Smart Agriculture Using IOT with Raspberry PI

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Abstract. *To improve traditional methods in the agriculture sector, there have been many systems developed using advanced techniques. IoT plays an important role in the agriculture Industry. Smart Agriculture helps to increase crop yield by reducing wastage and effective usage of fertilizer. Smart techniques make use of wireless sensor nodes to monitor the agricultural environment. Monitoring the field not only allows the user to reduce human effort but also allows the user to see accurate changes in it. This project aims to describe smart agriculture using IOT technologies. In India, most people are doing work-related agriculture directly or indirectly. The economy of India is mostly affected by agriculture-related activities. To check the water level of the well, the farmer has to go to a farm and start a water pump.*

1. INTRODUCTION

India is one of the largest freshwater users in the world, and our country uses a large amount of freshwater than other countries. There is a large amount of water used in the agriculture field rather than in the domestic and industrial sectors. 65% of total water is contributed as groundwater. Today water has become one of the most important sources on the earth and is most of used in the agriculturefield. In the current scenario, a major problem that the world is facing is undergoing groundwater table and water is needed in large quantities in agriculture. So there is a need for a sustainable system. At present, everywhere irrigation is performed manually. The enhancement in the science sector has removed lots of things that previously looked impossible.In the current situation, the advancement of mobiles, laptops, automobiles, and"smart" science and technology has expanded the market and has set up new standards.

2. LITERATURE REVIEW

A writing study frames the premise on which a task can be constructed or created. It frames the center to which thoughts can be added and created into an extensive system, which will have the capacity to cover the insufficiencies of a portion of the current system. This part manages the information and data aggregated after alluding to numerous books, articles, and specialized papers composed by surely understood writers.Connecting Agriculture to the Internet of Things through Sensor Networks Internet of Things (IoT), getting real-world objects connected, will change the ways that organize, obtain and consume information radically. Through sensor networks, agriculture can be connected to the IOT, which allows us to create connections among agronomists, farmers, and crops regardless of their geographical differences. With the help of the connections, the agronomists will have a better understanding of crop growth models and farming practices will be improved as well.

3. PROPOSED METHOD

Soil moisture sensor which will sense moisture level. A Humidity Sensor is to measure the environment's humidity and converts the data into a corresponding electrical signal that can be used for different purposes. A rain sensor is a small device set up in an open area that's exposed to the rain, and it works by interrupting the watering cycle of the automatic irrigation controller once a predetermined amount of rain has fallen it is connected to the raspberry

pi. Raspberry pi it will act as the microprocessor. According to the sensor's threshold value, the Relay will act as a switch the pump will Automatically ON/OF. The threshold values will display on the LCD.
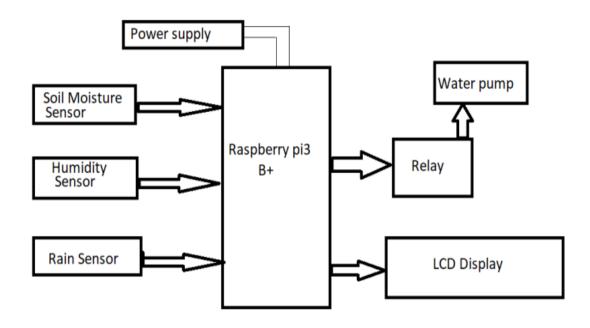

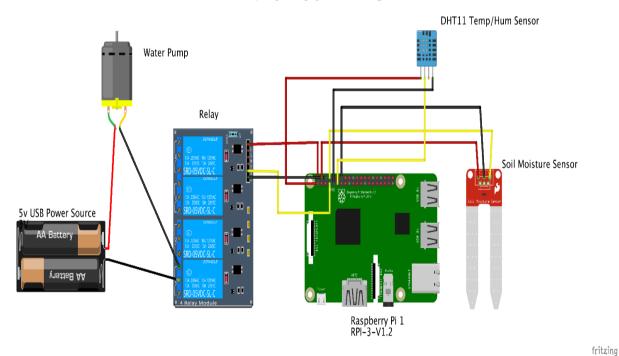**FIGURE.1** Block diagram of smart agriculture

4. CIRCUIT DIAGRAM

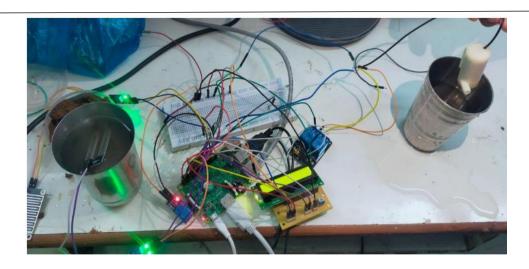**FIGURE.2**. Prototyping Model

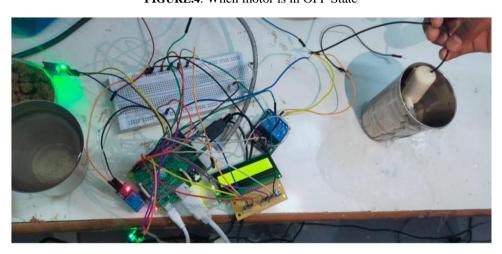## 5. RESULT

FIGURE.4. When motor is in OFF State

FIGURE.4. When motor is in OFF State

6. CONCLUSION

Overall, the adoption of smart agriculture using IoT with Raspberry Pi holds great promise for the agricultural sector. It empowers farmers with data-driven decision-making, resource optimization, and improved sustainability. As technology continues to advance, we can expect further innovations in this field, enabling even more efficient and environmentally friendly farming practices..

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