IoT Based Smart Agriculture and Automatic Seed Sowing Machine

Mr.M.Arun[1], A. Avinash raj [2], K.Surya kumar[3], E.Yuvaraj[4]
[1]AssistantProfessor, Dept of Mechanical Engineering
[2, 3, 4]Dept of Mechanical Engineering
[1, 2, 3, 4] Dr. Mahalingam College of engineering and technology

Abstract- *In today's date entire areas are moving to the speedy growth by means of many innovative technologies. Of all these extents, agriculture is also one of them. In order to meet the aggregate order of food, farmers have to contrivance progressive methods so that the soil texture is not affected and the whole food production is improved. Hence, in this project we aim at designing and fabricating a solar operated seed sprayer mechanism. Seed sowing procedure is typically passed out by humans using manual power. In this solar seed sprayer machine, seed in a hopper becomes sprayed by means of fan or blower straight to the land without any manual work. Using this procedure, the seeds are fed in the land over the time of plough. The main advantage of consuming this method is that, it comforts the time of seed to land and reduces human energies. In this solar agriculture sprayer solar panel is used as power foundation which is secondhand to run the fan and thus does not need any further power supply. This advanced mechanical project of seed sowing kit can exclude further time for sowing procedure and also it eases a lot of labour cost. This solar agro sprayer project is suitable for minor scale farmers.*

Keywords- IOT; Seed Sowing; Smart Agriculture; land.

I. INTRODUCTION

In some regions of Southern India, agriculture has existed since the Indus Valley Civilization period. India presently positions second internationally in terms of farm productivity. In a range of fields, such as industrial, medical, and military applications, specialized vehicles are crucial. The agricultural sector's special vehicle business is cumulative in productivity. Some of the main problems facing Indian agriculture are raising input costs, a lack of expert workers, absence of water and crop observing. To address these difficulties mechanization machineries were castoff in agriculture. Agriculture computerization may enable farmers to exert less effort. Vehicles are being created for the weeding, seeding, levelling, and water spraying procedures.

II. LITERATURESURVEY

1) According to M.V. Achutha [1], the design and analysis of a multipurpose farm machine that can carry out tasks for small-scale farmers without requiring a significant investment and can be operated manually without requiring an external source of energy, like sowing, inter-cultivating, and spraying. Amit Kumar
2) Mishra [2] here the author has recommended a development of a versatile agricultural machine which is easy in construction and is reasonable as it turns on solar energy.
3) By using specific instances, D.A. Mada [5] tries to demonstrate the value of mechanization in agriculture in this work. The article came to the conclusion that pre- and post-harvesting operations require multipurpose single axel vehicles.

III. RESEARCH METHODOLOGY

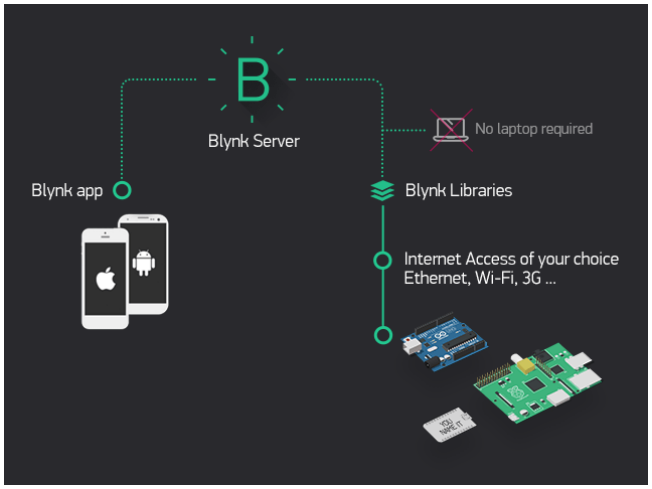
Agriculture in India has a extended past dating back to ten thousand years. Today, India positions2nd international in farm production. Agriculture and allied divisions alike forestry, logging and fishing accounted for 16.6% of the GDP in 2007, employed 60% of the total workforce and despite a stable decay of its share in the GDP, is still the major economic division and plays a important role in the complete socio-economic growth of India.

India is the main maker in the world of milk, ginger, turmeric, cashew nuts, black pepper, coconuts and tea. It also has the world's major cattle population (281 million). It is the next biggest maker of wheat, rice, sugar, groundnut and inland fish. It is the third main maker of tobacco. India accounts for 10% of the world fruit manufacture with initial rank in the production of banana and sapota. India's population is increasing quicker than its capability to harvest rice and wheat.

IV. WORKING PRINCIPLE

ESP8266 WIFI MODULE

Blynk Libraries - Connect to the server and manage everything received and outward guidelines for all widely used hardware platforms. Consider a scenario in which a message is delivered to the Blynk Cloud each time you click the Button in the Blynk app and then appears on your device by some strange coincidence. Going the other way, the procedure is identical, and it all happens in a split second.



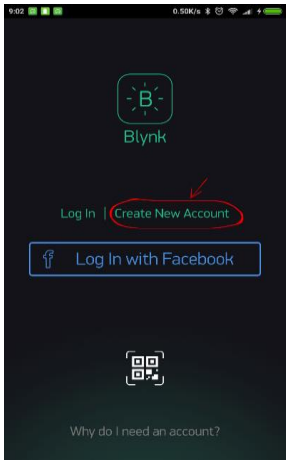
BLYNK APPLICATION

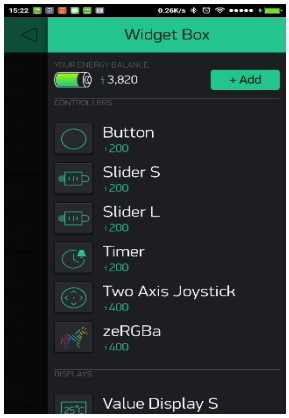
The Internet of Things inspired the creation of Blynk. It has some improbable functions, plus data storage, data visualization remote hardware switch and sensor data arrangement.

There are leading components in the platform:

Blynk App - permits you to use the many widgets, to generate stunning lines for projects.

Blynk Server - in control of overseeing all hardware-to-smartphone communications. You can cloud your private Blynk server locally. Its open-source design allows it to run even on a Raspberry Pi and is easily able to manage thousands of devices.





This project's plan includes a DC motor, IOT APP (remote), Driver circuit with relay, and Agriculture model. The seed dispensing rover and the mobile device were connected via the Blynk app. The Blynk app connects to Node MCU. When a user hits a switch that is linked to a hotspot through the internet, a signal is delivered to the Node MCU. The motor is controlled by a direct power supply or a battery. Each wheel has a separate motor in this situation. Which separates the placement of the two front and two rear wheels in the primary rigid body frame? There was a separate motor for each wheel. In order to regulate the direction of the motor, which is connected to an IOT app? When the start key is depressed, the motor moves ahead, and when the stop key is depressed, the motor immediately comes to a halt. The remote's forward and reverse buttons are utilized to control the motor in the necessary directions. When the seed spray key is pressed, the motor moves ahead, and when the stop key is hit, the motor immediately comes to a halt. IoT app used to wirelessly communicate and control all operations.

V. APPLICATION

This can be recycled by farmers such they evade diesel sprayers and with less maintenance cost, they can use

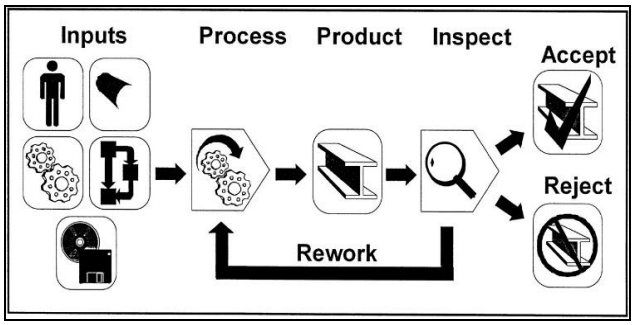
- Energy efficient. The machine could be powered by renewable energy sources such as solar panels to reduce operating costs and carbon footprint.
- Real time monitoring and control. The machine could be controlled to a cloud-based system that can be accessed via mobile app or web interface. This enables farmers to monitor the machine's progress in real-tie, adjust settings remotely and alert any issues arise.
- Automated navigation. The machine could be equipped with GPD and other sensors to navigate automatically in the field. This can save time and labor cost as farmers don't need to guide manually the machine.

In general, an Internet of Things (IoT) based seed sowing system can increase agricultural production, decrease labor costs, and improve efficiency and accuracy of seed planting. Ultimately helping the agriculture sector is more profitable and sustainable.

VI. FINAL OUTPUT

A continuing investigation, test, measurement, and comparison of materials or things constitute a critical assessment. The amount, quality, and compliance to any applicable or declared standards of the material are determined by an inspection. Getting inspection, in-process inspection, and final inspection are the three types of inspection that are often utilized. The goal of quality control inspection which is based on the opinion that "Quality cannot be inspected into a product," is to confirm and verify the variance data rather than to distinguish between good and bad products.

A manufacturing process known as an assembly line involves adding components successively as the semi-finished assembly changes from work station to work station, creating the concluding assembly. Assembling a finished product can be done considerably more rapidly and with a lot less effort than if workers had to move the parts to a fixed object. This is done by automatically transporting the components to the assembly task and the partially completed assembly after one work station to another.



VII. CONCLUSION

Our endeavor was a notable accomplishment in the realm of agriculture. The multi-purpose agricultural mechanism is highly helpful for the workers since it permits them to perform several responsibilities with just one machine. Practically, seed planting and ploughing may be done with our multipurpose agriculture machine. Every component is positioned so that it can be reconfigured to carry out the required task at every stage of agriculture. To boost the yield and lower labor costs, our team has effectively blended numerous concepts from various mechanical engineering domains and agricultural knowledge. The concept of multipurpose equipment as a whole is novel, patented, and workable in practical applications. The vehicle can be equipped with additional functions a grass cutter and numerous more machines for different tasks. Additionally, an engine can be employed to power the machinery, reducing the workload. Depending on the type of land, the tyre can be adjusted. Because each plough tool tip is created separately, just the tool tip needs to be replaced in the event of a break. For convenience, a steering system can be implemented.

VIII. FUTURE SCOPE

By expanding the equipment asset and quality to its highest, we can have versatile agricultural equipment for its life time practice. By providing gear arrangements, hydraulics and some slight changes the equipment can also be prepared as tractor driven kit.

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