LITERATURE SURVEY

Smart Farming using IoT

Abstract:

1) **India is agriculture sector, on either side, is losing ground every day, affecting the ecosystem\'s output capacity. In order to restore vitality and put agriculture back on a path of higher growth, there is a growing need to resolve the issue. A large-scale agricultural system necessitates a great deal of upkeep, knowledge, and oversight. The IoT is a network ofinterconnected devices that can transmit and receive data over the internet and carry out tasks without human involvement. Agriculture provides a wealth of data analysis parameters, resulting in increased crop yields. The use of IoT devices in smart farming aids in the modernization of information and communication. For better crop growth moisture, mineral, light and other factors can be assumed. This research looks into a few of these characteristicsfor data analysis with the goal of assisting users in making better agricultural decisions using IoT. The technique is intended to help farmers increase their agricultural output.**
2) **Agriculture is the most important sector of the Indian economy that provides employment to almost half the population of the country. Traditional way of farming had less concentration on humidity, water level and climatic condition which affects a farmer dreadfully. This farming will lead a loss to farmer because of labour insufficiency, water scarcity, inefficient knowledge about pest, crop selection for their land. To overcome these issues smart farming comes into existence. Automation ofthe farming process is called as smart farming. Internet of Things help in collecting information about various conditions like weather, moisture, temperature and fertility of soil. Based on this information farmer can irrigate their crop with required amount of water, add required amount of fertilizer, and cultivate suitable crop based on the soil nature. This paper discusses about various technologiesused in smart farming, various application in smart farming and issues of IoT in agriculture.**
3) **With the recent advancement of the Internet of Things (IoT), it is now possible to process a large number of sensor data streams using different large-scale IoT platforms. These IoT frameworks are used to collect, process, and analyze data streams in real-time and facilitate provision of smart solutions designed to provide decision support. Existing IoT-based solutions are mainly domain-dependent, providing stream processing and analytics focusing on specific areas (smart cities, healthcare etc.). In the context of agri-food industry, a variety of external parameters belonging to different domains (e.g. weather conditions, regulations etc.) have a major influence over the food supply chain, while flexible and adaptive IoT frameworks, essential to truly realize the concept of smart farming, are currently inexistent. In this paper, we propose Agri-IoT, a semantic framework for IoT-based smart farming applications, which supports reasoning over various heterogeneous sensor data streams in real-time. Agri-IoT can integrate multiple cross-domain data streams, providing a complete semantic processing pipeline, offering a common framework for smart farming applications. Agri-IoT supports large-scale data analytics and event detection, ensuring**

seamless interoperability among sensors, services, processes, operations, farmers and other relevant actors, including online information sources and linked open datasets and streams available on the Web.

4) **The system focuses on protection of the farm from rodents or insects in the field, the system provides real time notification on detecting the problem. The PID sensor is used to sense and detect animals using their body heat, we can improve and integrate this system even in the grain storage area. we have three nodes in this system sink node, a sensor node and an actuator node. acquisition, collection, and analysis of information like temperature and soil moisture is done from the sensors and the system identifies an ideal period to start the irrigation process, this saves the time and resources of the farmer.**
5) **Using sensors along with multispectral imaging technology detects most of the problems in the agricultural farm. Sensors like the ultrasonic sensor to determine the growth of the crop and detect the pests intruding the crops. The multispectral camera is a lost effective way to monitor the crop. The accuracy of these technologies is commendable.**
6) **The irrigation sensor consists of a camera embedded in a waterproof and closed chamber. Camera takes image of the soil to determine the water content in it. A gray scale analysis is used to differentiate between light pixel and dark pixel. The contents are forwarded to gateway router. An app is developed on a smartphone which has computation and connectivity capabilities.**
7) **IoT devices enable all farms to be connected and share knowledge regarding farming from experienced users. The smart farm, embedded with IoT systems, can support a wide range of devices. Due to the deployment of connected farms, it can be easy to detect disease on crop or virus spread over farm using prediction technique. All sensors and actuators who are monitoring and growing the crops are connected through a gateway. The gateway is intern connected to a server called Mobius. It will communicate with expert farming knowledge system and control actuators to make farm suitable to grow crops. Prediction combined with KF: It is used to remove the noise present during communication. For prediction using KF, the nodes form a set of clusters. The cluster head will receive data from different parameters of environment from the leaf node.**