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Seed Sowing System Using Iot

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ABSTARCT
Agriculture needs technology that is easier to understand, implement, and used by farmers. A device that requires less human effort and time at a lower cost Implementation is very necessary for success in the agricultural industry. That's why we designed a seed sowing system that can be controlled via IoT and helps with sowing seeds in the desired position, which helps farmers save time and money.
This the machine performs operations such as ploughing, sowing and leveling which are used for small-scale farming. Sowing seeds is one of the main processes of agricultural activity. It requires a large amount of human effort as well as time consumption.
All seeders should be suitable for all types of farms, all types of crops and should be robustconstruction and reliability, this is the basic requirement for a sowing machine. In this way, we have produced a seeding machine that is controlled manually when the quantity is reduced work for farmers to do, increasing planting efficiency and reducing problems associated with manual planting. With this machine we can plant seeds of different shapes, sizes and spacing between two seeds. We are also able to bet more efficiently and exactly. Using raw materials, we made it cheap and easy to use for small farmers. In order for any farmer or untrained worker to handle the machine effectively, its design such simplified. The adjustment and maintenance of the machine has also become easier.

I. INTRODUCTION

India's record of agricultural advancements over the past four decades has been quite remarkable. The agriculture sector has managed to keep up with rising food demand. The importance of increased land area under agricultural production has decreased over time, and production increases have been almost entirely due to increased productivity in the past two decades. Agricultural production has contributed widespread to overall progress. Increased productivity has helped feed the poor, improved farm profits and created both direct and indirect employment opportunities. A series of steps attribute to the success of India's agriculture. During this time, the main sources of agricultural growth were the spread of new crop varieties, intensification of input use, and investment leading to expansion in the irrigatedregion. Growth has now declined in areas where' Green Revolution ' technologies has major impact. New technologies are needed to push out yield boundaries, make more efficient use ofinputs, and diversify toward a more sustainable and higher value which means a field. Culturia, meaning agriculture, the Indian farmer faces more problems about the quality of the agriculturalproduct than others owing to traditional methods of agricultural operation.

Creating holes or slits by a stick or tool and lowering seeds by hand is done for seeding in small areas dibbling i.e., multi-row conventional seeding systems with manual seed meteringare quite common with seasoned farmers. Many countries do not have adequate skilled manpower directly in the agricultural sector in the current generation and it affects developing countries ' production. So, it is time for the sector to automate to overcome this problem.

In India, 70 percent of people are dependent on farming. So, we need to learn livestock.Our project's innovative idea is to process of sowing crops such as sunflower, baby maize, groundnut and vegetables such as beans, lady's finger, pumpkin and pulses such as black gram, green gram etc. to reduce human effort and increase yield. Using Microcontroller, the distance between the two seeds is controlled and varied. Various types of seeds can also be planted with different distances. Use remote switches, when the Robot

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reaches the end of the field, we will change the direction. Planting seeds is our daily life in farms is done by tractor. The traditional seeding approach is the manual one. But it takes more time and continually faces the man powershortage. India is an agrarian economy and most rural.

PROBLEM STATEMENT

As you know, India is characterized by agriculture. In India, 50% of the population depends onagriculture. If India's GDP were to reach 9-10% in the next 30 years, 50% of the population would mean about 70 million people, more than double the US population, so without a revolution in the agricultural sector is Impossible. In the current scenario, most countries do not have a sufficiently skilled workforce in the agricultural sector, affecting growth in developing countries. Therefore, farmers should use improved techniques for cultivation activities . Therefore, it's time to solve this problem. This eliminates the need for labor and also avoids seed waste

PROBLEM MOTIVATION

Since we are interested in embedded electronics-based projects, there are also many advantages for embedded systems despite electronics-based projects. You can use source code delays to control the speed of an electrical component, a DC motor. Since this project is an IoT based farming project, there is a motivation to carry out this project. It covers controllers, interfaces with DC motors, interfaces with ultrasonic sensors, and linear actuatorsused to open and close valves. such as seed delivery**.**

II. LITERATURE REVIEW:

COMPARATIVE PERFORMANCE OF SEEDING DEVICES WITHOTHER SOWING METHODS

In [1] the journal the authors used a manually operated template row planter was designed and developed to improve planting efficient and reduce drudgery involved in manual planting method.

In [2] this journal the authors used the camera for video interaction which will detect the obstacles during seed sowing. Smart robot can be used which will work automatically for sowing he seeds without use of human interaction.

In [3] this journal the authors said that the idea to implement the automation in the process of seed sowing raised. For the fabrication the components are solar panel, funnel, DC motor, Battery, Wheel, shafts.

In [5] this journal the authors said that the system uses many automatic methods that require very little labor. The project aims to develop prototypes of autonomous agricultural robots that include automatic control systems and can be applied in different stages of horticulture. The general concept of a robotic farming machine is to selectively harvest or easily weed the desired prototype.

In [6] this journal the authors said the system module is based on the ESP8266 Wi-Fi microcontroller. The module connects to the central server via a Wi- Fi environment using JSON-based data transmission over HTTP protocol using IP cameras. Programs in the module are designed to be as simple as possible to save resources and achieve the shortest response time. The modules of this smart home system have been tested and proven to work with the smart home system, providing electrical control, automaticdoor locks, electricity consumption statistics, infrared furniture and cameras for direct monitoring of the room.

Ultrasonic sensor:

Fig 1.1 : Ultrasonic

An ultrasonic sensor is a device that uses ultrasonic waves to measure the distance to an object. Ultrasonic sensors use transducers to send and receive ultrasonic pulses to relay information about the proximity of objects. High frequency sound waves bounce off boundaries, creating distinct echo patterns. The working principle of this module is simple. It emits a 40kHz ultrasonic pulse that travels through the air and bounces off the sensor if there is an obstacle or object. Distance can be calculated by calculating the transit time and the speedof sound. The ultrasonic sensor is an excellent solution for detecting transparent objects. As for liquid level measurement, applications using infrared sensors, for example, struggle with this particular use case due to the translucency of the target. For presence detection, ultrasonic sensors detect objects regardless of color, surface or material (if the material is very soft like wool, it will absorb sound). A reliable choice.To calculate the distance between the sensor and an object, the sensor measures the elapsed time between emitting

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sound from the transmitter and making contact with the receiver. The formula for this is D = ½ T x C (where D is distance, T is time, and C is the speed of sound ~ 343 meters/second). For example, if a scientist points an ultrasonic sensor at a box and the sound takes 0.025 seconds to bounce back, the distance between the ultrasonic sensor and the box is: D = 0.5 x 0.025 x 343.

Relay:

Fig 1.2 : Relay

The relay board is a computer circuit board with a series of relays and switches. It has an input terminal and an output terminal and is used to control the power supply. The relay board provides individually programmable real-time control for each of the multiple onboard relay channels. Relays basically allow relatively low voltage, higher power circuits to be easily controlled. The relay accomplishes this by using his 5V output from the Arduino pin to energize an electromagnet and close a physical switch inside to turn the high power circuit onor off.

DC Motor:

Fig 1.3 : DC Motor

DC motors belong to a class of rotary electric motors that convert direct current (DC) electrical energy into mechanical energy. The most common type is based on the force produced by a magnetic field. Almost all types of DC motors have an internal electromechanical or electronic mechanism for periodically changing the direction of current flow in some part of the motor. The DC motor was the first motor to be widely used because it could be powered from the existing DC lighting power distribution system. The speed of a DC motor can be controlled over a wide range by using variable supply voltages or by changing the amount of current in the field windings. Small DC motors are used in tools, toys and appliances. Universal motors are DC powered but lightweight brushed motors used in portable power tools and equipment. Large DC motors are now used to drive electric vehicles, elevators, hoists, and steel rolling mills. The advent of power electronics has made it possible to replace DC motors with AC motors in many applications

NODEMCU:

The name "NodeMCU" is a combination of "node" and "MCU" (microcontroller unit). Strictly speaking, the term "NodeMCU" refers to the firmware rather than the associated development kit. Both firmware and prototyping board design are open source NodeMCU is an open source firmware that can be used for open source prototyping board designs. The name "NodeMCU" is a coined word combining "node" and "MCU (microcontroller unit)". Strictly speaking, the term "NodeMCU" refers to the firmware rather than the associated development kit. Both the firmware and the prototyping board design are open source. The firmware uses the Lua scripting language. The firmware is based on the eLua project and is based on the Espressif Non-OS SDK for ESP8266. We use many open source projects such as SPIFFS. Due to source limitations, the usermust select modules relevant to the project and create a firmware to suit their needs. 32-bitESP32 support has also been implemented. A commonly used prototyping hardware is a board that acts as a dual in-line package (DIP), integrating a USB controller onto a small surface-mount board containing the MCU and antenna. Choosing the DIP format allows for easy prototyping on a breadboard. This design woriginally based on his ESP-12 module for ESP8266.

Fig 1.4: NODEMCU

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DC Motor Driver:

L298N Driver:

The L298N is a dual H-bridge motor driver that simultaneously controls the speed and direction of two DC motors. This module can drive DC motors with voltages from 5 to 35V and peak currents up to 2 A. Let's take a closer look at the pinout of the L298N module to explain. The L298n motor driver module uses H-bridge technology to control the direction of rotation of a DC motor. In this technique, an H-bridge changes the polarity of the DC motor's input voltage to control the direction of rotation of the DC motor. TheL298N module is a high voltage, high current, dual full-bridge motor driver module for controlling DC and stepper motors. You can control both the speed and direction of rotation of the two DC motors. This module consists of a dual channel H-bridge motor driver IC L298. This module uses two techniques to control the speed and direction of a DC motor. These are the PWM that controls the speed and the H-bridge that controls the direction of rotation. These modules can control two DC motors or one stepper motor simultaneously.

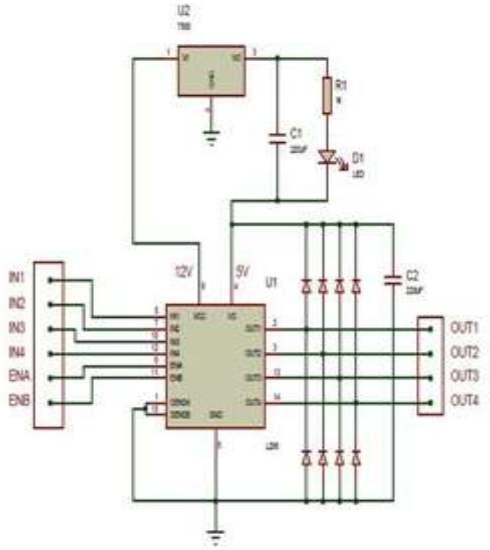

Fig 1.5 : Internal circuit diagram of L298N Motor

L298N Motor Driver IC

The L298 is a high voltage, high current dual full bridge motor driver IC. Accepts standard TTL logic levels (control logic) to control inductive loads such as relays, solenoids, DC and stepper motors. It is a 15 pin IC. According to the L298 datasheet, its operating voltage is +5 to +46V and the maximum allowable current it can draw from each output is 3A.

Fig 1.6: L298N

Features and Specifications:
Driver Model: L298N 2A
Driver Chip: Dual H-Bridge L298N **Motor Supply Voltage (Max):** 46V **Motor Supply Current (Max):** 2A **Logic Voltage:** 5V
Driver Voltage: 5-35V **Driver Current :**2A **Logic current:** 0-36mA**Max power (W):** 25W
Current measurement for each motor Heat sink for better performance

BLYNK APPLICATION

Blynk is an IoT platform for iOS or Android smartphones that is used to control Arduino, Raspberry Pi and NodeMCU via the Internet. This application is used to create a graphical interface or human machine interface (HMI) by compiling and providing the appropriate address on the available widgets. Blynk was designed for the Internet of Things. It can control hardware remotely, it can display sensor data, it can store data, visualize it and do many other cool things.

There are three major components in the platform:
Blynk App - allows to you create amazing interfaces for your projects using various widgets we provide.
Blynk Server - responsible for all the communications between the smartphone and hardware. You can use our Blynk Cloud or run your private Blynk server locally. It's open-source, could easily handle thousands of devices and can even be launched on a Raspberry Pi.
Blynk Libraries - for all the popular hardware platforms - enable communication with the server and process all the incoming and outcoming commands.
Now imagine: every time you press a Button in the Blynk app, the message travels to space the Blynk Cloud, where it magically finds its way to your

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hardware. It works the same in the opposite direction and everything happens in a blynk of an eye.

WORKING PRINCIPLE OF BLYNK APPLICATION

Blynk is using the concept of "energy" to implement a pricing system for its widgets. In the Cloud server you may start a new project with 1000 energy units. An LED widget may cost you 200 units, leaving 800 units for other widgets. On a private server, you can set your own energy limits. You can configure your server to allocate 100,000 energy units to new users. It's totally up to you. Of course, you can purchase additional energy units to spent on the Cloud Blynk server, and this is a legitimate consideration especially if the users of your Blynk project are distributed around the world (therefore latency is not a big issue). However, a private Blynk server gives you additional benefits:

- Essentially unlimited energy units, so that you can build any Blynk application you can think of.
- Minimal latency, which is useful when your application is used in a limited geographic area and responsiveness is important.
- Total control of your data. You can keep your own backups of your private server, migrate your server to a new host, implement whichever security mechanisms you wish, and finely control your users.

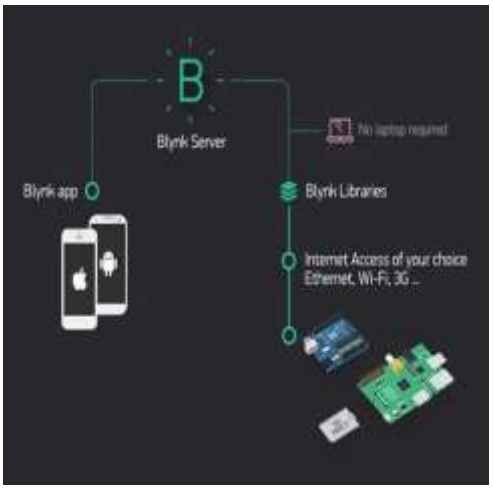

Fig 1.7 : Blynk Application

BLOCK DIAGRAM:

The proposed model uses battery for the power supply. DC motors placed in the wheels for themovement. The dropping of seeds from the seed drum and the seed sowing process takes place without wasting seeds. The also has an ultrasonic sensor mounted on the front to properly navigate the seed sowing across the field. After completing each row, the seed sowing should turn around and start seeding on the second row. This is done using the sensor and controlled by an application which detects the end of the line. Traditionally, seedingis only done in one row and then has to be manually moved to the second row. Adding sensors to this proposed model reduces human intervention. Control is done by a Node MCU connected to the sensor. The DC motor is driven by an L298N driver circuit. sowing technology is so efficient that less time is consumed and the manpower is gradually reduced. The GSM module is used to communicate with mobile and the seed sowing system. Then the servo motor is used to opening and closing of the hopper in the seed sowing system. The sowing depth is accurate and this does not tend to slow or speed up the growth of the plants and the yield is the same. Seeds are sown in precise rows, which results in precise sowing and very good food and economic growth. The complete system is environmentally friendly as the DC motor used here is powered by a Rechargeable battery.

Application, Advantage, Disadvantage:
Application

1. Agriculture The construction of the furrow opener of the seed drill varies according tothe soil conditions in each region. Most seed and fertilizer ballers are equipped with a pointed

tool to create a narrow slot in the ground for seed placement.

2. Develop a seeding robot that can be controlled by IoT to sow seeds in the desired position, helping farmers save time and money. It is a machine that performs work such as sowing seeds for small-scale farmers.
3. Gardening Seeds are scattered on the ground, causing seed loss and damage. Seeds are expensive and not affordable for farmers, so seeds must be properly planted in thesoil.
4. It can be use for small scale farming.
5. It can be use in low water level places.

Advantage

1. Reduce the manual work Anyone that has ever had the task of relocating a fixed conveyor system knows that this can be a cumbersome undertaking. Through the use of this seed sowing system can be quickly reprogrammed to change path or operation, New directions, tasks, and work cells can be created almost instantaneously without the need for physical equipment installation.
2. Labor requirement reduces Optimization of transport flows in accordance with vehicle fleet, traffic and missions. Work flows distributed dynamically between the same
3. Increased planting efficiency and Increased yield and crop safety.
4. Increased seeding speed.
5. The seeding process can be completed quickly with a limited number of farm workers.

Disadvantage

1. Electronics component cannot sustain the vibrations and the high temperature.
2. It is not suitable for high water level places.
3. Accuracy should be reduces due to clod and mud.

III. CONCLUSION:

The main focus of this system to sowing the seeds. The seeds are been sowed in a proper sequence which results in proper germination of seeds. Here the wastage of seeds is also been reduced to a greater extent. This system has been developed for the sowing of seeds to reduce the seed wastage. Here with the help of a the seeds sowing system are been dispensed in the soil in a proper sequence. The planting process like onion crop can implemented by using Seed Sowing system. This project will help the farmers to do the farming process efficiently. The project can be enhanced to any other kinds of crop such as fruits, paddy etc. The system can be designed with DC Motor with wheel. Hence, it can be applicable to the real time agricultural field.

Compliance with Ethical Standards:
Funding: This statement does not involve any funding.
Contact of interest: Mrs G.Preethi declares that she has no conflict of interest. R.Divyaprakash declares that he hos no conflict of interest. L.Vettrisilaiuhan declares that hehas no conflict of interest. S.Sanjay prabhu declares that he has no conflict of interest.
Ethical approval: This article does not contain any studies with animals performed by any of the authors.
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REFERENCES:

[1]. K. Amit Kumar and Vishal Parit, "Design and development of template row planter", Transnational Journal of Science and Technology, Vol. 3, No. 7, 2016.
[2]. Swati D. Sambare and S.S. Belasare, "Use of robotics technology for seed sowing in Agriculture", International Journal of Electrical and Data Communication, Vol. 2, No.1, 2016
[3]. Rashmi A Pandhare and Tejas Padathare, "Design and development of automatic operated seed sowing machine", International Journal of Recent and Innovation Trend in Computing and Communication, Vol. 5, No. 2, 2017.
[4]. B. Yogesh Ramdas, "Green growth management by using arm controller", International Journal of Engineering Research and Applications, Vol. 4, No. 3, pp. 360-363, March 2014.
[5]. Divya C. H., Ramakrishna, H. and Praveena Gowda (2013), "Seeding and fertilization using an automated robot", International journal of current research vol.5.
[6]. N. Suma, S.R. Samson, S. Saranya, G. Shanmugapriya, R. Subhashri, IOT Based Smart Agriculture Monitoring System, International Journal on Recent and Innovation Trends in Computing and Communication, 2017, 2:177–181.
[7]. L. Syafa'Ah, A.E. Minarno, F.D.S. Sumadi, D.A.P. Rahayu. "ESP 8266 for Control and Monitoring in Smart Home Application. Proceedings" International

Conference on Computer Science, Information Technology, and Electrical Engineering, 2019, 1:123-128.

[8]. S. Thakare, P.H. Bhagat. Arduino-Based Smart Irrigation Using Sensors and ESP8266 WiFi Module. Proceedings of the 2nd International Conference on Intelligent Computing and Control Systems, 2019, 1085–1089.

[9]. D.S. Rahul, S.K. Sudarshan, K. Meghana, K.N. Nandan, R. Kirthana, P. Sure. IoT based solar powered Agribot for irrigation and farm monitoring: Agribot for irrigation and farm monitoring. Proceedings of the 2nd International Conference on Inventive Systems and Control, 2018, 826–831.