

LITERATURE REVIEW

- [1] Aishwarya Kagalkar (2017) , has proposed a paper titled “Smart Irrigation System “; The proposed Irrigation System in this paper aims at fulfilling water requirements of the crops, by monitoring the soil moisture and other environmental parameters. The system, which is based on the Internet of Things, logs the sensor data to the cloud and the farmer can monitor and control all the water pumps remotely over the internet using an Android application. It consists of a wireless sensor node with Arduino publishing sensor data to the cloud using Wi-Fi module and controlling the pump using relay. The paper presents an automated irrigation system providing precision agriculture and thus preventing water wastage.

Advantage : Farmers can control all water pumps remotely over the internet.
All the datas is stored in the cloud.

Disadvantage : The mobile app doesn't display the weather conditions in the field.

Hardware Details : Arduino , Relay ,Wifi module

Software Details : Android Application

- [2] Dr. S.Kanchana (2018) , has proposed a paper titled “IoT in Agriculture : Smart Farming”; In this project it mainly focuses on climatic conditions that can be programmed into a microcontroller-based gateway to control water quantity. The system is powered by electric power and it also focuses on remotely detecting soil quality, weather conditions, crop growth, and crop damage using wireless monitoring sensors with a cloud based platform.

Advantage : Increase quality of food product and decrease production cost and this also detects plant growth.

Disadvantage : This device doesn't have motor control features in mobile applications.

Hardware Details : Temperature sensor, moisture sensor

Software Details : Web application

- [3] K. Lakshmi Sudha, et.al(2016), has proposed a paper titled “Smart Precision Based Agriculture Using Sensors”;It focuses on developing devices and tools to manage, display and alert the users using the advantages of a wireless sensor network system. A smart system based on precision agriculture would pave the way to a new revolution in agriculture. The user can monitor the agriculture environment from a remote location, thus providing a greenhouse condition for the plants. India being an agro based economy.

Advantage : Wireless monitoring of field reduce man power, and it send the SMS to the farmer about environmental conditions.

Disadvantage : This project doesn't have mobile application for users to control the motor.

Hardware Details : Raspberry pi, Relay , Moisture sensor,

Software Details : Web Application.

- [4] Dr. Madhu Kumari and Anant Kumar Sah (2021) have proposed a paper titled “IoT Enabled Smart Irrigation System, Monitoring and Water Harvesting in Different Soils” ; In this paper, we are able to realize the cost effective and reliable device whose aim is to irrigate fields only when there is a need of water and to provide information. The farmers can monitor their farm’s field simply by just browsing the channel link of thing speak. The information is sent to the farmers by using a cloud website called thing speak. All the data is uploaded by the Wi-Fi module inbuilt in MICROCONTROLLER, to thing speak cloud database.

Advantage : The farmers can monitor their farm’s field using simply by just browsing the channel link of thing speak.

Disadvantage : This device cant check the Environmental weather conditions.

Hardware Details : NodeMICROCONTROLLER-8266, soil moisture sensor, DHT11 sensor, Relay, Arduino Uno.

Software Details : Thingspeak

- [5] Neha Kailash Nawandar and Vishal Satpute (2019) have proposed a paper titled “IoT based intelligent irrigation support system for smart farming applications “; A crop irrigation management system with sensor data fetch, transfer and operate functionalities is proposed to meet the expectations. The system comprises of: sensing, data processing and actuator sections, with a network of ambient temperature and humidity at a height and, soil moisture sensor placed at the root zone of the subject. The sensor generated data is compressed and then sent to an FTP server for processing. At the server, a 2-layer Neural Network with 4-Inputs, plant growth, temperature, humidity and soil moisture is used for decision making that controls water supply.

Advantage : Less expensive techniques by which the necessary help can be provided to the Farmers and production of the crop will be increased.

Disadvantage : It will automatically irrigate the field even if farmer didn't want to irrigate

Hardware Details : Soil moisture sensor, Arduino-UNO ATmega328p, IR sensor.

Software Details : Cloud Server.

- [6] CH Nishanthi,et.al(2021) have proposed a paper titled “ Smart Farming Using IOT”. In this project, we are able to realize with a compilation of data from sensors and modern electronic gadgets, the farmer can monitor agricultural fields. Smart Agriculture can forecast weather data, switching ON the pump motor and switching ON the bulb for artificial light due to less light intensity, for farms acknowledging the dampness of soil or moisture levels . It also focuses on detecting the pest and humans by their temperature using IR sensors and the sensors are interfaced to process module Arduino-UNO.

Advantage : A compilation of data from sensors and modern electronic gadgets, the farmers can monitor agricultural fields.

Disadvantage : This device can't detect if the water is in the well or not.

Hardware Details : Humidity sensor, Temperature sensor, Arduino UNO microcontroller, IR sensor, ESP8266 Wi-Fi Module.

Software Details : Arduino IDE, Web Application.

- [7] Pankaj Kumar Kashyap, et.al (2021) have proposed a paper titled ,”Towards Precision Agriculture: IoT-Enabled Intelligent Irrigation Systems Using Deep Learning Neural Network”; Precision irrigation is the solution to deliver bigger, better, and more profitable yields with fewer resources. Several machine learning-based irrigation models have been proposed to use water more efficiently.a deep learning neural network-based Internet of Things (IoT)-enabledintelligentirrigation system for precision agriculture (DLiSA). This is a feedback integrated system that keeps its functionality better in the weather of any region for any period of time. DLiSA utilizes a long short-term memory network (LSTM) to predict the volumetric soil moisture content for one day ahead, irrigation period, and spatial distribution of water required to feed the arable land.

Advantage : Water pumps contol remotely over the internet. All the datas is stored in the cloud.

Disadvantage : They are not well suited to unpredictable climates.

Hardware Details : Moisture sensor, Temperature sensor.

Software Details : Deep learning neural network-based Internet of Things (IoT)-enabledintelligentirrigation.

- [8] Dr. V.Vidya Devi and G. Meena Kumari (2014), have proposed a paper titled, “Real Time Automation and Monitoring System for Modernized Agriculture”; It proposes an idea about how an automated irrigation system was developed to optimize water use for agricultural crops. In addition, a gateway unit handles sensor information.

Advantage : Online interaction can be made with the farmers by the consultant to give them the knowledge and Partial Root Zone Drying Process can be implemented to save water at the maximum extent.

Disadvantage : This device does not measure water level in the well and motor control features to users is not given in the application.

Hardware Details : Temperature sensor, humidity sensor and ARM Microcontroller.

Software Details : Web Application.

Summary of Literature Review:

The above literatures used hardwares like Humidity sensor, Temperature sensor, Moisture sensor, Raspberry pi, Arduino UNO, Zigbee module and some other microcontrollers. Softwares used are Arduino IDE, Cloud, Think speak, Web Application and Android Application. Some of the projects they have used are Machine learning and Deep Learning Methods. In the majority of the papers they have taken sensor data and sent it to the cloud or any other platform and the farmers can control the motor pump from their Mobile App.

Proposed Work:

- IoT-based agriculture system helps the farmer in monitoring different parameters of his field like soil moisture, temperature, and humidity using some sensors.
- Farmers can monitor all the sensor parameters by using a web or mobile application even if the farmer is not near his field. Watering the crop is one of the important tasks for the farmers.
- They can make the decision whether to water the crop or postpone it by monitoring the sensor parameters and controlling the motor pumps from the mobile application itself.

References:

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- [6] CH Nishanthi , Dekonda Naveen , Chiramdasu Sai Ram , Kommineni Divya , Rachuri Ajay Kumar , “ Smart Farming Using IOT”, in International Journal of Innovative Research in Technology (IJIRT 151824), ISSN: 2349-6002, Volume 8 Issue 1 , June 2021.

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- [8] Dr. V.Vidya Devi and G. Meena Kumari, “Real Time Automation and Monitoring System for Modernized Agriculture”, in International Journal of Review and Research in Applied Sciences and Engineering (IJRRASE), ISSN: 2231 – 0061X, Vol 3 No.1, PP 7-12, March 2013.