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Literature Survey on Wireless Sensor Network using Machine Learning Techniques for reformist Agriculture

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***Abstract* - Recent developments in Wireless Sensor Networks (WSN), and Information and Communication Technology (ICT) capacity to address some of the environmental, economic, and technological challenges and opportunities in the sector. As the number of connected devices continues to grow, this generating enormous data in many ways as well as local and temporary. diversity. Intelligent analysis and analysis of this large data is necessary to develop a high level of knowledge base as well information that leads to better decision making, forecasting, and reliable sensory management. This paper is a comprehensive review the use of different machine learning algorithms for analyzing sensory data within the agricultural ecosystem.**

Index Terms – Wireless Sensor Network, Machine Learning.

I. INTRODUCTION

In India one of the main economic activities is agriculture. About 60-70% of employment in India depends on the agricultural sector. It has the second largest arable land after the U.S. This is due to the high soil fertility and the large network of irrigation water sources. Due to the varied climatic conditions in different areas it ensures high availability and crop production. Although the availability of a resource does not produce results equal to availability. It is due to the lack and misuse of technology, lack of knowledge and awareness by agricultural workers, the use of alternative methods. In addition, many plants are attacked by pests, insects, diseases that lead to reduced yields. Many plants are affected by insect pests or insects. Pesticides or pesticides do not always seem to work because they can be toxic to certain species of birds and animals. It also damages the natural web of animal feed and food chains. Plant disease leads to very low productivity.

Decreased yields of between 20% and 40% of global agricultural production caused by pests, insects, germs, animals and weeds. In addition, they have many features, some of which are temporary, and some that have long-term effects on global food security. The loss of crop production due to pests and diseases is enormous, especially in the Indian desert climate. Climate plays a major role in agricultural production. In general, crops are more common in a climate-based agricultural system. The study challenged the fact that with the population growing to ten million, it is therefore likely that by 2050 we will be looking at food doomsday. It means that the ability to produce food will fall apart if we develop and develop agricultural technologies. Therefore, in order to properly manage limited resources, it is necessary to develop economic technology for Indian farmers. This program should help farmers prevent crop diseases on time and improve food security and quality. The system must be reliable enough to continue in hilly areas like Jammu and Kashmir for prevention and timely treatment. It is because of their ability to monitor natural boundaries, soil boundaries, plant boundaries by sending sensors to a remote location. Predictable timing of diseases caused by various hazardous organisms whether the deficiency or exceeding the normal range of controlled boundaries can help farmers. So that they can take special measures against the invasion of these insects and insects in a controlled manner. This will prevent any use of chemicals and reduce the incidence of animal diseases. In addition, it will increase Aggie's productivity and as a result will close the gap between population growth and increased demand for food. Obviously, the percentage of crop losses will be reduced. Over the past decade, science and technology have revolutionized the world.

The current era is the age of technology. To provide practical information to farmers, at present, remote monitoring methods are used. Wireless Networks and Internet of Things play an important role in this communication. Wireless Sensor Networks (WSN) and radio-frequency identification (RFID) are considered to be the two main components of IoT Wireless sensor networks used in various systems, such as military, agriculture, sports, medical, and industry. Because a large amount of data is generated. Wireless network sensors, smart devices, RFID tags, tablets, laptops, smart meters, smart phones, smart healthcare, communication platform, software applications and digital services that generate data capacity. They continually produce large amounts of organized data, with minimal structure and high throughput.

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II. MACHINE LEARNING TECHNIQUES

Machine learning is a type of AI that gives machines the ability to learn from experience. There are two broad categories of Machine learning algorithms: supervised and unsupervised learning. Supervised learning uses a known set of labeled data to train a model to predict the target variable for out of sample data. [1] Classification and regression

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techniques are common applications of supervised learning. The list of common algorithms that fall under the different techniques is highlighted in Figure. 1. On the other hand, unsupervised learning relies on hidden patterns or intrinsic structures in data to draw deductions from unlabeled data.

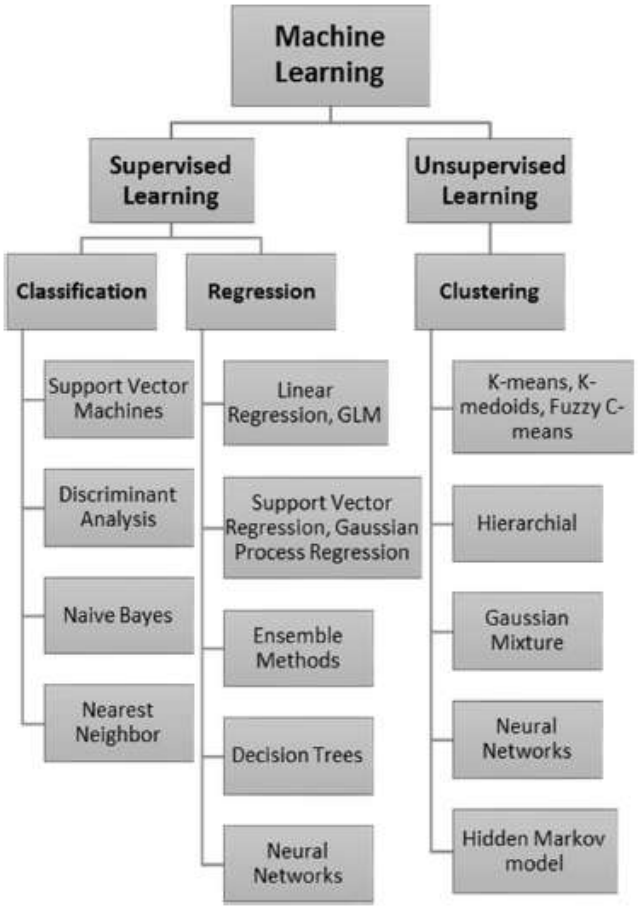

Figure 1. Machine learning Algorithms.

III Literature Review

A literature survey is the synthesis of the available literature regarding research topic.

Mengzhen Kang et, al. [2] explains in this paper that the concept of Knowledge Data Driven Model for new generation of smart agriculture which cessation the bottleneck of model application from laboratory situation to real world. The authors Yun Shiet, al. [3] Introduces the concept of Internet of things. Plant diseases and insect pests causes significant reduction in quality as well as quantity of agricultural product so plant disease and insects pests forecasting is of great significance and quite necessary. The use of machine learning algorithms was the main objective is to achieve the disease and insect pests monitoring information and collection of IoT.

Thomas Truong et, al. [4] in this paper that the machine learning algorithm to predict environmental condition for fungal detection and prevention. In machine learning algorithm using support vector machine regression (SVMr)was developed to process a raw data and predict result. SVM give result but it is less accurate than other algorithms. Carlos Cambra et, al [5] design of a smart IoT communication system manager used as a low cost irrigation controller. It shows how IoT, aerial images and SOA can be applied to large and smart farming system. Data is processed in smart cloud service based on the Drools Guvnor.

Snehal S. et, al. [6] illuminate in this India farming is the main Occupation. Above 70% business are depending on farming. In these paper Artificial Neural Network technology was used. The intelligent system has brought artificial neural network(ANN) to become a new technology which provides assorted solution for the complex problem in agriculture researches. This project only presented the most commonly used type of ANN, which is the feed forward back propagation network. Here the ANN is used for the proper crop for particular soil and also suggesting proper fertilizer for that crop.

Hemantkumar Wani et, al. [7] the machine learning algorithm is fitted for the prediction of diseases using naïve Bayes kernel algorithm. Naive Bayes kernel model where we are understanding correlation pattern between real time data and existing data set. Naïve Bayes kernel algorithm is for the classification of data sensed from the sensors. Harshal Waghmare et, al. [8] Support vector machine and decision support system is used to identification of plant disease through the leaf texture analysis and pattern recognition. Decision Support Systems (DSS) for agriculture is based on the technology that can be useful for farmers and help to increase the agricultural productivity .by this paper we come to know that the DSS is time saving, enhance effectiveness, increase decision maker satisfaction.

Giritharan Ravichandran, et, al. [9] Artificial Neural Network is used which is one of the most effective tool in modelling and prediction. Feed forward Back Propagation Network is used together to implement the Artificial Neural Network. The proposed system is made as an Android Application, where the user could feed the inputs and obtain the desirable application.

Xin Zhao et, al. [10] proposed a short-term wind speed for-casting model with samples selection by a new active learning algorithm. Active learning is used in sample selection for machine learning. In this study active learning was useful for applications characterized by a large number of training sample in wind speed prediction.

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Dr N. Suma et, al. [11] proposes a model includes various features like GPS based remote controlled monitoring, moisture and temperature sensing, intruders scaring, security, leaf wetness and proper irrigation facilities. It makes use of wireless sensor networks for noting the soil properties and environmental factors continuously.

IV CONCLUSION

Agriculture is undergoing digital transformation. The amount of data collected on farms is growing exponentially. The use of wireless, IoT, robots, drones, and AI networks is increasing dramatically. Machine learning algorithms enable the extraction of useful information and data from abundant data. This paper has reviewed the ML methods commonly used by researchers in conjunction with wireless networks. The coming years may see an increase in the use of more sophisticated techniques such as spreading deeper learning. AI should be used to increase agricultural productivity and improve productivity while improving the use of natural resources.

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