

LITRATURE REVIEW

[1] Muhammad Shoaib Farooq (member IEEE), Shamlariaz , Adnan abid (member, iee), Kamran abid , and Muhammad Azhar Naeem(2019) has presented a paper titled “**A Survey on the Role of IoT in Agriculture for the Implementation of Smart Farming**”.Network architecture and layers, network topologies, and protocols have all been thoroughly discussed in relation to network technologies used in IoT-based agriculture. Additionally, it has been demonstrated how IoT-based farm systems may work with pertinent technologies like cloud computing, big data storage, and analytics. Security concerns in IoT agriculture have also been brought forward. A list of programmes created for many facets of farm management using sensors and smart phones has also been provided. In addition to a few success examples, the legislation and policies developed by several nations to standardise IoT-based agriculture have been discussed. Finally, some unresolved problems and difficulties in the realm of IoT agriculture have been discussed.

Hardware : RFID and sensors

Software : Lorawan , LAN

Advantages :

- Major advantage of this net topology is its bi-directional communication
- RFID tags are cheaper

[2] Neha Kailash Nawandar and Vishal Satpute (2019) has presented a paper heading “**IoT based intelligent irrigation support system for smart farming applications**”.Herea 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, fertilizer spray, etc. and a plant is used as the test object.

Hardware : Actuators and sensors

Software : Cordic algorithm

Advantages :

- Improved crop quality and yield
- Water savings by its efficient utilization via proper irrigation mechanisms
- High quality dairy products

[3] Nermeen Gamal Rezk ,Ezz El-Din Hemdan , Abdel-Fattah Attia , Ayman El-Sayed and Mohamed A. El-Rashidy (2020) has presented a paper heading “An efficient IoT based smart farming system using machine learning algorithms”. It is an efficient prediction method called WPART based on machine learning. Here five datasets are used for estimating the proposed method. The results indicated that the projected method is robust, accurate, and precise to classify and predict crop productivity and drought in comparison with the existing techniques. From the results, the proposed method proved to be most accurate in providing drought prediction as well as the productivity of crops like Bajra, Soybean, Jowar, and Sugarcane. The WPART method attains the maximum accuracy compared to the existing supreme standard algorithms.

Hardware : Sensors and Actuators

Advantages :

- Crop productivity
- Drought predicting

[4] Abhishek Raghuvanshi , Umesh Kumar Singh , Guna Sekhar Sajja , HarikumarPallathadka , Evans Asenso ,Mustafa Kamal , Abha Singh , and KhongdetPhasinam (2022) has presented a paper heading “**Intrusion Detection UsingMachine Learning for Risk Mitigation in IoT-Enabled Smart Irrigation in Smart Farming**”. In this framework, theNSL KDD data set is used as aninput data set. In the pre-processing of the NSL-KDD data set, first all symbolicfeatures are converted to numeric features.Feature extraction is performed using principal component analysis.Then machine learning algorithms such as support vector machine, linear regression, and random forest areused to classify pre-processed data set. Performancecomparisons of machine learning algorithms are evaluatedon the basis of accuracy, precision, and recall parameters.

Hardware : Ardino UNO, Soil and humidity sensor

Software : Machine learning algorithms

Advantages :

- Enhanced efficiency
- Cost optimization
- Optimal energy consumption

[5] Akshay Atole, Amar Biradar, Apurva Asmar, Nikhil Kothawade and Sambhaji Sarode (2017) has presented an article titled on “**Iot based smart farming system**”. This method uses advantages of cutting edgetechnologies such as IoT, Wireless Sensor Network and Cloud computing to help farmersenhance the way farming is done. Using sensors like temperature, humidity, moisture etc. are used to getinformation about the field and help farmers to take precise decisions on insights and recommendationbased on the collected data. One of the limitations of this system is thatcontinuous internet connectivity is required at user end which might prove to be costly for farmer. Thiscan be overcome by extending the system to send suggestion via SMS to the farmer directly on hismobile using GSM module instead of mobile app.

Hardware : RF nodes

Software : Sensors

Advantages :

- Help farmers to take precise decisions oninsights and recommendations based on the collected data

[6] Ritika Srivastava, Vandana Sharma, Vishal Jaiswal, and Sumit Raj (2020) has presented a paper heading”**A research paper on smart agriculture using IOT**“.The project aims at making use of evolving technology i.e. IOT and smart agriculture using automation. Once hardware has been developed depending on the change in requirements and technology the software needs the updating. The updated hardware is called new version of the software. This new version is required to be tested in order to ensure changes that are made in the old version work correctly

and it will not bring bugs in other part of the software. This is necessary because updating in one part of the hardware may bring some undesirable effects in other part of the hardware.

Hardware : LCD, Water level sensor, Ardino UNO, Buzzer.

Advantages :

- Soil moisture sensors aid good irrigation management.

[7] M.[S.D. Abhiram](#); [JyothsnaviKuppili](#); [N.AliveLu Manga](#)(2020) has presented a paper titled on “**Smart Farming System usingIoT for Efficient Crop Growth.**”In this paper, an IoT based advanced solution for monitoring the soilconditions and atmosphere for efficient crop growth is presented. The developedsystem is capable of monitoring temperature, humidity, soil moisture level usingNodeMCU and several sensors connected to it. Also, a notification in the form ofSMS will be sent to farmer and phone using Wi-Fi about environmental condition of the field.

Hardware : Humidity and temperature sensor,Soil moisture sensor, Node MCU.

Advantages:

- It gives very time efficient process.
- It is very useful for farmers to cultivate suitable crop to the field.
- It improves soil quality and soil fertility.

[8] [Harendra Negi](#) and [Sushil Chandra Dimri](#) has presented a paper heading “**Smart farming Using IoT.**” This work analyzes samples of an internet of things to modify the farming desires of the commodities for the region to maximize the yield production. In India, most of the peoples relay on agriculture and a big part of nation’s income originate from the agriculture. Automation of agriculture method is one in all the crucial steps to our country, which needs to import immense quantity of crops from different nations to satisfy the need of peoples. The main challenge of the rural and urban agriculture area is that the correct observation of the land health, the environment, and arrange the spraying.

Hardware : ArdinoUNO and other sensors

Advantages :

- Observation of the land health, the environment, and arrange the spraying.

Summary

The majority of nations depend heavily on agriculture as a source of employment. In a nation like India, irrigation makes up a considerable share of total water use. The temperature of the physical surroundings, the temperature of the soil, and the relative humidity are a few of the variables that affect crop productivity. A direct correlation between agricultural irrigation and crop yield makes it essential for crop production. Successful field harvesting is heavily reliant on human supervision and expertise. Our work helps in deciding the suitable crop for the field that makes the production efficient.

References :

- [1]<https://ieeexplore.ieee.org/ielx7/6287639/8600701/08883163.pdf?tp=&arnumber=8883163&isnumber=8600701&ref=aHR0cHM6Ly9pZWVleHBsb3JlLmllZWUub3JnL2Fic3RyYWN0L2RvY3VtZW50Lzg4ODMxNjM=&tag=1>
- [2]https://gredos.usal.es/bitstream/handle/10366/143307/IoT_based_intelligent_irrigation_support.pdf?sequence=1&isAllowed=y
- [3] <https://link.springer.com/content/pdf/10.1007/s11042-020-09740-6.pdf>
- [4] <https://downloads.hindawi.com/journals/jfq/2022/3955514.pdf>
- [5]https://www.jetir.org/view?paper=JETIR1704008&gclid=CjwKCAjwvNaYBhA3EiwACgndgrUjihT10pIqv7MKy8wwp_sLV03uWkuELXAZE3YID20SVDYQKKJPBoC1QQAvD_BwE
- [6] [file:///C:/Users/hp/Downloads/li.survey%20\(6\).pdf](file:///C:/Users/hp/Downloads/li.survey%20(6).pdf)
- [7] <https://ieeexplore.ieee.org/document/9087134>
- [8] https://www.researchgate.net/publication/358954702_Smart_farming_Using_IoT

