LITERATURE SURVEY
Smart Farming using IoT

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Source: Ijraset

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Abstract:
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 of interconnected 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 characteristics for 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.

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 Authors: Simon X. Yang

 Abstract:
Improving farm productivity is essential for increasing farm profitability and meeting the rapidly growing demand for food that is fuelled by rapid population growth across the world. Farm productivity can be increased by understanding and forecasting crop performance in a variety of environmental conditions. Crop recommendation is currently based on data collected in field-based agricultural studies that capture crop performance under a variety of conditions (e.g., soil quality and environmental conditions). However, crop performance data collection is currently slow, as such crop studies are often undertaken in remote

and distributed locations, and such data are typically collected manually. Furthermore, the quality of manually collected crop performance data is very low, because it does not take into account earlier conditions that have not been observed by the human operators but is essential to filter out collected data that will lead to invalid conclusions (e.g., solar radiation readings in the afternoon after even a short rain or overcast in the morning are invalid, and should not be used in assessing crop performance). Emerging Internet of Things (IoT) technologies, such as IoT devices (e.g., wireless sensor networks, network-connected weather stations, cameras, and smart phones) can be used to collate vast amount of environmental and crop performance data, ranging from time series data from sensors, to spatial data from cameras, to human observations collected and recorded via mobile smart phone applications. Such data can then be analysed to filter out invalid data and compute personalised crop recommendations for any specific farm. In this paper, we present the design of SmartFarmNet, an IoT-based platform that can automate the collection of environmental, soil, fertilisation, and irrigation data; automatically correlate such data and filter-out invalid data from the perspective of assessing crop performance; and compute crop forecasts and personalised crop recommendations for any particular farm. SmartFarmNet can integrate virtually any IoT device, including commercially available sensors, cameras, weather stations, etc., and store their data in the cloud for performance analysis and recommendations. An evaluation of the SmartFarmNet platform and our experiences and lessons learnt in developing this system concludes the paper. SmartFarmNet is the first and currently largest system in the world (in terms of the number of sensors attached, crops assessed, and users it supports) that provides crop performance analysis and recommendations.
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Abstract:

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 analyse 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.

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Abstract:
 Internet of Things (IoT) technology has brought revolution to each and every field of
common man's life by making everything smart and intelligent. IoT refers to a network of things which
make a self-configuring network. The development of Intelligent Smart Farming IoT based devices is day
by day turning the face of agriculture production by not only enhancing it but also making it cost-effective
and reducing wastage. The aim / objective of this paper is to propose a Novel Smart IoT based Agriculture

Stick assisting farmers in getting Live Data (Temperature, Soil Moisture) for efficient environment
monitoring which will enable them to do smart farming and increase their overall yield and quality of
products. The Agriculture stick being proposed via this paper is integrated with Arduino Technology,
Breadboard mixed with various sensors and live data feed can be obtained online from Thingsspeak.com.sss
The product being proposed is tested on Live Agriculture Fields giving high accuracy over 98% in data
feeds.