

Title of the Project

ARDUINO BASED AUTOMATIC SEED SOWING AND SPRAYING AGRICULTURE ROBOT

Project Reference No.:

46S_BE_1783

Name of the College: **ADICHUNCHANAGIRI INSTITUTE OF TECHNOLOGY,CHIKKAMAGALURU**

Branch: **ELECTRONICS AND COMMUNICATION ENGINEERING**

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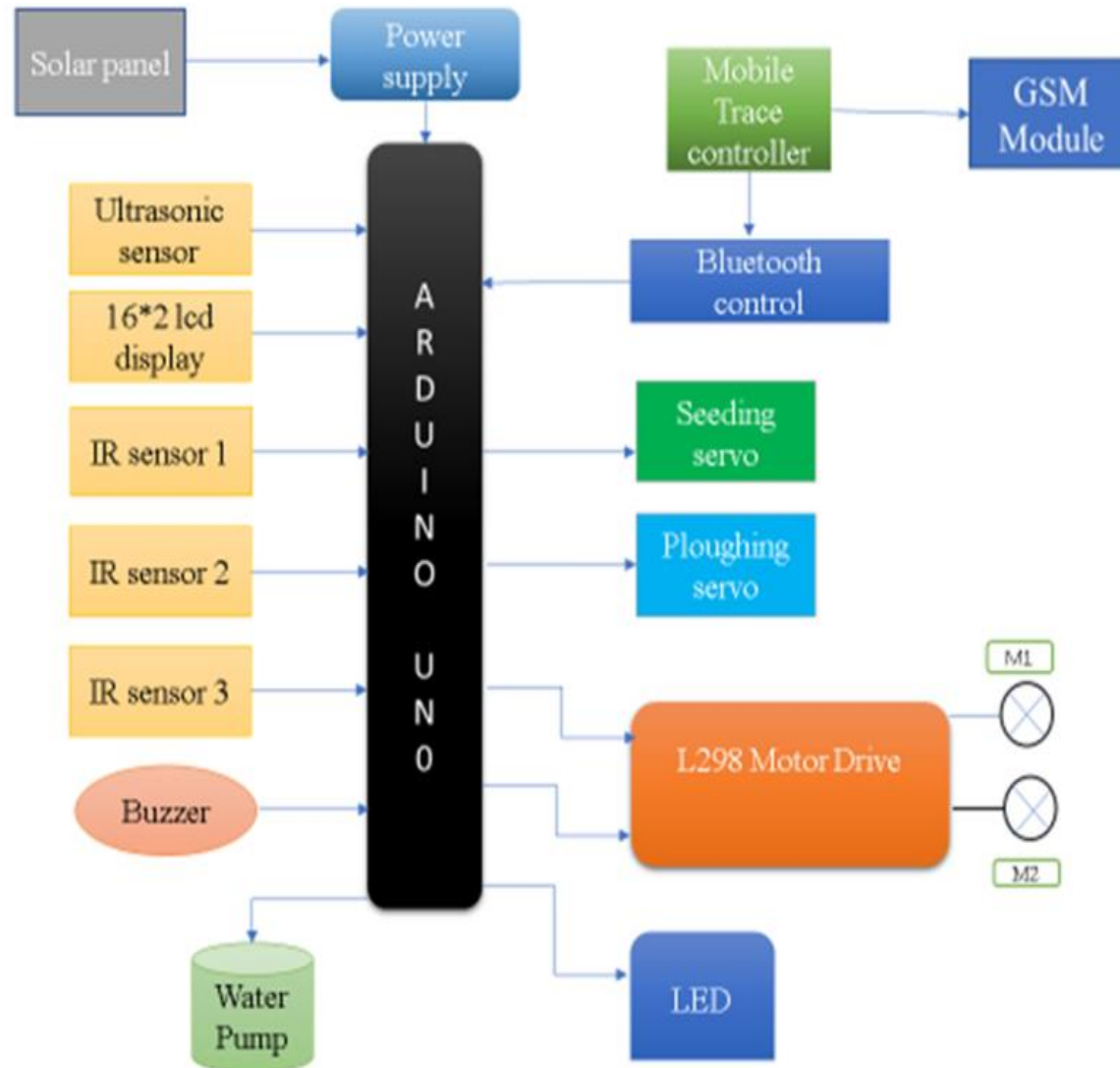
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OBJECTIVES

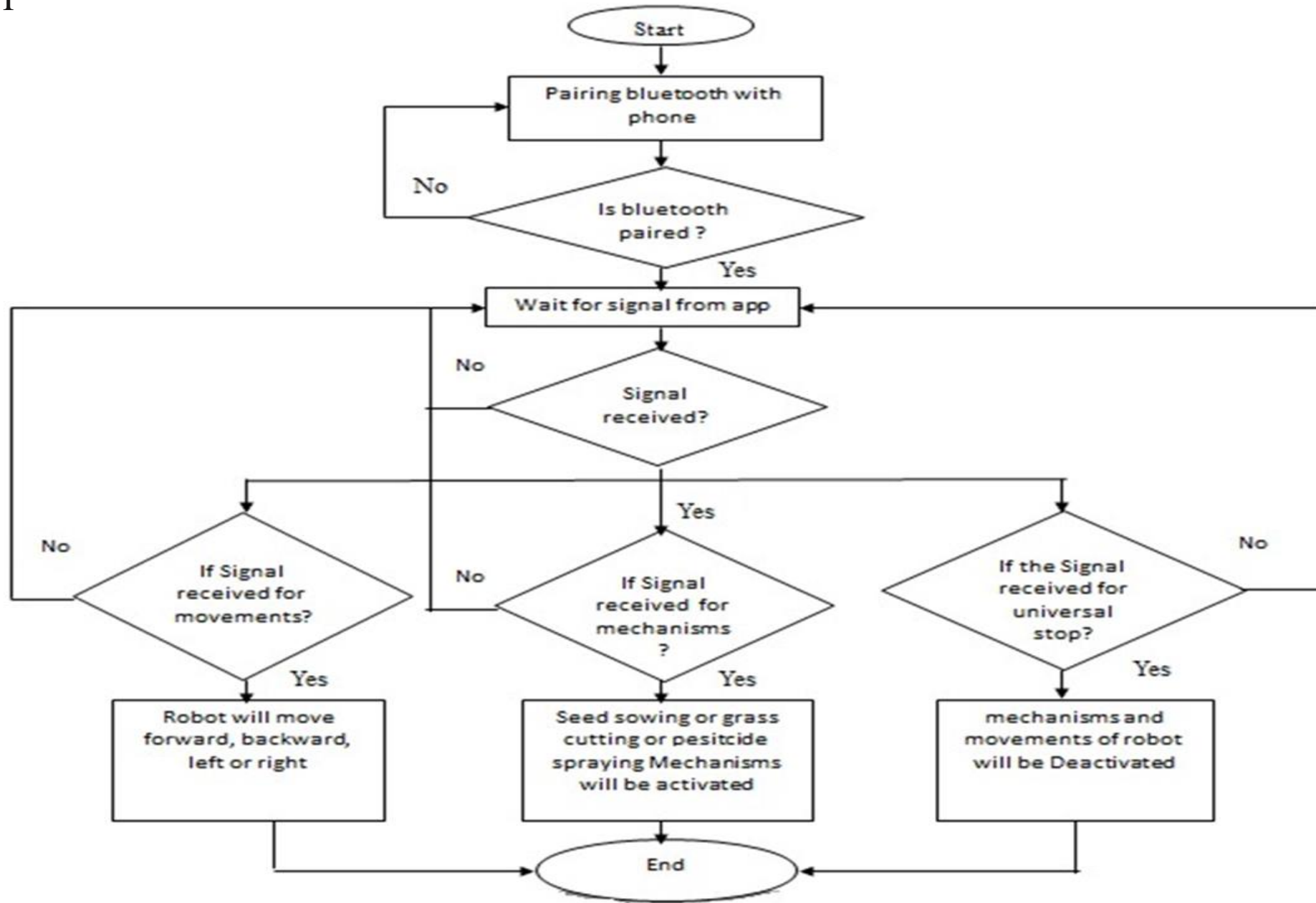
- Now a day's many industries are moving towards the automation in their working environment.
- This reduces the overall cycle time and cost of manufacturing of the product.
- The biggest profit of automation is that it saves the labor, however it also save energy and materials and to improve the quality, accuracy and precision.
- It is an Arduino controlled robot that carries out ploughing, sowing and watering process.
- The robot carries out farming using ultrasonic sensors in order to change its position from one farming strip to another.
- The robot aims contribute greatly in developing the farming strategies and reduce farmers cost.
- The basic objective of sowing operation is to put the seed and fertilizer in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed.
- Agricultural robots automate slow, repetitive and dull tasks for farmers, allowing them to focus more on improving overall production yields.
- Some of the most common robots in agriculture are used for: Harvesting and picking, Weed control.

METHODOLOGY

BLOCK DIAGRAM



FLOW CHART



WORK PLAN



Agriculture is a most important field in life of human being. It is a backbone of our country's economic system. In this project we have focused on seed sowing processes and tried to solve the problem. In seed sowing machine system we have used battery powered wheels, L298 motor drive inbuilt in these wheels and Arduino Uno is used for control the all system process. When the seeds are empty it detects the level of storage seed and indicates with the help of LED and also send the message to operators mobile through GSM module. Red LED indicates that seed drums are empty and green LED indicates that seed drums are fill. LCD displays the percentage of the seeds in a seed drum and also displays when any obstacle comes in-front of machine or divert path the seed sowing machine can detect the obstacle very easily with the help of Ultrasonic sensor.

In each complete rotation of rotating wheel there is seeds falls from these seed drums and the seed plantation process can take place smoothly as well as without wastage of seeds. After completing the seed sowing process, ploughing will automatically takes place. If there is any necessity of water we will use the water pump which is controlled through mobile. We also used the solar panel to charge the battery. The overall control of this robot using a Bluetooth controller app.

SUMMARY OF PROGRESS (DESIGN, EXPERIMENTS, RESULTS)

By putting the seed and fertilizer in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed. The robot can cover large areas of the field in a short time, reducing the time and effort required for manual sowing and spraying.



SCIENCE & TECHNOLOGY COMPONENT / INNOVATIVENESS / NOVELTY OF THE PROJECT

- **Integration of Robotics and Agriculture:** By combining robotics with agriculture, this project addresses the need for efficient and automated farming practices. It introduces a new way of performing labor-intensive tasks, such as seed sowing and spraying, in a more precise and automated manner.
- **Customizability and Scalability:** Arduino, an open-source electronics platform, provides a versatile and customizable framework for developing the robot. It allows farmers and developers to modify and adapt the robot to their specific needs and scale it up or down based on the size of the farm or desired functionality.
- **Automation of Tedious Tasks:** The robot's ability to automatically sow seeds and spray crops reduces the manual effort required from farmers. This automation frees up their time and resources, allowing them to focus on other important aspects of farming, such as monitoring crop health or managing overall farm operations.
- **Precision and Efficiency:** The use of robotics and sensors enables precise seed sowing and spraying. The robot can be programmed to sow seeds at specific intervals and depths, ensuring optimal spacing and reducing wastage. Additionally, it can accurately apply pesticides or fertilizers, minimizing the risk of under- or over-application.

FUTURE SCOPE

- The future scope for an Arduino based automatic seed sowing and spraying agriculture robot is quite promising. As automation continues to revolutionize the agriculture industry, there is a growing need for smart farming solutions that can optimize crop production and minimize costs.
- Future developments in sensors, machine learning, and artificial intelligence could enable the robot to precisely identify the right amount of seeds and fertilizer needed for each plant. This could reduce waste and improve crop yields.
- The robot could be integrated with other smart farming technologies such as weather monitoring systems, soil sensors, and drones. This could help farmers make more informed decisions about when to sow and spray their crops.
- The robot could be designed with better mobility features such as wheels or tracks to navigate difficult terrain. This could make it possible for the robot to work in areas that are difficult for humans to access. The robot could be integrated with IoT technologies to enable remote monitoring and control. As technology continues to advance, we can expect to see more sophisticated and versatile versions of this robot in the future.