

# **LITERATURE SURVEY**

## **IOT BASED SMART CROP PROTECTION SYSTEM FOR AGRICULTURE**

**Title : Development of IoT based smart security and monitoring devices for agriculture**

**Author Name:** T . Baranwal, PK. Pateriya

**Published on:** 2016 6th International Conference

### **Review Of Literature:**

For developing an intelligent security device based on IoT, M2M framework, sensor network and database management are the foundations. The fields like data analytics and pattern matching also influences security devices. Researchers have been developing various IoT based security devices but a little work is done in agricultural area. Internet of Things is used with IoT frameworks in order to easily view, handle and interact with data and information. Within the system, users can register their sensors, create streams of data, and process them. In addition, the system has searching capabilities, helping the user with a full-text query language and phrase suggestions, allowing a user to use APIs to perform operations based on data points, streams and triggers. It is also applicable in various agricultural areas apart from security.

Few areas are :

- Water quality monitoring
- Monitor soil constituent, soil humidity
- Intelligent greenhouses
- Water irrigation
- Scientific disease and pest monitoring

To develop more cost efficient system by avoiding the need of maintainance, free from geographic constraints and to access affordable services, extended "as-a-Service" framework in

cloud computing can be integrated with Internet of Things to deliver financially economical IT resources.

### **Benefits:**

Internet of things' is widely used in connecting devices and collecting information. The system is designed for identification of rodents in grain stores. After collecting and analyzing the data, algorithm is designed to provide accuracy in notifying user and activation of repeller.

- It may be helpful to extend the security system to prevent rodents in grain stores.
- It can be further improved for the identification and categorization between humans, mammals and rodents.
- Device can be enabled to collect more information about surroundings and presence of threats so that implementation of machine learning is achieved.
- Location of device in area can also be change based upon the location of grains for more effective results.

## **Title: Wireless Sensor System According to the Concept of IoT - Internet of Things**

**Author Name:** Juan Felipe Corso Arias , Yeison Julian Camargo Barajas , Juan Leonardo Ramirez Lopez

**Published on:** 2018 7<sup>th</sup> International Conference on wireless sensor system.

### **Review Of Literature:**

The trend of the market is the information to be available independently of the place or the geographic location. For this reason, currently, the internet is used to bring a real time interaction among devices that will not be possible with other mediums . Simply, all the information gathered from the sensors must be available in the cloud to be managed and controlled. Thus, a central point of management exists where the information from the sensors remotely distributed is stored. Furthermore, the industrial processes make necessary to implement wireless communication systems (due to the hostile environment and the difficult

access to the places) to transmit the signals generated by the sensors making up the control loop . Hence, the modeling, design and implementation of a remote wireless system applied to an industrial process is done. Then, the reliability of the system can be analyzed. A SCADA system supervises the process and a PLC executes the event generated in the control. The modeling of the communication was performed using Petri nets . It allowed analyzing the viability and reliability of the system.

### **Benefits:**

The results of the simulation described a pattern that goes from a chaotic state in the first day to a Gaussian state day after day . The pattern denotes the stability and reliability of the industrial communication in environments using data networks. The results showed the system not to be suitable for industrial processes that require immediate responses times due to the delay found in the network based on the simulations performed . But, according to the decrement of the delay the implementation of the system will allow using data networks in industrial processes with real time responses. The model could be implemented in conditions where the change in the measure (temperature, level, grades) respect to the time is not critical. Finally, the implemented system demonstrated that it was possible to build a control system (PLC) that centralizes the data gathered from sensors distributed around the world. Hence, the sensors can be monitored and controlled from anywhere in the world according to the concept of IoT.

## **Title: IoT Based Smart Sensors Agriculture Stick for Live Temperature and Moisture Monitoring using Arduino, Cloud Computing & Solar Technology.**

**Author Name :** Anand Nayyar, Vikram Puri

**Published On:** 2016 The International Conference On Communication And Computing Systems.

### **Review Of Literature:**

IoT based agricultural convergence technology (Lee et al, 2013) creates high value in terms of quality and increased production and also reduces burden on farmers in ample manner. In

addition to Agricultural IoT, the future of agriculture is “Precision Agriculture” which is expected to grow at \$3.7 billion by 2018. With data generated from GPS and Smart Sensors on agricultural field and integration of smart farming equipment along with Big Data analytics, farmers would be able to improve crop yields and make effective use of water and in turn wastage of any sort would be reduced to a remarkable level. So, seeing the current scenario of agriculture which is surrounded by tons of issues, it is utmost requirement to have IoT based Smart Farming. In order to implement smart farming in real world, IoT based products are required to be developed and implemented at regular intervals and also at a very fast pace. The objective of this research paper is to propose IoT Based Smart Stick which will enable farmers to have live data of soil moisture, environment temperature at very low cost so that live monitoring can be done.

#### **Benefits:**

- IoT enables easy collection and management of tons of data collected from sensors and with integration of cloud computing services like Agriculture fields maps, cloud storage etc., data can be accessed live from anywhere and everywhere enabling live monitoring and end to end connectivity among all the parties concerned.
- IoT is regarded as key component for Smart Farming as with accurate sensors and smart equipment's, farmers can increase the food production by 70% till year 2050 as depicted by experts.
- With IoT productions costs can be reduced to a remarkable level which will in turn increase profitability and sustainability.
- With IoT, efficiency level would be increased in terms of usage of Soil, Water, Fertilizers, Pesticides etc.

### **Title: Smart Agriculture System using IoT Technology**

**Author Name:** Adithya Vadapalli, Swapna Peravali, Venketerao Dadi

**Published On:** International Journal of Advance Research in Science and Engineering (2319-8354)

#### **Review Of Literature:**

As traditional farming are more labour intensive, Risky and resulting to suicidal due low yield or Act of God. Small farmers unaware of the smart agriculture system big fishes and corporate community are enjoying the advantages of smart agriculture technology. Thanks to Pandemic Covid-19 which returned the migrants back to their respective villages and having no source of income are happily willing to come back to their original agriculture farming as their occupation. At this time when the Smart Irrigation System is an IoT based device which is capable of automating the irrigation process by analyzing the moisture of soil and the climate condition (like raining) can be incorporated by small players in farming and enjoy high yield profit earning. IOT advancement helps in agrarian societal information on conditions like atmosphere, temperature and productivity of soil, harvest web watching engages area of weed, level of water, bug acknowledgment, animal interference in to the field, alter improvement, cultivation. The farmers can know get details of farm conditions with the help of remote sensor frame work and WSN (Wireless Sensor Networking) systems sitting at home or any other place.

### **Benefits:**

The availability of sensors for the agricultural parameters and microcontrollers can be easily interfaced with each other and with the help of Internet of Things, wireless sensor networks communication the challenges encountered by the farmers can also be reduced and a better communication path for the transfer of useful data can be achieved between various nodes. So, farmers are able to control various equipment's related to agricultural and monitor their crop on Smartphone or on computers. These systems offer a high application area to the users to improve their skill and output of the crops in better way. Use these systems help to increase the Rice, wheat and maize and other agricultural production in India in the near future. IOT capable to control the condition of the yield and growth, it can also able to check soil, temperature, humidity, etc.

**Title : Smart farming for improving agricultural management.**

**Author Name:** Elsayed Said Mohamed, Mohammed A El-Shirbeny, A. Gad, AA. Belal, Mohamed B Zahran, Sameh Kotb Abd-Elmabod.

**Published On:** September 2021, Egyptian Journal of Remote Sensing and Space Science 24(4).

**Review Of Literature:**

The current work considered a large number of research topics to explore scientific methods relating to smart farming. Consequently, this work covered many aspects regarding the agricultural practices, decision-making, and technologies involved. We have used several sources from various scientific publishers such as Springer, Elsevier, Wiley, MDPI, etc. The sources varied from books, book chapters, conference proceedings, and articles, in addition to research project reports. Thus, this work has relied on 58 published documents, most of which were published during the last three years, and the authors from different countries worldwide. Meanwhile, a particular focus was dedicated to some smart agriculture approaches in the Africa continent. Subsequently, the review highlights the main components of smart farming, such as IoT, the role of internet connection, and smart sensing.

**Benefits:**

The implementation of Smart Decision Support Systems (SDSS) in the agriculture sector aims to support farmers and those interested in agricultural investment for making proper decision-making (Adebayo et al., 2018). The decision support systems in agricultural management are numerous such as irrigation management, fertilization, and others for service operations .

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