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IOT Using Water Optimization and Crop Protection

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ABSTRACT **- India's primary industry is agriculture. The amount of water wasted in agriculture will be decreased with the use of sensors. Sensors will be used to provide the crop with the water it needs. The crop's roots contain three soil moisture sensors that have been set to three distinct Levels. When the farm's soil is dry. When soil moisture sensor detected, this data will appear on the display and be viewable on the farmer's show through thing Speck. The primary microcontroller in this system is an Arduino Mega. The data will be gathered by the node MCU in the Arduino Mega and sent to Thing Speck, where it will be displayed. Sensors will automatically cut off more water as needed by crops. Large output declines have been addressed by the farm field's usage of buzzer and PIR in defences utilising animal attack systems. The PIR will also look for movement there. Animals are the farmers' number one enemy because they devour their crops,** All **farms can afford to use this technique, and it also saves money, time, and labour**

I. INTRODUCTION

India is mostly an agricultural country. Agriculture on a large scale is practised. The health of the economy depends on it. The amount of irrigation water waste cannot be totally reduced by using different farming techniques. The development of the intelligent irrigation system involved researching and studying the agricultural ground's three various levels of soil moisture.

The expansion of agriculture is crucial for feeding the world's expanding population. India is currently experiencing serious water issues. crop production employs water resources that are scarce. The main objective is to boost agricultural output. The data from the soil moisture sensor 2 will be shown on the display and will appear on the farmer's show through Speck.

The motor pump will turn on when the soil moisture sensor number 3 detects wetness. Once in a while, this information will emerge on the farmer's show through Speck and be visible on the display after the motor pump is started, when the water descends from the top, and after the soil moisture sensor 1 is detected. a second soil moisture sensor On the display, this data will be detectable and displayed on the farmer's show through Speck. The motor pump will turn on when the soil moisture sensor number 3 detects wetness. Without manual input, the system will not function. When the dirt is dry, the motor will start. When the soil is moist, the automated motor will shut off. Farmers may view all of these activities online at Things Speck. Also shown will

be the temperature. The temperature sensor is used to gauge the temperature close to the crop.
Power supply and generation are significant issues. This initiative will cut back on energy production. reducing animal damage to crops. The yield potential of the crop can be boosted if it is protected from animals. The yield potential of the crop can be boosted if it is protected from animals The PIR will also look for movement there. Animals are the farmers' number one enemy because they devour their crops, which results in low yield output and financial loss to the landowner. We may employ technology, such as Things Speck, to solve this issue by giving the form owner complete Things Speck information. this technique aids farmers. By eliminating the animal from its shape, this technique aids farmers. When motion is detected, this system employs several PIR to turn on the buzzer. When the buzzer is turned on, the animals will depart as soon as it sounds. On the LCD, every sensor event will be visible. soil moisture 3 It will be able to gauge how deeply the water has permeated the crop's roots if it is inserted into the crop's roots. The motor pump will turn on when automation number 3 is engaged. The motor pump will shut down if Soil Moisture 3 is not on.

The suggested system optimises and safeguards the water supply. The humidity sensor, soil moisture sensor, temperature sensor, and PIR sensor are the typical components of an automated irrigation system. Every sensor aids in providing the precise value required to water the field in real time. The system includes a node MCU module that aids in sending data to the form owner.

II. DESCRIPTION OF PROPOSED WORK

A soil moisture detection module and a water level have been integrated in order to make irrigation of crops easier and prevent water waste, and their combined data are used to determine whether irrigation is permitted. The wetness of the soil is initially taken into consideration. soil moisture checked if the amount of water in the soil is less than what is necessary for the plant. Checks are made on the temperature and humidity with the intention of watering the crops. The plant must be watered and the water level in the tank or well must be checked if all the conditions do not meet the predetermined value that is sufficient for the plant. In order to safeguard the crops from wild animals, Data collection and transmission to the Speck and display are handled by the Node MCU. To safeguard the crops from wild animals, the PIR sensor is used to detect animals in the field. If an animal is discovered, the PIR sensor will go off and produce a loud buzzer sound, which will cause the animal to leave the farm. To persuade the farmer, the LCD display will show the temperature, humidity, and moisture content of the soil.

III. BLOCK DIAGRAM

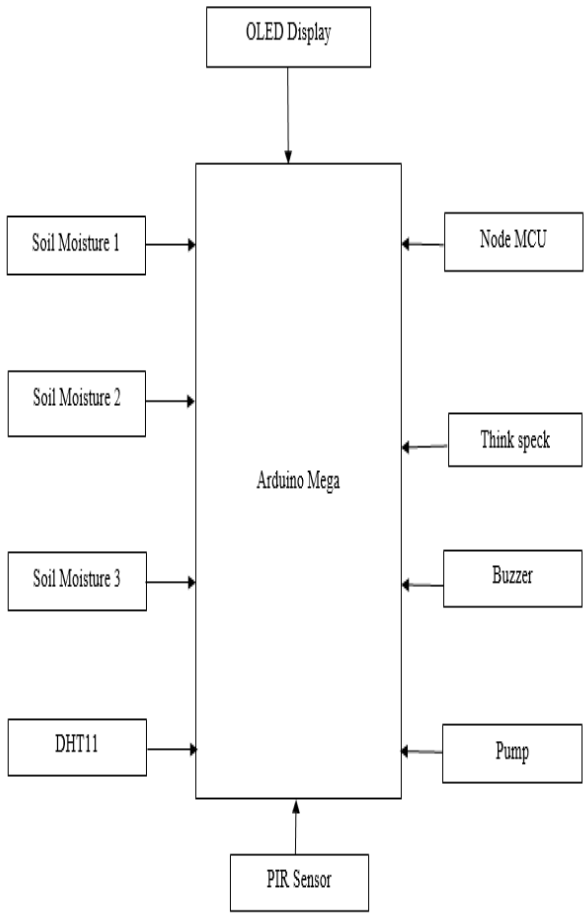


Fig.1. Block Diagram

IV. RESULT

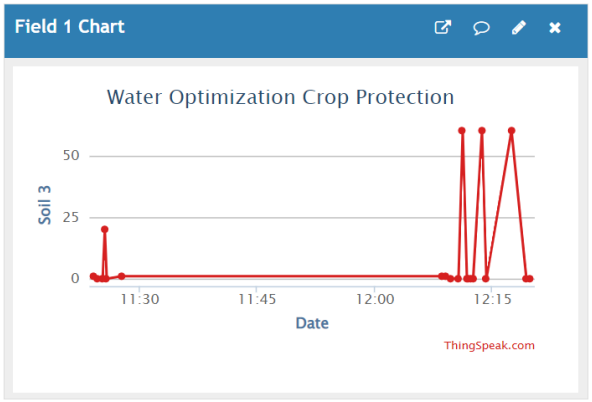


Fig2. Soil moisture 3

The output of soil 3 displays the date, time, and soil condition.

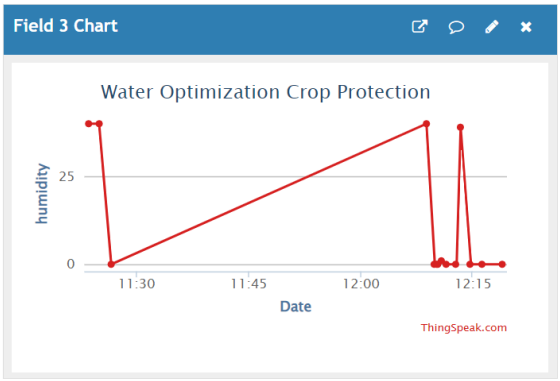


Fig3. Humidity sensor output

The date, time, and motion detection are displayed on the humidity sensor's output.

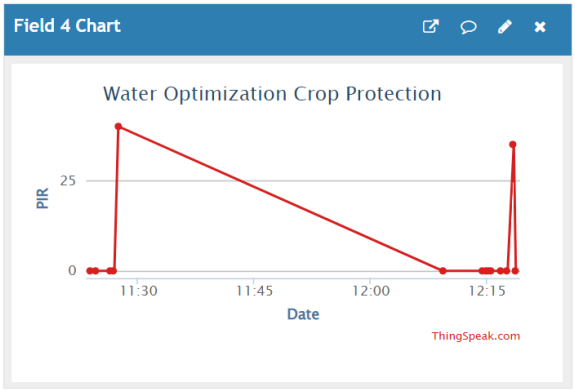


Fig4. Pir sensor output

The output of the pir sensor shows the time, date, and temperature.

V. FUTURE SCOPE

The addition of any visual recognition sensor powered by node MCU based can enable the model, if it is to be deployed in a large-scale farming area, to independently recognize the crops and retrieve the necessary data from a centralized database. The model can be produced in large quantities and used on numerous acres of farmland owned by the same farmer to calculate statistics for each change in soil moisture and humidity levels as well as an event log of each instruction carried out by the Node MCU using Big Data Analytics.

In order to evaluate a specific plot of land and its output based on a comparison between its yield and the amount of nurturing done by the model with the amount of instructions executed as the variable, the data gathered from hundreds of acres can all be sorted and organised in a simpler and easier growth and production of farmlands can also be used to classify lands according to their efficiency, and the lower-yielding fields can be appropriately managed or even utilised for a different crop entirely depending on their conditions. Depending on its intended purpose, this model could evolve in a number of different ways. This system would serve as a solid foundation upon which to expand as time goes on as technology improves farming and agricultural practises all around the world.

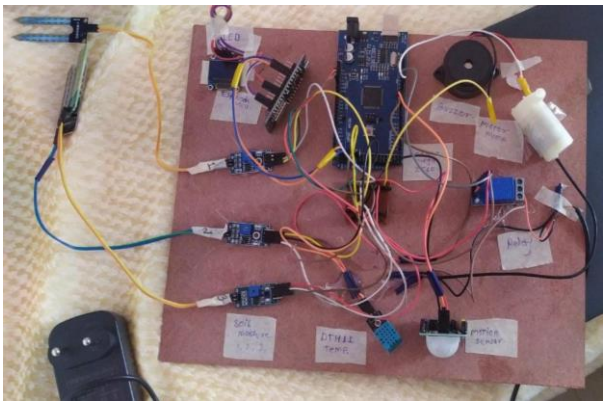
VI. CONCLUSION

1) IOT will improve intelligent farming. The technology can monitor and manage the irrigation system by forecasting humidity and soil moisture levels. IOT helps improve time management, water management, crop monitoring, soil management, and pesticide and insecticide control in several areas of farming. Additionally, this approach reduces the amount of labour required by humans,

streamlines farming methods, and promotes smart farming. In addition to the benefits this system offers, smart farming can, with only a single touch and no work, aid in expanding the farmer's market.

2) Together, the internet of things and cloud computing create a system that effectively controls the agriculture sector The user will control the device in accordance with that, and the actuator will accomplish this. This resource enables the farmer to enhance cultivation in a way that the plants require.
3) Thus, the proposed system deals with the irrigation system in a smart way using the Internet of Things (IoT), The work can be extended in such a way that it detects plant disease and crop theft.

VII. ACTUAL PROJECT



VIII. REFERENCES

[1] Jeevan Nagendra Kumar, V. Spandana, V.S. Vaishnavi, K. Neha, and V.G.R.R. Devi. Crop yield prediction using supervised machine learning in the agricultural sector.

[2]2020, "Crop Yield Analysis Using Machine Learning Algorithms," by Kumar Yelamarathi, Venkata Prasanth Yangmbaka, and Fatin Farhan Haque.

[3] Real-Time Monitoring of Agricultural Land with Crop Prediction and Animal Intrusion Prevention Using Internet of Things and Machine Learning at Edge, R. Nikhil, B.S. Anisha, and Ramakanth Kumar P., 2020.