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Android Controlled Multipurpose Agriculture Robot

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ABSTRACT: The paper targets at the design, improvement and the fabrication of the robotic which could dig the soil, put the seeds, leveler to shut the dust and sprayer to spray water, those entire structures of the robotic works with the battery and controlled using an android mobile and controller used in it is Arduino UNO. More than 40% of the population in the world, the international chooses agriculture because the number one occupation, in latest years the improvement of the self-reliant motors withinside the agriculture has skilled expanded interest. The car is managed with the aid of using Relay transfer through Wi-Fi generation the usage of cell. The concept of making use of robotics generation in agriculture could be very new. In agriculture, the possibilities for robotic-improved productiveness are immense - and the robots are acting on farms in numerous guises and in growing numbers. We can assume the robots acting agricultural operations autonomously along with ploughing, seed sowing, dust ultimate and water spraying.

KEYWORDS: Android,Relay, Wi-Fi, Self-reliantMotors, Autonomous System,Arduino UNO.

I. INTRODUCTION

Indian economic system is primarily based totally on agriculture. The backbones for meals manufacturing are farmers. Traditionally farming [1] is accomplished through man or women with the assist of bullock carts, tractors and tillers etc. In present day era, the primary hassle in agricultural subject consists of loss of hard work availability, lack of understanding concerning soil testing, growth in hard work wages, wastage of seeds and greater wastage of water [2]. To conquer most of these negative aspects the robotic for agriculture has been developed. The principal intention of agricultural robotic is making use of robot era in agricultural subject. The agriculture robotic efficaciously plays sloughing, seeding and dirt leveling automatically. The robotic is a mechanical tool that is able to appearing diverse responsibilities without human intervention. The robotic works primarily based totally on command given through the controller [3]. Various sensors are used for sensing diverse parameters alongside the robot path. The microcontroller being the coronary heart of the robot device manipulates the whole the motion of the robot device. It additionally controls a wheel movement through controlling the DC motors. Motor using circuit is used to pressure the DC motor [4] which in flip controls the wheel movement.

We are so much pleased to do the human effortless robot system for the farmers which helps the farmer for better yield and lesser time to finish the task by the artificial thing that we are created the system developed will create a huge impact in the agriculture sector in terms of yield and cost of operation for the task. The total equip mental setup cost is very low compared to existing system models.

Designing and developing of a multipurpose using agricultural robot, which can be used to plough the soil and dispense seeds in the soil in agricultural field. The controlling of this Agro-bot should be wireless with mobile phone like android or IOS and can be able to showup digging and seeding operationsaccurately.The Fabricatedour model operated by wireless control which able to showthe operations likes ploughing and seeding. Alsothe designing and analyzing a real time system for this robot to give a solution and propose a model which can be used in real time field operable and maintainable easily.

II. LITERATURE SURVEY

[1]. "Agricultural Robot for Automatic Sloughing and Seeding" 2015 (Amrita Segar, A, Abrams. E, Ankita. A, Mrs. R. Praveen, Mrs. R. Simeon). This paper strives to increase a robotic able to performing operations like computerized sloughing, seed meting out. It also affords guide manage while required and maintains tabs on the humidity with the assist of humidity sensors. The main aspect right here is the AVR At mega microcontroller that supervises the complete process [1]. Initially the robotic tills the complete subject and proceeds to sloughing, simultaneously meting out seeds aspect with the aid of using aspect. On the sphere the robotic operates on automatic mode, however out of doors the sphere is precisely operated in guide mode.

[2]. "Design and Implementation of Seeding Agricultural Robots" (IRAs) (P. Usha, V. Maheshwari, Dr. V. Nandagopal) In this paper, the robotic device is used to develop the process of cultivating agricultural land without the usage of guy electricity [2]. The intention of the paper is to lessen the person electricity, time and growth the productiveness rate.

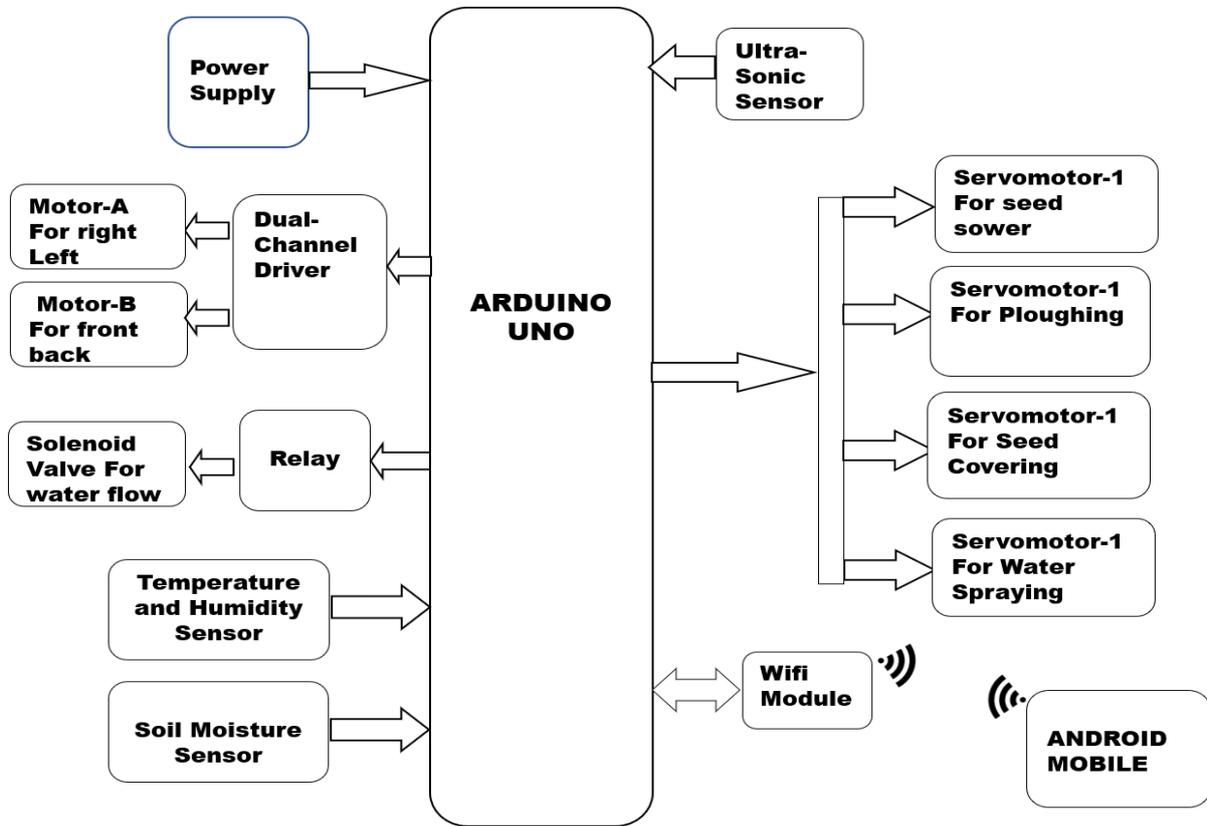
[3]. "Automated Farming Using Microcontroller and Sensors" (Abdullah Tanveer, Abhishek Choudhary, Divya Pal, Rajani Gupta, Farooq Husain) Farming may be accomplished in the use of new technology to yield higher boom of the vegetation. In this mission we're going to check temperature, light, humidity and soil moisture. The paper right here is all approximately computerized manage capabilities with the latest electronics generation the use of microcontroller and GSM phone line. The mission works routinely and subsequently reduces the manpower.

[4]. "IOT Based Smart Agriculture" June 2016 (Nikesh Gondchawar¹, Prof. Dr. R. S. Kawitkar²) In this paper a mission version for agriculture robotic is described the more modern situation of lowering water tables, drying up of rivers and tanks, unpredictable environment gift a pressing wants of right usage of water. To cope up with this, use of temperature and moisture sensor at appropriate places for tracking of vegetation is carried out in a set of rules evolved with threshold values of temperature and soil moisture may be programmed into a microcontroller-primarily based totally gateway to manipulate water quantity. The device may be powered with the aid of using photovoltaic panels and can have a duplex verbal exchange hyperlink primarily based totally on a cellular net interface that permits statistics inspection and irrigation scheduling to be programmed through an internet page. The technological improvement in Wi-Fi sensor networks made it viable to apply in tracking and manage of greenhouse parameter in precision agriculture. After the studies with inside the agricultural subject, researchers determined that the yield of agriculture is lowering day with the aid of using day. However, use of generation with inside the subject of agriculture performs vital function in growing the manufacturing in addition to in lowering the extra guy electricity efforts. Some studies try are accomplished for betterment of farmers which affords the structures that use technology useful for growing the rural yield.

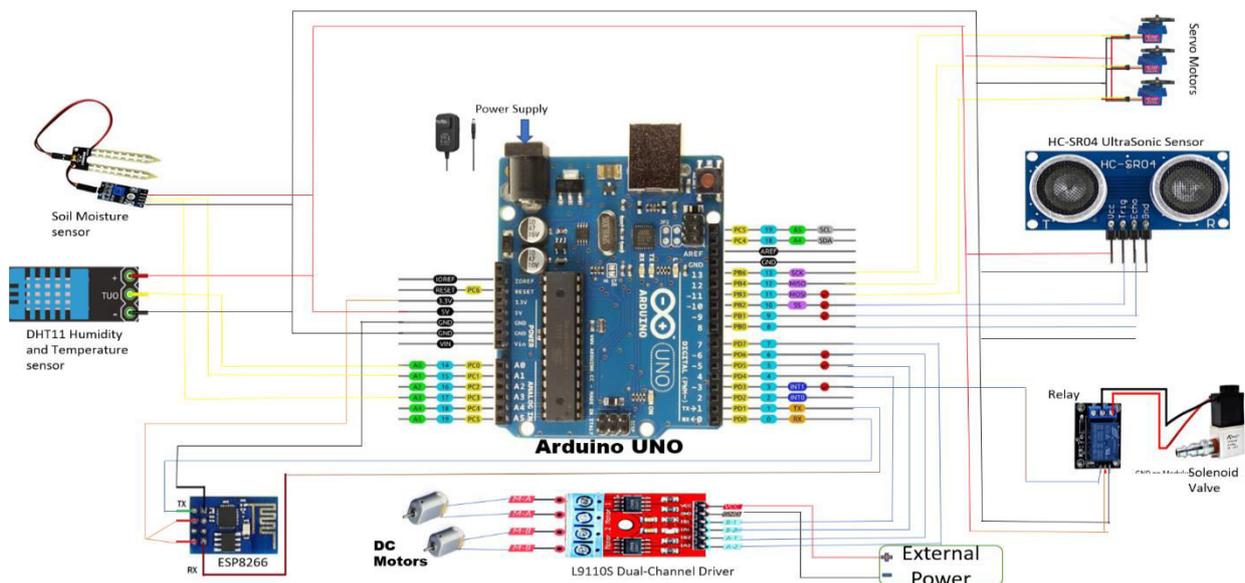
III. PROPOSED SYSTEM

In contemporary-day era, the principal trouble in agriculture discipline encompasses loss of farm exertions' availability, lack of understanding concerning soil testing, boom in exertions wages, wastage of seeds and extra wastage in water. To conquer most of these negative aspects the robotic for agriculture has been proposed. The essential purpose of agricultural robotic is making use of robot era in agricultural discipline. The agriculture robotic successfully plays sloughing, seeding and dust leveling automatically. The robotic is a mechanical tool that's able to acting diverse responsibilities without human intervention. The robotic works primarily based totally on command given through the controller. Various sensors are used for sensing diverse parameters alongside the robot path. The microcontroller being the coronary heart of the robot device manipulates complete the motion of the robot device. It additionally controls a wheel movement through controlling the DC automobiles. Motor riding circuit is used to force the DC automobiles which in flip manage the wheel movement. The seeding robotic for agricultural cause is a self-sustaining robotic that's managed remotely through a Wi-Fi connectivity among the Smartphone and the robotic. The Android app is used to function the robotic. It is used to govern every and each operation of the robotic.

3.1 BLOCK DIAGRAM



3.2 CIRCUIT DIAGRAM





3.3 WORKING

The working of the system is very simple and easy, first we need to switch ON the power supply to it then check for the connectivity with the Wi-Fi module and also check the connectivity of the mobile phone also. Open the application in the phone and check the soil moisture reading and temperature reading in the app check for perfect time to sow the seeds if this the right time to do the operation or task then we need to give the command through the app the system will perform the specified task for us if the work done we have to leave the system with STOP command then we can use this system further for monitoring the system for checking humidity and temperature time to time if the soil moisture is low then we can perform the water spraying from the home itself without physically going to field and spray the water in the field.

As the Agri Bot moves forward and the backward the operation of digging of the ground is done by using the pointed structures forming the continuous part. The container of the seed is spaced at equal calculated distance from these structures. The seeds will be sown in the wiggled hole with using the DC motors. A hole is to be drilled in the bottom of the seed container and is covered with a metal sheet. This metal sheet provides a way to the dropping of seeds at periodic intervals. The metal sheet is connected to a DC motor, as the DC motor rotates to a specific angle the metal sheet opens and a seed is dropped. Then, immediately it rotates the same angle in reverse direction thus, closing the metal sheet. The specific number of seeds is to be dropped in the hole we made. Back filling is done by the metal sheet provided at the back of the robot. The functions are carried out simultaneously. The chargeable battery is the main source of power to the robot system. The robot is placed on the hard surface or standard metal sheet. The front two wheels are used for turning right and left and rear wheels for forward and backward movement of the robot.

IV. CONCLUSION AND RESULT

An Android-controlled agricultural robot that ploughs, sows' seeds, and levels mud has been attempted. The proposed system runs on batteries and is regulated via Wi-Fi. In addition to running the robot, the farmer may use this robot for other purposes. Farmers may increase their profits by performing several tasks at the same time. We can further use as a surveillance after its task completion.

As we are seeing the present generation the agriculture sector is degrading in terms of human effort in the field. Our developed system will cope up the gap between these two in the future and present generation, we will enjoy the working with the phone in the field.

The above system was designed and implemented using an android mobile we have made a great initiation in agri robot design and implementation we have achieved all the expected results from the above conducted project, we hope this will help the farmer in a great way reducing the manpower and with less human involvement we can contribute more towards the future agricultural implementation.

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