**International Journal of Research Publication and Reviews**

Journal homepage: www.ijrpr.com ISSN 2582-7421

# Cloud Based Monitored System For Smart Agriculture With IOT

***Prof. S.A.Shete[1], Mr. Durvesh Kale[2], Mr. Ayan Manyar[3], Mr. Piyush Bansode[4], Mr. Om Palande[5]***

[1] Professor, Department of Information Technology, AISSMS Polytechnic, Pune, Maharashtra, India
[2,3,4,5] Student , Department of Information Technology, AISSMS Polytechnic, Pune, Maharashtra, India

**ABSTRACT:**

Agriculture has emerged as a fast-rising industry globally, thanks to the quick and unlimited increase in population. One of the biggest challenges in this sector is enhancing farming quality and efficiency without permanent physical monitoring, in order to keep pace with the growing demand for food. Another major concern is global warming. This paper suggests a smart farming framework based on the Internet of Things and clustering to solve similar challenges. Different sensors such as soil moisture, air pressure, rain sensor, and humidity are employed. Data is harvested in the cloud and automatically processed. Crop control, data harvesting, and analysis are automated by the system, enabling real-time monitoring and water management using IoT and sensor integration.

**KEYWORDS**: Agriculture, Smart Farming, Internet of Things (IoT), Population Growth, Climate Change

## Introduction

Air-Canvas: Real-Time Gesture Recognition is a cutting-edge project aimed to change the future of human-computer interaction with hands-free manipulation of a virtual whiteboard. Leveraging real-time gesture recognition via AI technology, users will be able to write, erase, and sketch on a digital canvas by a mere finger gesture. The technology renders input peripherals such as keyboards, mice, or styluses unnecessary, giving rise to an easier and natural interface.

Air-Canvas uses visual sensors to translate hand movements, making digital interaction smoother and more natural. Its uses extend across different fields, especially in education, where students and instructors can work together seamlessly in virtual classrooms. With the growing trend of online learning, remote collaboration, and digital design, Air-Canvas offers an interactive and accessible interface, enabling real-time interaction irrespective of location. Apart from education, Air-Canvas has broad applicability. In medicine, it offers no-contact communication in sterile settings. In the creative arts, hand gestures can be utilized for hands-free design by designers and artists. The technology is also applied in entertainment, where virtual and augmented reality can be improved.

With its versatility, Air-Canvas is defining the future of digital interaction through enhanced accessibility and efficiency. With progressive development, it will further extend its real-time AI-based gesture recognition across industries, especially within the UAE-based systems, to strengthen functionality, creativity, and collaboration. This initiative is a model for the possibilities of AI in revolutionizing day-to-day digital experiences to create a more interactive, inclusive, and touch-free digital world.

## Problem Statement

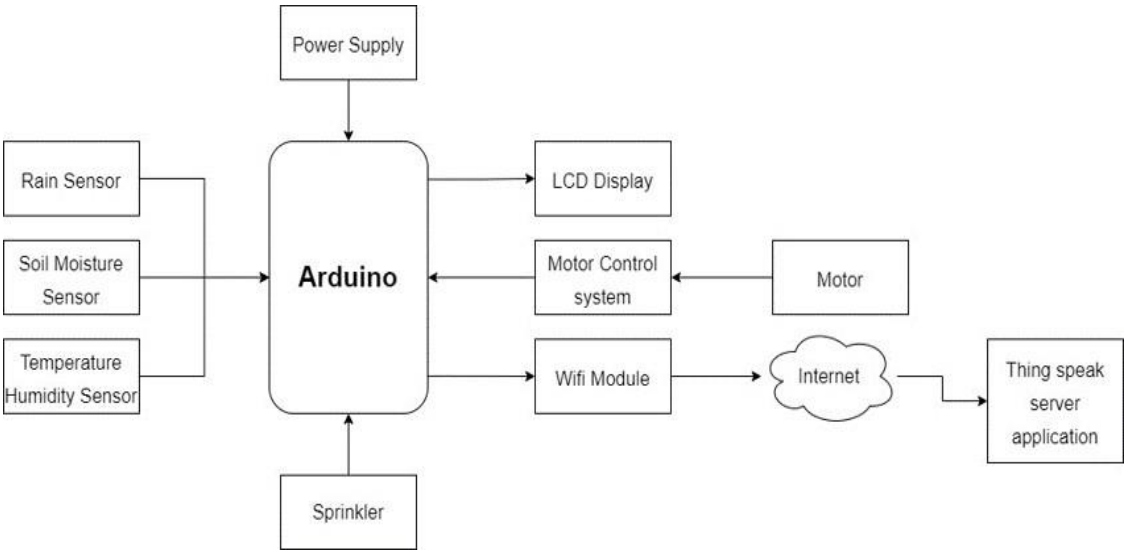
With growing global population and diminishing arable land, conventional farming methods fail to meet the demand for food. Inadequate monitoring in real time, inefficient use of resources, and climatic problems further affect productivity. This project solves these problems through the installation of an IoT-based intelligent farming system using sensors and automation to increase crop production, make resource utilization efficient, and provide sustainable agricultural use.

***Working Devices used:***

- Arduino UNO (328P)
- LCD I2C
- Wi-fi Module (ESP8266)
- Soil moisture
- Humidity Sensor (DHT11)
- Temprature sensor (LM35)
- Ph sensor

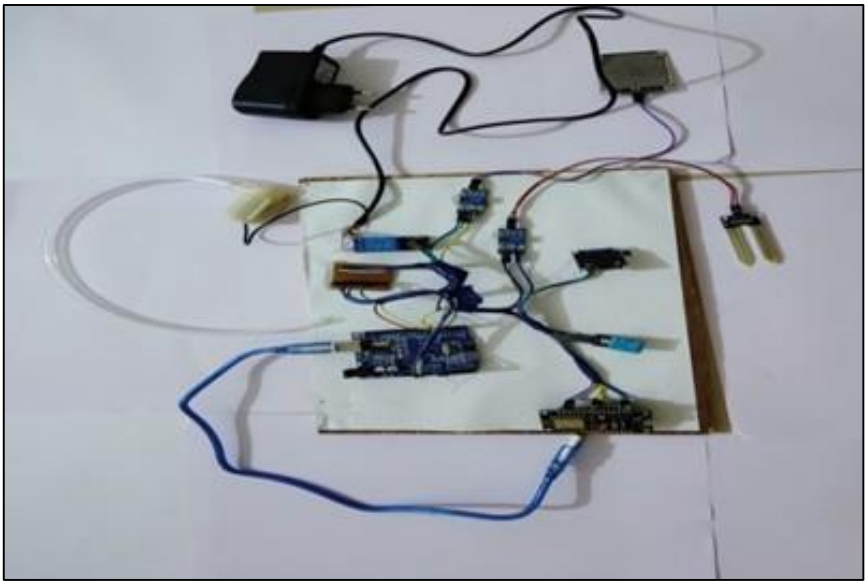
## Working of the Project:

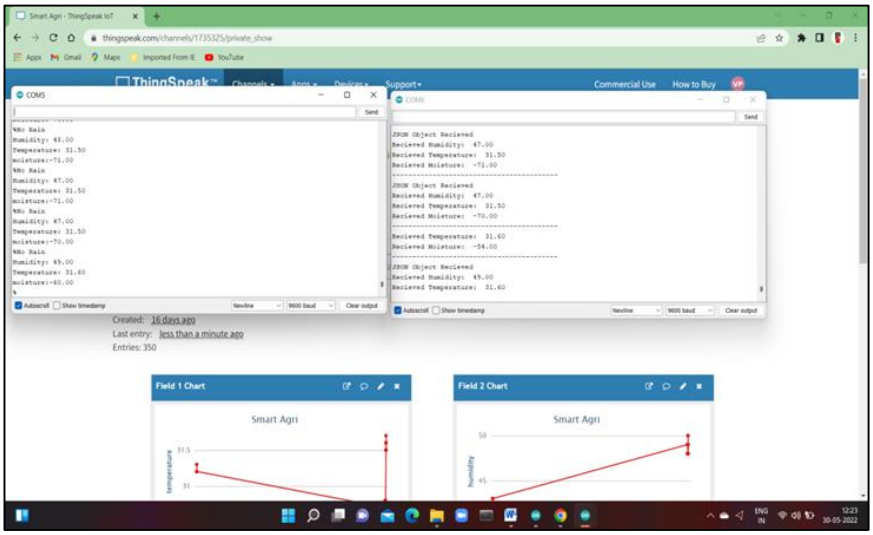
- Sensor data is collected from the field using DHT11, rain detection, humidity, and soil moisture sensors connected to an Arduino Uno.
- The collected data is wirelessly transmitted to a server using a Wi-Fi module for real-time monitoring.
- Data analysis helps determine field conditions, especially soil moisture levels.
- If soil moisture drops below a set threshold, the irrigation pump automatically turns ON.
- An automated irrigation system processes commands sent from a mobile or web application.
- The Arduino microcontroller receives these commands and controls the electrical switches accordingly.
- An Android-based mobile application is developed for easy monitoring and control.
- A web-based interface allows access to real-time field data and visuals from anywhere.
- The web app can communicate with the system using the Processing IDE.

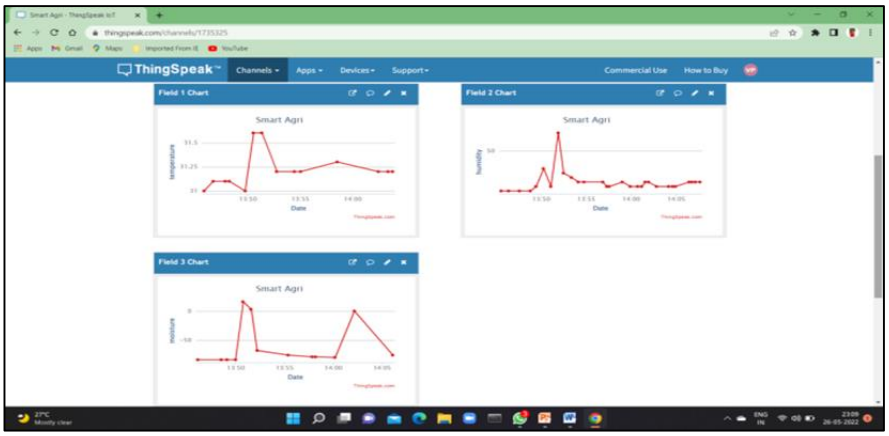



## BLOCK DIAGRAM

***Outputs And Result***






## Outcome:

The result of our Automated Irrigation System is a sensor-based intelligent solution that automates watering crops based on real-time environmental information. It utilizes sensors to track soil moisture, temperature, humidity, and rainfall, which are processed using an Arduino microcontroller. When the soil moisture goes below a level, the motor is automatically switched ON to water the field and OFF when sufficient levels are achieved. The system is internet connected through a Wi-Fi module so that remote control and monitoring is possible through mobile or web applications. Data also gets uploaded onto the ThingSpeak platform for immediate access and analysis. With options for manual overrides, LCD display for on-spot updates, and energy-efficient design, the system enables sustainable agriculture, saves water, and facilitates farmers to regulate irrigation easily and smartly.

## Conclusion

This smart irrigation system using Arduino improves agriculture efficiency by remotely controlling water usage through sensors such as rain, soil moisture, and humidity-temperature. The sprinklers will only be turned on when necessary, saving water while maintaining ideal soil conditions. Remote monitoring and analysis are done by sending real-time data to ThingSpeak using WiFi. Local feedback is achieved using an LCD, making the system easy to use. Overall, it provides a cost-effective, scalable option that advocates sustainable agriculture and smart farming through accurate, automated, and data-based irrigation management.

## Future Scope

Environmental conditions are also essential in farming, and inappropriate data may be bad for the crop quality and output. Real-time weather conditions from sensors that have been located within and near agriculture fields can be delivered using IoT solutions. Older databases have a low level of storing extensive sensor data and may therefore necessitate cloud storage as well as an IoT platform. Precision farming incorporates this sensor-derived information to enable farmers to make swift, knowing choices. It enables smart analysis and response, enhancing productivity, resource utilization, and overall farm management effectiveness in a bright, data-dependent way.

**REFERENCES :**

[1] Dr. Sanjay N. Patil1, Madhuri B. Jadhav, et.al. "Smart Agriculture Monitoring System Using IOT", Ind. J. Pure App. Biosci,2019.

[2] Priyanka Bhardwaj, Adarsh Srivastava, Abhishek Kumar Pandey, Abhishek Singh, Bhartendu Tripathi, et.al. "IoT Based Smart Agriculture Aid System using Raspberry Pi ", International Journal of Engineering and Advanced Technology (IJEAT),2021.

[3] T. Rajesh, Y. Thrinayana, D. Srinivasulu, et.al." IoT based smart agriculture monitoring system", International Journal of Scientific Engineering and Research (IJSER),2020.

[4] Zuraida Muhammad,Muhammad Azri Asyraf Mohd Hafez,Nor Adni Mat Leh,Zakiah Mohd Yusoff , Shabinar Abd Hamid,et.al." Smart Agriculture Using Internet of Things with Raspberry Pi", 10th IEEE International Conference on Control System, Computing and Engineering (ICCSCE),2020.