

# SMART FARMER - IOT ENABLED SMART FARMING APPLICATION PAPER

## TEAM DETAILS:

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## LITERATURE SURVEY:

**GodwinIdoje, TasosDagiuklas, MuddesarIqbal:** Internet of Things (IoT) has been a major influence in Agriculture since its application to the sector. This paper provides an extensive review of the use of smart technologies in agriculture and elaborates the state-of-the-art technologies for smart agriculture including, Internet of Things, cloud computing, machine learning, and artificial intelligence. The application of smart farming to crop and animal production and post-harvesting is discussed. The impact of climate change on agriculture is also considered. This paper contributes to knowledge by iterating the challenges of smart technology to agriculture while highlighting the issues identified from existing framework of smart agriculture. The authors identify many gaps in existing research affecting the application of IoT in smart farming, and suggest further research to improve the current food production globally, to provide better food management and sustainability measures across the globe.

**Muhammad Shoaib Farooq, Shamyla Riaz, Adnan Abid, Kamran Abid**: Internet of things (IoT) is a promising technology which provides efficient and reliable solutions towards the modernization of several domains. IoT based solutions are being developed to automatically maintain and monitor agricultural farms with minimal human involvement. The article presents many aspects of technologies involved in the domain of IoT in agriculture. It explains the major components of IoT based smart farming. A rigorous discussion on network technologies used in IoT based agriculture has been presented, that involves network architecture and layers, network topologies used, and protocols. Furthermore, the connection of IoT based agriculture systems with relevant technologies including cloud computing, big data storage and analytics has also been presented. In addition, security issues in IoT agriculture have been highlighted. A list of smart phone based and sensor based applications developed for different aspects of farm management has also been presented. Lastly, the regulations and policies made by several countries to standardize IoT based agriculture have been presented along with few available success stories. In the end, some open research issues and challenges in IoT agriculture field have been presented.

**M.Balasubramaniyan, C.Navaneethan** : In today's world agriculture is very important in farmer and people's life, because without food production people cannot able to live. Farmer's day-by-day make food production in the world. This food production process has many difficulties in farmer's normal life in current world. The farmer's facing the difficulties in manually are monitoring the water, monitoring the human works, monitoring the animals, monitoring the dangerous animals, cost, and etc. These difficulties will be overcome through IoT technologies. This technology used to monitor the water through sensor, monitoring the normal animals and dangerous animals through sensor because farmer's avoid risk and disease, and finally save and improve the farmer's production time, production cost, and health. The researchers are searching technological key to improve the agriculture existing services by setting technology of IoT. In this paper, based on the survey paper, to help the farmers for increase the crop production between high and low quality through various algorithms. This algorithm used to find the best quality, and used to implement the manage climate change, soil erosion, and availability of water

efficiently in various sensors. Finally, discuss about the trends and platform of the agriculture with various applications and finding the research gap.

**H.A.C. Dharmagunawardhana, J.V. Wijayakulasooriya, and H.G.C.R. Laksiri** The creation of an efficient IoT-based smart irrigation system is another essential requirement for farmers in the agricultural sector. A low-cost, weather-based smart watering system is created by this research. In order to get started, an efficient drip irrigation system that can automatically adjust water flow to plants based on soil moisture levels must be developed.

Then, an IoT-based communication feature is added to this water-saving irrigation system to increase its efficiency. This feature enables a remote user to monitor soil moisture levels and manually control water flow. The system also incorporates sensors for temperature, humidity, and raindrops that have been updated to enable online remote monitoring of these variables. These field meteorological variables are kept in a distant location in real time.

**Shuchi Upadhye, Rajeev Tiwari, Arzeena Khan, and Dweepayan Mishra** Indians rely heavily on agriculture as a source of income, which has a significant effect on the country's economy. In order to increase output and produce products of greater quality, crop development is crucial. Therefore, crop beds with optimum conditions and the right amount of moisture can significantly affect productivity. Streams that run from one end to the other of an area are common examples of traditional irrigation systems. The delivery of this material has the potential to change the fields' moisture content. The management of the water system can be improved with the use of a tailored watering system. This study suggests a terrain-specific programmable water system that will save human labour while boosting agricultural productivity and water efficiency. An Arduino kit, a moisture sensor, and a Wi-Fi module make up the system. Data is obtained by coupling our test system to a cloud infrastructure. The data is subsequently analysed by cloud services, who then take the required actions.

**B. Sridhar and R. Nageswara Rao** India and other agrarian nations are significantly dependent on agriculture for their development. The country's

progress has traditionally been hampered by the agricultural sector. The only way to overcome this problem is through smart agriculture, which entails modernising current agricultural systems. In order to make agriculture smarter, the suggested plan makes use of automation and Internet of Things technology. The Internet of Things enables applications such as irrigation decision support, crop growth monitoring, and crop selection (IoT). A Raspberry Pi-based autonomous irrigation Internet of Things system has been suggested to modernise and increase crop productivity. The primary goal of this project is to grow crops while utilising the least amount of water feasible.

**Dhanashri H. Gawali and Shweta B. Saraf** The connecting of a vast number of gadgets to the internet (the "Internet of Things") (IoT). Each item is connected with a distinct identity, enabling data transmission without human intervention. It enables the creation of plans for better natural resource management. According to the IoT concept, smart devices with sensors allow interaction with both the physical and logical worlds. The proposed system in this study leverages real-time input data and is based on the Internet of Things. An Android phone is used by a smart farm irrigation system to remotely monitor and control drips using a wireless sensor network. Zigbee is used for communication between base stations and sensor nodes.

**M. Shrihari-** Irrigation is a major issue that both scientists and farmers face while trying to automate agricultural production; this idea has been around since the early 1990s. A dynamic system, irrigation is heavily influenced by external factors. In order to create a smart system, the method described in this article uses a specially created mathematical model to manage data from wireless sensors on Google Cloud. a design that can scale up to large farms and is IoT connected. Holistic Agricultural Studies estimate that 35 have been harmed by both animals and people. This smart system can identify humans who are unauthorised visitors to the farm as well as animals depending on their threat level using Tensor flow and deep learning neural networks.

**Sujatha and G. Sushanth** Since Internet of Things (IoT) sensors may provide information about agricultural area and then act on it based on user input, smart agriculture is a revolutionary notion. The goal of this research is to create a smart agricultural system that uses cutting-edge technologies including wireless sensor networks, the Internet of Things, and Arduino. The goal of this study is to create a system that can use sensors to track temperature, humidity, wetness, and even the movement of animals that could harm crops in agricultural areas. If there is a discrepancy, the system will send an SMS notification to the farmer's smartphone as well as a notification on the app that was created for it via Wi-Fi/3G/4G. Using an android app, the system's duplex communication link, which is based on a cellular Internet interface, enables data inspection and irrigation schedule modification. The device has the potential to be helpful in water-scarce, remote places due to its energy independence and low cost.

**Suraj S., Dhivya S., Vignesh G., Vaishali S., and Udhayakumar S.** Agriculture has long been regarded as the most significant activity in human society. Traditional irrigation techniques, such flood irrigation and overhead sprinklers, are ineffective. They use a lot of water inefficiently and might even make people sick by encouraging the spread of fungus in the soil because of excess moisture. A computerised irrigation system is necessary for water conservation and, as a result, agricultural success due to the limited availability of water. Around 85% of the water resources that are globally accessible are used for irrigation. The population is expected to grow in the upcoming years, increasing this need. We must use innovative techniques that reduce the amount of water used in order to satisfy this need.

**Amina Saidi, Khaoula DJELLOUT, Mounir BOUHEDDA, and Hamza Benyeza** -We all face a global problem with water management, so we must prepare carefully if we want to solve it soon. As a result of the abundance of usable sensors in today's

society, systems with water-saving capabilities can be created. The goal of the work presented in this paper is to increase the farmer's ability to use water effectively. It basically uses a soil moisture sensor to determine the amount of moisture in the soil and then connects to the Thing Speaks cloud through ESP8266 Wi-Fi to monitor the soil's status. The proposed system is also equipped with an algorithm that forecasts crop irrigation decisions based on information about soil moisture patterns. If this happens, the device also alerts farmers when the water supply is exhausted. Weather forecasting via internet is another benefit of adopting this approach. The device's energy independence and inexpensive cost make it potentially useful in areas with limited water resources and remote locations. The technology's usefulness is increased by the ease with which farmers may use it. By reducing waste, it also conserves water.