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Seed Soeiing Robo

Ajay Suresh Sarwade, Ankita Tagade, Deeba Khan, Kalpak Nikose, Shifa Sheikh, Prof. Pramod Gadge
Department of Electrical Engineering, Anjuman College of Engineering and Technology, Nagpur, Maharashtra, India

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ABSTRACT

Seed sowing robo is a robot used for agricultural purposes. With the advent of robots in agriculture has significantly increased the efficiency and productivity of agriculture in many countries. In addition, the use of robots in agriculture is to reduce the operational costs, as well as the timing of agricultural activities. Agriculture is the backbone of Indian economy. But the state of agriculture is in its decreasing trend this is due to lack of mechanization. Some of the raising problems in Indian agriculture are rising of input costs, unavailability of skilled labour lack of water resources and crop monitoring. To overcome these problems, the automation technologies are being used in agriculture. It is automation of the land, the farmers, decreasing their activity. Moreover, there is need for electrical and agricultural scientists to work together for the development of some new technologies. This would increase the productivity of agricultural land. Robotic plays an important role in various fields such as industrial, medical military applications etc. In the past few years, there has been an increased interest in the development of autonomous vehicles, in the field of agriculture. The robotic fields are gradually increasing its productivity in agricultural fields. Some of the raising problems in Indian agriculture are rising of input cost, unavailability of skilled labour, lack of water resources, and crop monitoring. To overcome these problems, the automation technologies are being used in agriculture. The automation in agriculture could help farmer to reduce their effort.

Keywords : Skilled Labour, Crop Monitoring, Water Resources, Seed Sowing Robo

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I. INTRODUCTION

The introduction of robotics in agriculture can be seen as a revolutionary step away from the current direction in farming of increasingly large machines designed to optimize an individual farmer's productivity. Larger machines cause severe subsoil compaction issues and greater machinery complexity resulting in longer disruptions from single vehicle failure. In addition, farmers are facing increasing levels of herbicide resistance in weeds, a problem costing 4 billion dollars a year. Losses are occurring in production efficiency because large farm machinery can no longer mitigate weeds using current management modalities. The field of agricultural robotics is responding to these challenges by developing robots that can operate with greater effectiveness, for longer hours and at less cost than traditional farm machinery and labour. The Robotic vehicle is a lightweight and energy efficient robotic vehicle with a configurable, modular design, which enables interchangeable implement units to span between the modular side units. It is capable of undertaking a range of agricultural tasks, including seeding, fertilizing management through mechanical intervention. The robot is designed to be more than an order of magnitude lower in weight than existing broad acre agricultural equipment. Over the past century, agricultural productivity growth has been achieved through farm consolidation leading to greater economies of scale, increased mechanization, crop improvements through accelerated breeding and genetic modification, as well as through the application of inputs including herbicide, fertilizer and water. As countries have shifted to broad acre farming to increase food production, crops and landscapes that were once tended by humans are now tended almost entirely by machines through large scale mechanical and chemical interventions. Increasingly larger vehicles combined with precision guidance systems have been designed and used to improve production on broad acre farms. The benefits have been greater productivity and reduced labour cost per hectare and an economical platform for the latest technological developments. However, this trend has resulted in new problems for farmers. As vehicle size has increased so have the detrimental effect of soil compaction through the ground pressure of these vehicles, while increased engineering complexity of the vehicle has resulted in disruptions due to single machine failures.

II. METHODS AND MATERIAL

The information provided agricultural businesses are changing into a profitable solution, and the only effective management. Development of data management in the smart agriculture to grow exponentially, as it has become an important component of modern farming to the producers, to help in making important business decisions. For farmers to execute decisions, they need advanced equipment that can receive orders from a computerized control unit. The variable speed of the machine to perform a wide range of farming tasks, and is powered by an intelligent system.

Robotics in agriculture can be seen as a revolutionary step away from the current direction in farming of increasingly large machines designed to optimize an individual farmer's productivity. The Robotic vehicle is a lightweight and energy efficient robotic vehicle with a configurable, modular design, which enables interchangeable implement units to span between the modular side units. It is capable of undertaking a range of agricultural tasks, including seeding, fertilizing management through mechanical intervention.

At present the system used for monitoring and watering of the system in manual and adoption of automation is restricted to only few categories of farms. The major reasons for this are the expensive systems utilized which uses sensor arrays to monitor

the whole fields. These systems are not portable hence for each and every to monitor the whole fields. These systems are not portable hence for each and every field a sensor array has to be employed. Apart from this the maintenance of this system will also be a complex task.

The proposed system is designed to overcome this problem by automating at the same time providing portability to the system. The system is capable of measuring the moisture, temperature and humidity parameters and act accordingly automation refers to automatically switching on and off the system of irrigation. All the data can be monitors remotely through mobile and can be accessed at any point of time. These advantages can be used to monitor and control different plants and crops parameter. The robotic system ensures the accuracy of data at the same time, collecting the data for future use. This system can be implemented for small kitchen gardens, farms, farmhouse, vertical farming etc.

The soil moisture sensor, measures soil moisture levels by capacitive sensing rather than resistive sensing like other sensors on the market. It is made from corrosion-resistant materials, making it an excellent sustainable. Insert it into the soil around the plant, and amaze your friends with the real-time soil moisture data. The module is equipped with a built-in power regulator which provides power supply voltage.

It consists of central computer or mobile application to control and monitor the entire system. It comprises of sensors and devices and they are further connected to one central server via Wi-Fi module. The central device sends and receives information from user end using internet connectivity. The system operates mainly on two modes, namely: automatic mode and manual mode. In the automatic mode, the system takes its own decisions while controlling the various devices, while in the manual mode, the user can have the system by you with the help of a mobile app or a PC, the commands. The node MCU provides data using Wi-Fi to the user over Blynk app. The automation of watering mechanism can be controlled by programming and value of threshold has to be changed according to user and need in respect of water required by different crop sand soil seed sowing, soil digging mechanism will be controlled through app.

The chassis has sensors and controller module mounted on it which has the following:

Controller: Node MCU is a microcontroller-based platform with Wi-Fi module which helps to provide control action as well as transmit the status to any mobile device.

Servomotor: Servomotor is used at the front to insert the moisture sensor into the soil.

Moisture Sensor: It is used to sense the water content in the soil. Capacitive type moisture sensor will be used for it.

Chassis: The chassis has wheels which move forward - reverse according to the command sent by the remote transmitter.

Driver: It is used to drive or provide the required voltage to switch on the motor.

Cloud: This is the virtual space, and the availability of computer system resources, by application, in particular, to data storage and computing power, without direct active management by the user. It is a term often used to describe data centers that are accessible to multiple users over the Internet.

Mobile: The system gets the data through cloud service.

The Movement of robot shall be controlled by blynk app which has a GUI buttons for movement of robot which front, back, right, left .once robot is controlled on,, the robot movement is controlled and the moisture 0sense is plug in soil according to user need through the servo motor which is mounted on the chassis of robot. The moisture sensor data is taken

as input by the controller and its program as to switch on the water pump if moisture sensor value exceeds the threshold. The threshold can be changed according to the user need.

III. RESULTS AND DISCUSSION

In our project we have one sensor which is moisture sensor. The moisture sensor can provide data to the NodeMCU then servo motor is activated.

As system is design as a prototype for standard user among for Indian framer, the crops and soil characteristics tend to vary, hence the moisture content or moisture threshold value can be change through programming according to the requirement. The threshold value can be different for different crops, on which user can be change programming as we can get the maximum output from the machine.

IV. CONCLUSION

This project has been designed by keeping in mind the problem is faced by Indian framer or Indian agriculture scenario many developed country have started automation technique to make the life and work style of framers comparatively easier and thus increasing the production by focusing more on planning, different strategies rather than doing the same repeated task and wasting the affords on which could have been automated.

We have moisture sensor for taking water content values remotely through the internet. This can facilitated the framer to understand the temperature variation and it also been data can be used for research by agriculture department.

The moisture sensor is attached to the servo motor; when servo motor is dig into the soil it provides a reading of moisture content according to the threshold value water pump gets switch on.

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