SmartFarmer - IoT Enabled Smart Farming Application

LITERATURE SURVEY

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According to **Abimanyuh Pandit,** the majority of farmers use huge tracts of land, making it quite challenging to get to all of their corners and keep track of them. Uneven water drops are a possibility occasionally. This causes crops to be of poor quality, which further causes financial losses. The Smart Irrigation System, which makes use of the most recent IoT technology, is beneficial in this situation and makes farming easier.

According to **Madhu ,**this project is about the Nodemcu ESP8266-based IoT-based Smart Agriculture & Automatic Irrigation System. The development of agricultural nations depends heavily on agriculture. Some agricultural-related concerns have consistently slowed down the nation's progress. Therefore, updating the current traditional methods of agriculture is the only way to solve this issue. Therefore, the approach involves using automation and IoT technology to make agriculture smart. The Internet of Things (IoT) provides a number of applications, including automatic irrigation decision support, crop growth monitoring and selection, etc. To modernise and boost crop yield, we suggested an ESP8266 IoT automatic irrigation system.

According to **Srishti Rawal**, Automation of farm activities can transform agricultural domain from being manual and static to intelligent and dynamic leading to higher production with lesser human supervision. This paper proposes an automated irrigation system which monitors and maintains the desired soil moisture content via automatic watering. Microcontroller ATMEGA328P on arduino uno platform is used to implement the control unit. The setup uses soil moisture sensors which measure the exact moisture level in soil. This value enables the system to use appropriate quantity of water which avoids over/under irrigation. IOT is used to keep the farmers updated about the status of sprinklers.

According to **MD Safayet Ahmad**, Agriculture is the most important sector for humankind to survive their existence.It enhances a big concern to manage food for people all over the world. Most ofthe farmers follow very traditional methods to cultivate their crops. They used to bepresent physically on their farm to monitor crops. Use of technology can make thisjob easier and time efficient. Internet of things (IoT) is a technology which can sendor receive any data to a server using the Internet. Using this technology, farmers canmonitor the actual condition of the crops without being present in their field. In thispaper, we have proposed a system to monitor the farming field with the help of IoTtechnology. This

system allows various devices and sensors to send data over theInternet. It enables farmers to monitor their field remotely from their home by usinga smartphone or a computer.Almost every field embraces the Internet of things (IoT) revolution [1]. Agri-culture has seen many transformations and has adopted many machines to improvethe yield. Field (soil and environmental parameters) and crop health monitoring areimportant factors for the yield to be of better quality. In recent years, there have beenmany technological advancements in agriculture which have led to an increase inproductivity and immunity of the crops. About 70% of the freshwater available inthe world is consumed by the agriculture sector [2], with the help of soil moisturesensor, we can optimize the irrigation process and use of water [3,4]. The technologywhich plays a key role in this is the Internet of things (IoT) [5]. Traditional agricul-ture is transforming into smart agriculture due to the penetration of the Internet ofthings (IoT) in the agricultural sector. The IoT networks are reducing human labor.

According to **Akhlak Uz Zaman**, Internet of things (IoT) is one of the fastest-growing technologies in the last few years. This technology might be used widely in real-life agriculture. In this paper, we have proposed a low-cost and easy accessible IoT-based smart agriculture monitoring system along with double-tier data storage facility to store and secure such a huge volume of data by an IoT device. Tier-1 focuses on collecting data from different sensors and stores it locally using the SD card. Tier-2 uses a cloud server for storing the large volume of IoT sensors data. Farmer or analyzer can be able to monitor the actual condition of the agricultural field remotely using a smartphone application or a computer. There exists a scope to store data for further analysis.

According to **Ganesh Kumar**, In every country agriculture is done from ages which are considered to be science and also art of cultivating plants. In day today life, technology is updating and it is also necessary to trend up agriculture too. IoT plays a key role in smart agriculture. Internets of Things (IoT) sensors are used to provide necessary information about agriculture fields. The main advantage of IoT is to monitor theagriculture by using the wireless sensor networks and collect the data from different sensors which are deployed at various no desk andsend by wireless protocol. By using IoT system the smart agriculture is powered by NodeMCU. It includes the humidity sensor,temperature sensor, moisture sensor and DC motor. This system starts to check the humidity and moisture level. The sensors are used to sense the level of water and if the level is below the range then the system automatically stars watering. According to the change intemperature level the sensor does its job. IoT also shows the information of humidity, moisture level by including date and time. The temperature level based on type of crops cultivated can also be adjusted.

According to **Abderrahim Zannou**, Integrating Internet of Things (IoT) techniques into different fields and processing data produced within it can effectively shape the future. In Precision Agriculture, the use of the IoT features helps to manage crops production by optimizing productivity and reducing environmental concerns based on prediction models. In this paper, an IoT-based agricultural monitoring system is proposed, which integrates principal component analysis (PCA) feature selection methods and neural network classification techniques for crop productivity prediction. Furthermore, the model system allowed a sensing network to collect data of some crops (Tomatoes, Potatoes, Etc.). The experimental results show that our proposed model system can make decisions more accurately.

According to **S.Prathibha**, Internet of Things (IoT) plays a crucial role in smart agriculture. Smart farming is an emerging concept, because IoT sensors capable of providing information about their agriculture fields. The paper aims making use of evolving technology i.e. IoT and smart agriculture using automation. Monitoring environmental factors is the major factor to improve the yield of the efficient crops. The feature of this paper includes monitoring temperature and humidity in agricultural field through sensors using CC3200 single chip. Camera is interfaced with CC3200 to capture images and send that pictures through MMS to farmers mobile using Wi-Fi.

According to **Swaraj CM**, In earlier days farmers used to calculate the readiness of soil and impacted doubts to create which to sort of yield. They didn't consider the stickiness, level of water and particularly atmosphere condition which was difficult to a Farmer, progressively renovating the agribusiness engaging the agriculturists through the broad scope of methodologies, for instance, exactness just as useful cultivating to manage difficulties in the field. IOT modernization helps in get together data on conditions like atmosphere, protection, temperature and productivity of soil, Harvest online assessment enables disclosure of wild plant, level of water, cultivation area, animal break in to the field, trim turn of events, agriculture.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.

According to **R.Mythili**, Internet of Things (IoT), a well-known branch of computer science has introduced smart farming to each and every farmer's neighborhood while offering constructive green agriculture. IoT depicts a self-configuring chain of components. The efficient implementation helps agriculture, a self-discipline as nicely as reducing human work and increasing crop cultivations. This paper endorses sensible IoT based Agriculture Stick as farmers aid by obtaining Live knowledge (Temperature,SoilMoisture) of farm data.These live readings help the farmers to try clever farming and to increase their average crop yields, also the quality of plants.The Smart Agriculture with Arduino Technology supports the farmers to control the live farm data and get the desired crop cultivation results.