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## Design and implementation of automatic seeding and pour water robot for agriculture

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### ABSTRACT

*Agriculture is a significant industry in India, where a large number of individuals choose to work in this field. The population of farmers is declining as a result of the conversion of rural areas to urban ones and the growth of technology. The labour force that formerly assisted farmers in their work is also declining. Therefore, in this circumstance, it is essential for modern technology to play a significant position in improving and making farming a simpler occupation. One such technology that can be employed in many farming operations, such as seed sowing, ploughing, and other tasks as well, and eliminate the need for human labour is robot technology. Therefore, we created a prototype in which an autonomous robot plants seeds in a field of agriculture. In order to improve irrigation, it will sow seeds and pour water. The project also outlines the sequence of activities to be completed in order to create a wheel drive robot and the criteria that must be met before the prototype is built.*

**Keywords:** Agriculture, Irrigation, Robot, Plants, Voltage, Motor, Sowing and Seeds.

### 1. EXISTING SYSTEM

The main issues in modern agriculture are the scarcity of agricultural labour, the ignorance of soil testing, the rise in labour costs, the loss of seeds, and the increased loss of water. The agricultural robot has been presented as a solution to all these drawbacks. Application of robotic technology in the

agricultural area is the primary goal of agricultural robots. The ploughing, sowing, and mud levelling tasks are efficiently carried out by the farm robot. The robot is a mechanical device that can carry out a variety of duties without the assistance of a human. The controller issues commands to the robot, which follows them. Along the robotic path, numerous sensors are employed to sense various parameters. The robotic system's microcontroller, which sits at its core, controls every single

movement it makes. By managing the DC motors, it also regulates the motion of a wheel. The DC motors are driven by a motor driving circuit, which controls the motion of the wheels. The autonomous sowing robot for agricultural use is operated from a distance by a Smartphone and the robot connected by wireless Bluetooth. The robot is controlled using a Bluetooth electronics app. It is utilised to manage every action the robot takes.

### 1.1 Proposed System

In this arrangement, the robot moves automatically for 500 metres before stopping. The robot will then sow seeds at a specific depth. The robot will use an electromechanical relay to feed water to the land for irrigation. Robot navigation will be carried out via gear motor operation. Real-time clocks will be used for distance measurement for robot movement, depth measurement for drilling purposes, and water quantity measurement for irrigation. Up until the system is in functioning mode, the entire process will be repeated.



**Fig-1 Working Prototype of automatic seeding and pour water robot for Agriculture**

This part contains the block diagram, circuit diagram, and methodical technique. Hardware and software tools are integrated throughout the construction of the agricultural robot.

The prototype of an agricultural robot is shown in Fig. 1. The designed robot's master controller is an Arduino Uno microcontroller. The robot's functions are all managed by Bluetooth connectivity. A wireless Bluetooth connection between the Smartphone and the agricultural robot allows for remote operation of the autonomous machine. The robot's entire operation is managed via a Bluetooth electronics app. The robot is equipped with a Bluetooth HC-05 module that receives signals from a Bluetooth electronics app and transmits them to the microcontroller for processing. The voltage regulator in the microcontroller controls the voltage input to the controller and is powered by a 12V DC battery. The driver circuit receives a 5V supply from the microcontroller. DC motors cannot be started using this supply. In order to run the motors connected to it, the driver circuit amplifies the 5V current into 12V current.

## 2. CONCLUSION

An effort has been undertaken to create a Bluetooth-controlled agricultural robot that can level muck, sow seeds, and plough fields. The suggested system is Bluetooth-enabled and battery-powered. The farmer can use this robot to operate it as well as perform other auxiliary tasks. Farmers can improve their income

by performing numerous tasks at once, which helps the Indian economy grow.

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