AGRIBOT

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ABSTRACT: Agribot is a machine that helps to reduce man power in the field of agriculture Which helps in process of seeding, watering, fertilizing, pesticides and closing the dig. This Agribot machine can provide manual as well as auto control. At present time, robots are increasingly being integrated into working task to replace humans specially to perform repetitive task. Seeding is one of the first steps in farming during this process seeding is carried out in all the rows of the farming plot. The second step of the farming is irrigation process, slowly applies small amount of water to the planted seeds in all the rows of the farming plot. The fertilization process is same as irrigation process, but some crops need fertilizers when the seed germinates, and plant begins to grow. The third step is to be monitoring the weather and cutting the crops. In past agriculture equipment was only available in the form of massive heavy machinery but now the Agribot are used commonly as normal machines.

KEYWORDS: Robot, Seeding, Watering, Weather monitoring and Grass Cutting.

I. INTRODUCTION

In olden days technology was not developed that much. So, they were seeding and plant cutting by hand. And Watering and pesticide spraying was done by man. But nowadays technology was developed. So now it's not necessary to do seeding in sunlight. By using robot technology, the one who monitoring the robot motion can sit in a cool place and can-do seeding by monitoring the robot motion. Today's agricultural field demands to find new ways of agricultural operation to improve performance efficiency. In the field of agriculture various problems are faced by the farmers in the operations like seed sowing, pesticide spraying and grass cutting. Manually irrigation method suffers from various problems. The tendency of manual work is going on reducing. The man power shortage is one of the biggest problems faced continuously to all farmers. Due to the lack of labours, wages are already rising. It is not economically beneficial to all farmers. So, we develop a system for "Agribot" using microcontroller which is very economical and beneficial. Due to automation the work become easiest and saves money also. Our system is nothing but two-Tyre vehicle which is driven by DC motor. The micro-controller supplies the power for servo motor which helps the Agribot in theprocessofseeding in theagriculturefields. The ARDUINO UNO IDE is used to write the software program for the Agribot tomove,seeding andwateringfunctions. DHT11 sensor fitted robotic arm should be dipped into the soil. It checks the humidity and temperature of soil. The blynk app is used to create the remote controller that helps in controllingthe agribot to perform the functions. The software program is then bumped into theblynkapp. So, there is no more labour work. It gives information about weather conditions of soil nutrients. Hence all the problems of proposed system are overcomes by using this system.

II. LITERATURE SURVEY

A literature survey is an objective, critical summary of published research literature relevant to a topic under consideration for research. Seven published articles have been referred to create a firm base about the project. Following is a brief overview of all the eight papers that have been referred.

This Series addresses current and future challenges pertaining to embedded hardware, software, specifications and techniques. Titles in the Series cover a focused set of embedded topics relating to traditional computing devices as well as high tech appliances used in newer, personal devices, and related topics. The material will vary by topic but in general most volumes will include fundamental material (when appropriate), methods, designs, and techniques. [1] This introductory tutorial

is designed to give you an overview of how to create a schematic, update the design information to a PCB, route the PCB and generate manufacturing output files. It also investigates the concept of projects and integrated libraries and provides a summary of the 3D PCB environment. [2]

This book provides a hands-on introductory course on concepts of C programming using a PIC(r) micro-controller and CCS C compiler. Through a project-based approach, this book provides an easy to understand method of learning the correct and efficient practices to program a PIC(r) micro-controller in C language. Principles of C programming are introduced gradually, building on skill sets and knowledge. [3]

This book provides information about robotics offers a distinct and unified perspective of the mechanics, planning and control of robots. Ideal for self-learning, or for courses, as it assumes only freshman-level physics, ordinary differential equations, linear algebra and a little bit of computing background. Modern Robotics presents the state-of-the-art, screw-theoretic techniques capturing the most salient physical features of a robot in an intuitive geometrical way. [4]

This paper provides information about multipurpose robot. How it works and what are the tools it requires and the software code to dump into blynkapp. [5]

This paper has information IoT technologies. What are the benefits of IoT based Projects. How IoT technology working and industrial applications. [6]

In this paper we get the information of what are the tasks in agriculture and How to do it in automatic this type of information we got. [7]

III. EXISTING SYSTEM
Existing Agricultural system depends on human for seeding, watering, pesticide spraying and grass cutting. Traditionally farming is done by human beings with the help of bullock carts. The main problem in agricultural field include lack of labor availability, lack of knowledge regarding soil testing, increasing labor wages, wastage of seeds and more wastage of water. Further some driver less tractors are developed also, but their actual possibility in real scenario is very less. Further some automatic irrigation system has been implemented to reduce human work load. But these methods can't recognize the yield and soil test.

Figure 3.1: Seeding existing system.

Then after robots were proposed by researchers. The demand of such robots ishigh, and it can do single work. And the quantity of production is lesser which make the available robots expensive, and hence economically tougher for poor farmers to buy it.

Figure 3.2: watering system.

IV. PROPOSED SYSTEM
To overcomes all the drawbacks of existing system theagribot has been proposed. The main aim of agribot is applying robotic technology in agricultural fields. This robot efficiently performs seeding, watering, pesticide spraying, Humidity and temperature checking, weather monitoring and Grass cutting. The robot works based on command given by controller. The micro-controller is main part of robot system and entire action is done by micro-controller. And some sensors are used to sense temperature and humidity. For cutting the grass purpose DC cutter motor was placed in front of vehicle.

Figure 4.1: Watering (proposedsystem)

A water container is used for water storage. A water pump is used for pumping water to the water sprayer.

Figure 4.2: Seeding (Proposedsystem)

The water flows to the sprayer through pipe. The power for pump is regulated by a toggle switch.

Its working is based on the precision agriculture which enables efficient seed sowing at optimal depth and at optimal distances between crops and their rows, specific for each crop, developed agriculture needs to find new ways to improve efficiency.
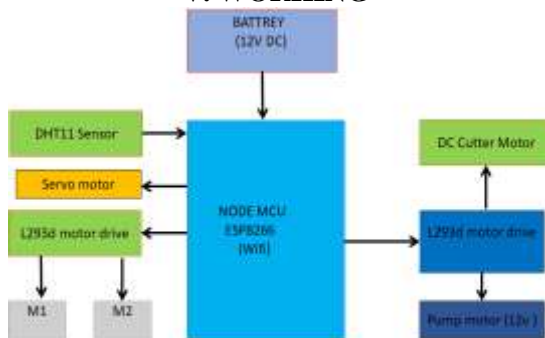
V. WORKING

Figure 5.1: Block diagram.

The AgriBot consist of 60% of hardware and 40% of software. The NodeMCU (Micro Controller Unit) ESP82665 gives instructions to the hardware of AgriBot. The MCU which receives the power from the battery (12 DC) and MCU suppliesto drive motors L293d which helps to run the motors M1 and M2 that helps the AgriBotwheelsto movearoundthefarming fields oftheplot. Seed dispensing is done by servomotor. This servomotor takes input from the micro-controller. Servomotor is a special motor it is working based on PWM technique. It sets angle as per number of pulses. After seeding watering is done. This mechanism is done by pump motor. One tank is placed on top of the robot and the motor is connected to Arduino. As per the instruction watering is done. The tank used for watering is also used for pesticides spraying by adding pesticide to water. And when we on the switch of pump motor pesticides is sprayed. This robot is also used to test the Temperature and humidity of soil. DC cutter motor is used to cut the grass. All the instructions what to do is in the code. This code is bumped into the blynk app.
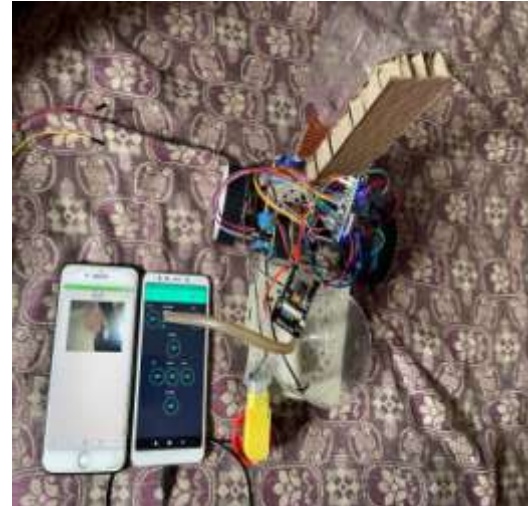

Figure 6.1: Agribot.

VI.RESULT

This agribot is very helpful to farmers. It reduces work load of man. The Agribot can do all thefarming work very fast and with more precision and with less effort and less humanpower likeseeding andwatering. 8 the Agri-bot performs only Two tasks (Spraying & Seed Dispensing), the robot can be Operate by blynk app or manual and the action is performed in the robot. and DC Cutter motor, DHT11 Sensor, ESP32 Camera. the cutter is used to cut the crops in the field, and the DHT11 sensor is used to monitoring the temperature and humidity that can be observed in the blynk application. Where the ESP32 Camera is used to see the conditions of the leaves and soil in the field the camera has a Wi-Fi ability feature we can connect through IP Address and it can be used as live stream, or it can be record.

VII. CONCLUSION

An attempt has been made to develop an IoT based Agribot which performs seeding, watering, Humidity and temperature checking and grass cutter. Using this system farmer can do multiple activities at a time and increase his income which results in development of Indian economy.

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