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IOT BASED SMART AGRICULTURAL PLANT WITH AI

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ABSTRACT:

Farmers used to determine the soil's readiness and cast doubts in order to determine the yield.They ig nored the stickiness, water level, and atmospheric condition, all of which were challenging for farmers to deal with over time.The Internet of Things (IOT) is revolutionising the agricultural industry by involving farmers through a variety of approaches, such as precise and practical cultivation to address challenges in the field.
IOT modernization facilitates the collection of data on environmental factors such as temperature, humidity, a nd soil production. Harvest online assessment allows for the disclosure of wild plants. level of water, cultivation area, animal break in to the field, trim turn of events, agriculture. IOT use farmers interaction to get related with his living arrangement from any place and at whatever point. Distant sensor structures are used for watching the residence conditions and smaller scope controllers are used to control and motorize the field. To see distantly the conditions as picture and video, far off cameras have been utilized. IOT improvement can decrease the expense and update the efficiency of standard creating for farmers.

Keywords — Arduino board, Soil moisture sensor, lR sensor, Humidity sensor, Temperature sensor, WIFI module etc.

I. INTRODUCTION

Agriculture, one of the main industries in the world economy, has the fastestgrowing rates of IoT adoption.The world's population is expected to reach by 2050, giving the industry good cause to welcome advancements.It is hard to undervalue the significance of farm monitoring in light of these possibilities.It goes without saying that businesses who employ agriculture monitoring systems to meet the increasing demand for organic food goods will have a clear competitive advantage.Herbicides must be used on crops in order to protect and ensure both crop quantity and quality.
Herbicides are typically sprayed over entire fields since weeds are often geographically scattered in patches, e ven if there are weed-free sections. Overdrive of pesticides, on the contrary, poses patent economic and environmental hazards, prompting the adoption of European law for sustainable use of pesticides, which includes guidelines for reducing these substances . In this way, patch spraying has made it possible to apply SSWM based on weed coverage. In this regard, remote sensing is shown to greatly enhance the reliability of

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SSWM, considering that the spectral and spatial resolutions of the apparatus are sufficient to detect changes in spectral reflectance.On the other hand, crop and weed appearances are strikingly similar in the early stages of growth.To overcome this, previous studies have mapped weeds at late growth phases (such as flowering) using piloted aircraft or Quick Bird satellite data.These methods cannot be employed for early detection, even with their restricted spatial resolution.Numerous studies have shown that unmanned aerial vehicles (UAVs) has sev eral advantages over airborne or satellite missions. These advantages include reduced costs, increased flexibilit y in scheduling flights, and the capacity to obtain ultra-high spatial resolution photographs.

Thus, UAVs are a potential instrument for multi-temporal study in early crop together with weed mapping , which is one of the conventional constraints of remote sensing technologies. In some recent works for precision agriculture, image analysis and machine learning are mostly used, and it is a mostly undeveloped area. In this regard, employing manually-defined rules to construct a weed management strategy with UAVs is a popular option. Nonetheless, expect that new image analysis, furthermore machine learning methods, will help remote sensing to a great amount. This type of technology has been successful with on-ground photographs, which encourages more research in this area. Proximal sensing, on the other hand, has some drawbacks that make it difficult to employ in practice (computational resource constraints because it is frequently done in real-time, equipment vibration, variations in brightness, and so on) . In contrast, using remote sensing, an analysis should be done before broadcasting, except it could also be effective to predict the required amount of herbicide and enhance field path that broadcasting equipment should take. The most common challenges with UAVs have now gone to overcome, and the cost of this technique is now acceptable, making it ready for implementation.

II. METHODOLOGY

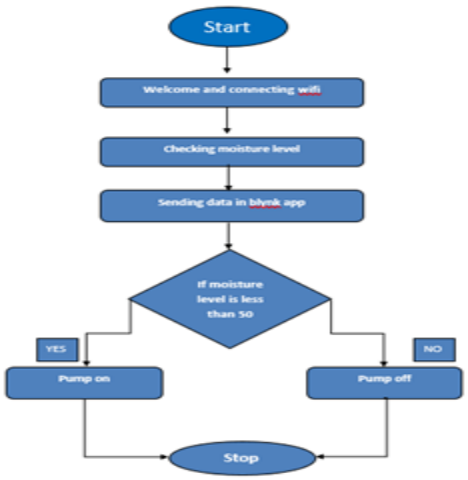

Fig.1- Methodology

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algorithm :

1. Starting of project.
2. Moisture sensor senses the humidity and temperature present in the system.
3. Input of sensor is sense by the controller and according the output is turn on.
4. Relay turn on
5. Water pump on.

III. Hardware Implementation

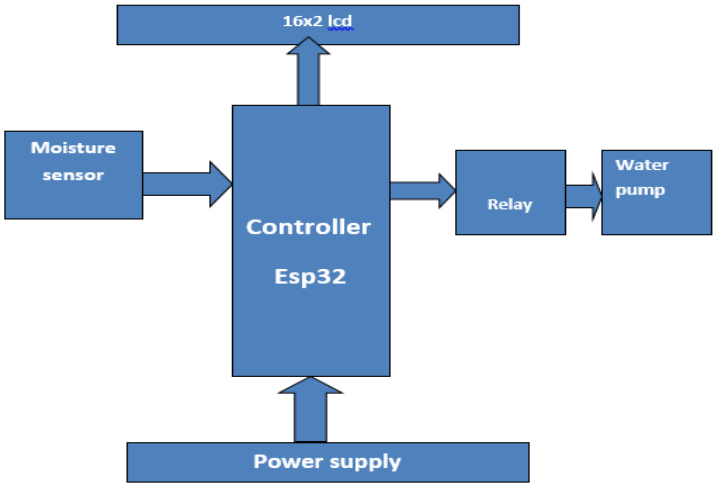

Fig. 2- Hardware Implementation

1) *MICRO-CONTROLLER UNIT*: The heart of the whole project is the Micro-controller unit. For this project the ESP32 Micro-controller was used. It is a low power general purpose micro-controller with good processing speed, small physical dimension, that is durable and cheap.it having in built wifi and Bluetooth.
In above diagram as we see that the all the components is communicate with the esp32 microcontroller it is the heart of our system and hence the all the devices input and output is attached with the controller .the moisture is a device which has ability to sense both the moisture i.e humidity and temperature of environment .the overall system communicate with the controller which sense the input coming from the sensor and send this output to the relay to start the water pump so that desired parameter must be comes in controlling with the standard volues of crop requirement.
2) *LCD DISPLAY*: this is 16*2 display which shows the process output like ,humidity in air ,temperature and other parameter like water pump is ON or OFF.
3) *MOISTURE SENSOR :*We here using DHT11 as a moisture and temperature sensor.which is then senses the input from the environment and send the output according to the weather condition *THE POWER SUPPLY*

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UNIT: Now days, almost all electronic equipment includes a circuit that converts ac supply into dc supply. The part of equipment that converts ac into dc is called DC power supply. In general at the input of the power supply there is a power transformer. It is followed by a rectifier (a diode circuit) 1a smoothing filter and then by a voltage regulator circuit.

Here In our system we were design a 5v and 12v power supply for our electronic device .

4) *5V RELAY:* it is using for the switching purpose to turn on the water pump.
5) *WATER PUMP :* this is used for the to regulate the humidity and temperature of the environment.

IV. RESULT

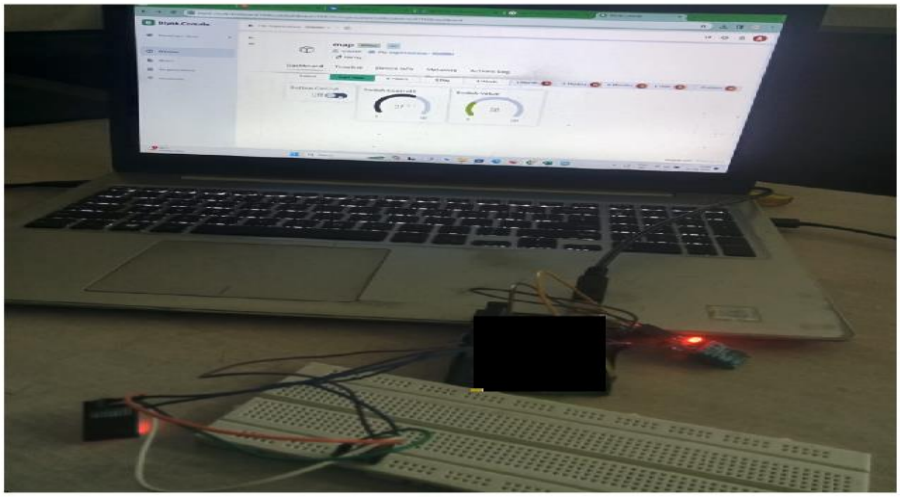

Fig. 3- Result

V. CONCLUSIONS

IoT improves soil management, crop monitoring, water management, time efficiency, and pesticide and insecticid control among other farming domains.Additionally, this approach reduces the need for human labour, streamline farming methods, and promotes intelligent farming.Society has benefited greatly from agriculture.We cannot ig nore its own advantages and disadvantages, though.In addition, the government is making every effort to support the expansion and advancement of agriculture; nevertheless, action must still be taken to mitigate adverse effects of this sector.Society has benefited greatly from agriculture.However, there are advantages and disadvantages to it that we cannot ignore. Although the government is making every effort to support the expansion and advancem ent of agriculture

VI. FUTURE SCOPE

The scope of farm management encompasses what crops, livestock or their combination that can be grown, what number of resources to use and how the various farm activities are going to be performed**.** Livestock and crop management are both a part of farm management. Smart farming technology offers businesses new ways to drive agricultural efficiency, and by doing so also reduces costs, and increases revenue.

REFERENCE

[1] Rawal, S. (2017). IOT based smart irrigation system. International Journal of Computer Applications, 159(8), 7-11.

[2] García, L., Parra, L., Jimenez, J. M., Lloret, J., & Lorenz, P. (2020). IoT-based smart irrigation systems: An overview on the recent trends on sensors and IoT systems for irrigation in precision agriculture. Sensors, 20(4), 1042.

[3] Nawandar, N. K., & Satpute, V. R. (2019). IoT based low cost and intelligent module for smart irrigation system. Computers and electronics in agriculture, 162, 979-990.

[4] Saraf, S. B., & Gawali, D. H. (2017, May). IoT based smart irrigation monitoring and controlling system. In 2017 2nd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT) (pp. 815-819). IEEE

[5] Shekhar ,Y. Dagur, E. Mishra, S. & Sankaranarayanan, S. (2017). Intelligent IoT based automated irrigation system. International Journal of Applied Engineering Research, 12(18), 7306-7320

[6] Pernapati, K. (2018, April). IoT based low cost smart irrigation system. In 2018 Second International Conference on Inventive Communication and Computational Technologies (ICICCT) (pp. 1312-1315). IEEE.