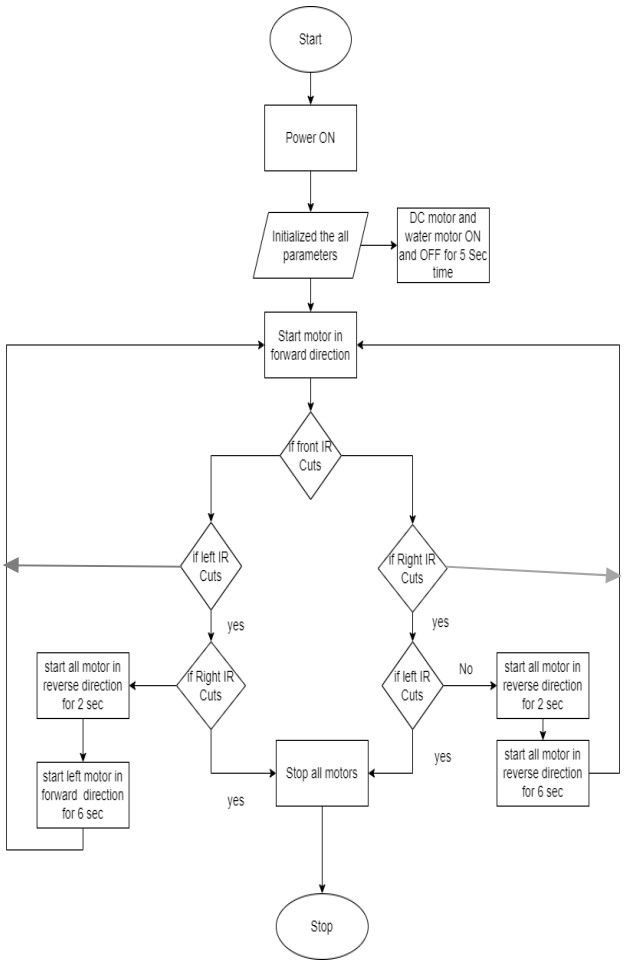
Reverse the motor and take a left or right
Step 7. Continue till the suitable IR and Front IR block.

Flow Chart



Images

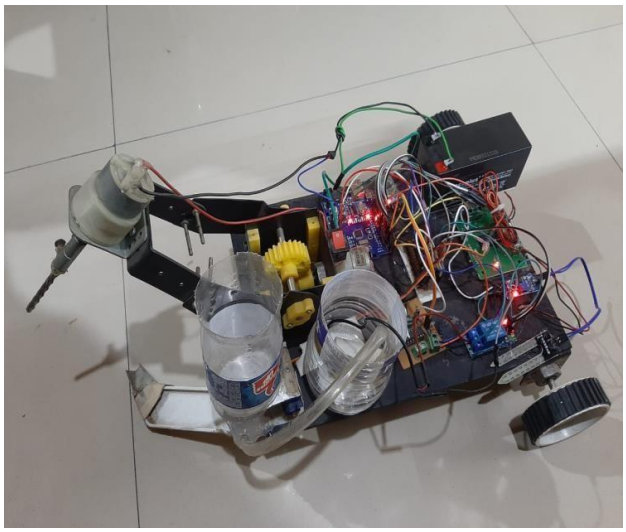


Fig. Image of Model

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Advantages

Following are the advantages of seed sowing robot are :

- Improvement in planting efficiency.
- Increase in crop yield and cropping reliability.
- Increase in cropping frequency.
- It increased seed planting.
- Seed/fertilizer placement accuracies.

IV. CONCLUSION

Our team has created an automatic seed-sowing device thatsuccessfully plants seeds based on input from the user.

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