

IOT ENABLED SMART FARMING APPLICATION SYSTEM

ABSTRACT

The agriculture industry has just become smarter and data oriented. Today world the IOT is most important for Farming side due to the following reasons. The recent lively growth in IOT based technologies has redesigned the way many industries start to work. This revolutionary change in Farming has generated various opportunities as well as new disputes. It's time for us to beat the clock and implement various IOT technologies in agriculture for higher production to keep up with the never-ending increasing demand for food all over the world. Supervising agricultural fields can be done with the help of data collection by various sensors for the farmer to monitor. Our Proposed System uses four different sensors with real time update on the status the sensors provide unlike existing systems which provides the status from time to time. The sensors that

used helps in knowing the soil moisture, soil's ph. value, water level in the field. The water volume sensor detects the amount of water supplied to the field for a particular crop and supplies the required water and prevents overflow of water. The sensors are connected to the ArduinoUNO module for processing. From remote locations the system can be operated with the help of networking technology.

LITERATURE SURVEY

Giovanni Randazzo : In this study, we presented an overview of IoT and big data for the smart agriculture sector. Several issues related to promoting IoT deployment in the agriculture sector have been discussed in detail. Survey results indicate that many studies have been performed to apply IoT for smart agriculture, aiming to enhance productivity, reduce Ohuman labour, and improve production efficiency. The benefits of applying IoT and big data in agriculture were discussed. In addition, we also pointed out the challenges we need to overcome to be able to accelerate the deployment of IoT in smart agriculture. However,

there are still some challenges that need to be addressed for IoT solutions to be affordable for the majority of farmers, including small- and medium-scale farm owners. In addition, security technologies need to be continuously improved, but in our opinion, the application of IoT solutions for smart agriculture is inevitable and will enhance productivity, provide clean and green foods, support food traceability, reduce human labour, and improve production efficiency. On the other hand, this survey also points out some interesting research directions for security and communication technologies for IoT. We think that these will be very exciting research directions in the future.

A Semantic Framework for Internet of Things-enabled Smart Farming Applications Andreas Kamilaris:

In this paper, we have described Agri-IoT, an IoT-based framework applying real-time stream processing, analysis and reasoning in the domain of agriculture, based on semantic web technologies, facilitating more informed and accurate decision making by farmers and event detection. We have investigated the introduction of IoT in smart farming and its opportunities,

through the seamless combination of heterogeneous technologies, as well as the semantic integration of information from various sources (sensors, social media, connected farms, governmental alerts, regulations etc.), ensuring increase of production and productivity, better products' quality, protection of the environment, less use of resources (e.g. water, fertilizers), faster reaction to unpredictable events and more transparency to the consumer. Agri-IoT achieves this by offering interoperability between sensors, processes, data streams, farms as entities and web-based services, exploiting open data, making use of semantic technologies and linked web data. Our evaluation efforts focusing on two realistic and demanding farming scenarios indicate the good performance of the proposed framework in medium-to-large farms, while our discussion reveals the large opportunities arising in farming by introducing open standards and semantics based on IoT.

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Conclusion The review undertaken in this research paper aims to fathom the depth and breadth of the need and application of cryptographic security in the area of Agriculture 4.0. The survey identifies the applications of IoT in agriculture and its benefits along with the attacks and possible remedies. A number of existing test beds for smart agriculture are studied. A layered architecture is proposed for smart agriculture that can be generalized for any application scenario and layer-wise security requirements are proposed. Various security protocols have been studied in the subsectors of cybersecurity applicable in agriculture. It can be understood that research in the design of authentication protocols in the area of smart farming remains stunted even though a wide range of test

beds have been studied, developed and implemented. Moreover, Vangala et al. surveys the authentication protocols based on block chain in smart farming and other IoT based areas and finds that very few block chain based solutions have been developed for smart farming. This leads to the conclusion that there is an immediate necessity to focus on developing authentication protocols before any message exchange takes place in a smart farming environment

Table 8 Advantages and drawbacks of authentication protocols in smart agriculture

Paper	Advantages	Drawbacks
Chen et al.	Low computational cost	Vulnerable to privileged insider attack, DoS attack, ESL Does not support anonymity
Chae and Cho[155]	Low communicational cost	* Vulnerable to physical device capture and stolen smart attack
Rangwani et al.	Reduces performance degradation of smart devices	* Handoff service of mobile device considered for execution time
	No user/ device anonymity	* No traceability
		* Vulnerable to physical device capture impersonation, replay, admit attacks

Rangwani et al. Supports anonymity.