Precision Farming using Machine Learning and IoT

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Abstract— Climate change is a serious problem in agriculture field and has led to huge losses. This has a enormous set back in profitability. Also weather is a crucial part in agriculture. A farmer cannot fight with weather conditions. However peasants can adopt the provided situation and take extra farm management practices to attenuate crop losses. Therefore real-time data regarding weather is crucial in order that farm produces a good yield. Having real time weather data will be important part of agriculture in coming times. use of machine learning algorithms on weather data to suggest crops best suited for that climate has led to both increase in production and reduction in use of fertilizers In this paper, this issue is illuminated by proposing a system that will collect real time weather data and use machine learning algorithms on that data to suggest best crops for that climatic conditions and recommending satisfactory measure of composts our system will help farmers to increase crop production and reduce fertilizer consumption leading to greater profits

Keywords— *Precision Agriculture, Crop Recommendation, Machine learning, Wireless sensors, fertilizers, Real time, Embedded systems*

I. INTRODUCTION

From very early age agriculture is taken into picture because it is an important culture practised in our country. Men and women use to cultivate the crops on their land and it is the basic need of human beings. The traditional agriculture techniques are slowly degrading now-a-days and are not quite effective as they used to be. The climate change has led to natural disasters and untimely change of weather. Such untimely changes has caused huge losses in the agriculture sector untimely changes in weather even for a short period of time can destroy the whole crop in a certain area Due to this many farmers have moved from their traditional methods and ggrateful to our many modern invention people are cultivating stilted products that results in not so healthy life style and causes various health problems peasants are many a times forced to inject malign substances to get better production in the farm. Among present generation there is a lack of knowledge among people about the cultivation of crops in at right time and right place due to such cultivating techniques along with climate change the elemental resources like soil, water and air are being exploited .

Algorithms supported are grasped by the Machine learning. There are various different types of learning such as supervised and unsupervised and reinforcement learning each has importance and its own advantages and disadvantages. A mathematical model is built by supervised learning algorithm from a group of knowledge that has both inputs as well as desired outputs. Unsupervised learning algorithm will build a mathematical model from in sufficient data which has inputs only and no desired output. This is one of the handy ways of agriculture and is internationally accepted using machine learning and embedded system technologies separately for agriculture.

This paper aims to recommend collection of real time data of the field using Internet of things (IOT) and using Machine learning algorithms like K-nearest neighbour (KNN) on that data to suggest the farmers the best crops that can grow under the climate conditions and also recommend fertilizers to be used for the aim of accurate farming. It combines both the advance technologies like machine learning and embedded system. To increase production of crops and reduction in resources used leading to higher profits. Our system will make use of real time data collected from the exact location instead of using data from the internet which will lead to higher accuracy

II. RELATED WORK

The paper [1] aims to increase the yield of the farmers by recommending crops using machine learning techniques. Crop prediction is employed using ensemble technique. Ensemble may be a technique which is even referred to as model combiners combining the facility of two or more models to achieve greater efficiency in prediction. To be [2] accurate

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