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MACHINE LEARNING ALOGRITHMS INAGRICULTURE AND APPLICATIONS

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ABSTRACT:

Machine Learning(ML) makes machines independent and self-learning component. Researchers applying machine learning algorithms to solve various real world problems in various domains. Nowadays agriculture affects by various factors such as global warming, climatic changes, lack of manpower, etc. To help the farmers from the above factors and increase agriculture production, recently many machine learning techniques are utilized in the agricultural field. In this paper, we studied different applications of machine learning techniques in the agriculture domain. We classified applications of machine learning algorithms in agriculture by four categories namely, machine learning in plant monitoring, machine learning in soil analysis, machine learning in detection (or) prediction process in agriculture, machine learning in animal monitoring. We also analyzed the important features of machine learning applications in agriculture.

1.INTRODUCTION:

Agriculture is one of the ancient businesses. Agriculture suffers due to various factors such as climatic change, unpredictable rainfall, pollution, lack of manpower, etc. Due to high population growth create a great demand for agriculture products [1]. To feed the world population, it is necessary to increase agriculture production. To increase agriculture production, researchers utilizing various technologies such as sensor networks [2], image processing [3], remote sensing [4], machine learning [6], etc. Machine learning is a fast growing technique, which makes machines are intelligent also machines able to work without any instructions. The machine learning techniques are applied in various applications such as health care, smart cities, health care, automobile, etc [5]. Now a day's various machine learning algorithms are used in agriculture to solve various issues. In this paper, we studied applications of machine learning in agriculture field. The machine learning algorithms are used in various real-world agricultural applications; we classified these applications as machine learning in-plant monitoring, machine learning in soil analysis, machine learning in detection (or) prediction process in agriculture, machine learning in animal monitoring. The various agricultural applications of machine learning techniques are discussed in next section The field of agriculture suffered due to various challenges, such as lack of water, excess rain,
soil pollution due to plastics, synthetic fertilizer, etc. To helps the farmers from these issues,
researchers applying machine learning in different fields of agriculture. The machine learning
algorithms are mainly applied in the following four areas of agriculture such as plant monitoring, soil analysis, prediction (or) detection in the agricultural process, animal monitoring..

2.RELATED WORK

Using Internet of Things (IOT) and data analytics in agriculture. By this technologyimplementation they need the hardware for the prediction. Without hardware they can predict the agriculture analysis. The Main objective is to predict

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agriculture problem using ML Algorithms. Machine learning techniques are applied in various fields of agriculture. We studied various applications of machine learning algorithms in agriculture and also classified these applications into four categories. Various features of agriculture machine learning techniquesare discussed.This application can use to predict phenotype: studies in yeast, rice, and wheat

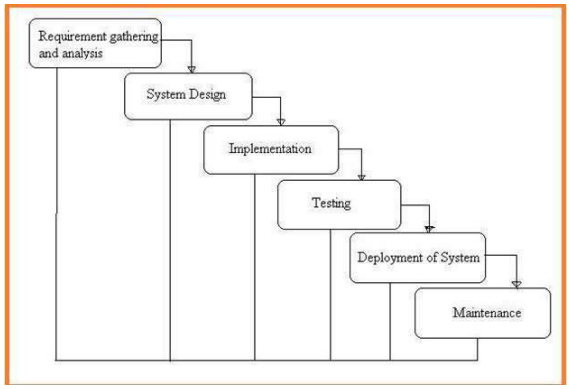

Figure 1: Architecture

Requisites Accumulating And Analysis

It's the first and foremost stage of the any project as our is a an academic leave for requisite amassing we followed of IEEE Journals and Amassed so many IEEE Relegated papers and final culled a Paper designated "Individual web re visitation by setting and substance importance input and for analysis stage we took referees from the paper and did literature survey of some papers and amassed all the Requisites of the project in this stage

Systemdesign

In System Design has divided into three types like GUI Designing, UML Designing with avails in development of project in facile way with different actor and its utilizer case by utilizer case diagram, flow of the project utilizing sequence, Class diagram gives information about different class in the project with methods that have to be utilized in the project if comes to our project our UML Will utilizable in this way The third and post import for the project in system design is Data base design where we endeavor to design data base predicated on the number of modules in our project

Implementation

The Implementation is Phase where we endeavor to give the practical output of the work done in designing stage and most of Coding in Business logic lay comes into action in this stage its main and crucial part of the project

Testing Unit testing

It is done by the developer itself in every stage of the project and fine-tuning the bug and module predicated additionally done by the developer only here we are going to solve all the runtime errors.

Deployment Of System And Maintenance

Once the project is total yare, we will come to deployment of client system in genuinely world as its academic leave we did deployment i our college lab only with all need Software's withhaving Windows OS. The Maintenance of our Project is one-time process only specifies the quality attribute of a software system. They judge the software system based on Responsiveness, Usability, Security, Portability and other non-functional standards that are critical to the success of the software system. Example of nonfunctional requirement, "how fast does the website load?" Failing to meet non-functional requirements can result in systems that fail to satisfy user needs. Nonfunctional Requirements allows you to impose constraints or restrictions on the design of the system across the various agile backlogs. Example, the site should load in 3 seconds when the number of simultaneous users are> 10000. Description of non-functional

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requirements is just as critical as a functional requirement.

3. METHODOLOGY:

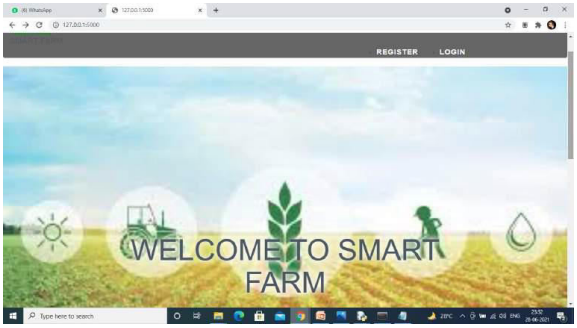
We classified applications of machine learning algorithms in agriculture by four categoriesnamely, machine learning in plant monitoring, machine learning in soil analysis, machinenlearning in detection (or) prediction process in agriculture, machine learning in animalmonitoring.Help the lot of farmers to analysis the whole types of crops analysis with the singleimplementation by using those algorithms.

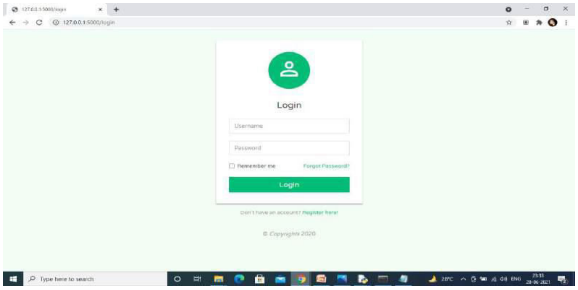
CNN model with increased accuracy

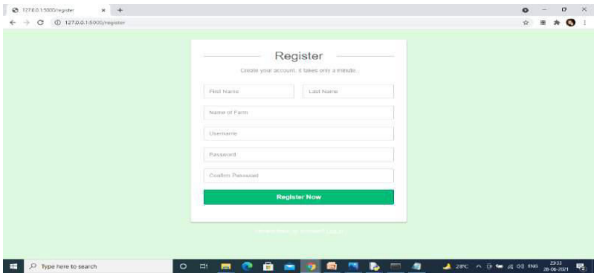
Convolutional Neural Networks (CNN) are everywhere. It is arguably the most popular deep

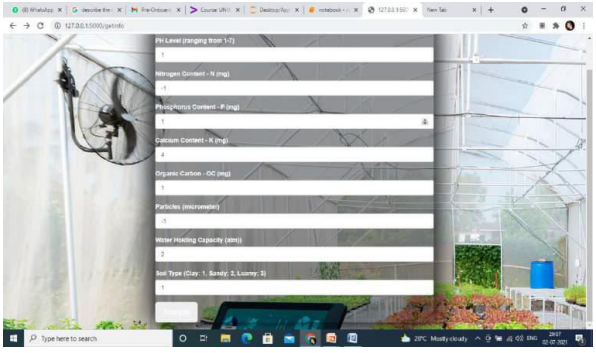
Learning architecture. The recent surge of interest in deep learning is due to the immense Popularity and effectiveness of convnets. The interest in CNN started with AlexNet in 2012 And it has grown exponentially ever since. In just three years, researchers progressed from LayerAlexNet to 152 layer ResNet. CNN is now the go-to model on every image related problem. In terms of accuracy, they blow competition out of the water. It is also successfully applied to recommender systems, natural language processing and more. The main advantage of CNN compared to its predecessors is that it automatically detects the important features without any human supervision. Forexample, given many pictures of cats and dogs it learns distinctive features for each class by itself. CNN is also computationally efficient. It uses special convolution and pooling operations and performs parameter sharing. This enables CNN models to run on any device, making them universally attractive. All in all this sounds like pure magic. We are dealing with a very powerful and efficient model which performs automatic feature extraction to achieve superhuman accuracy (yes CNN models now do image classification better than humans). Hopefully this article will help us uncover the secrets of this remarkable technique.

4.STUDYOF RESULTS:









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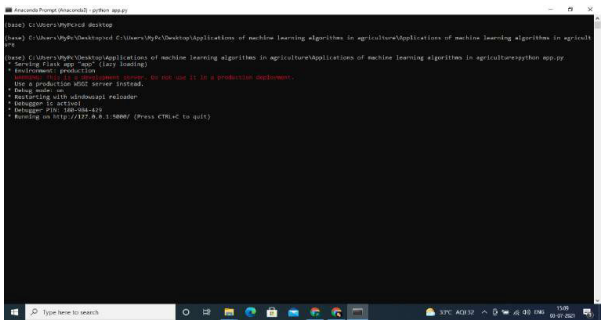

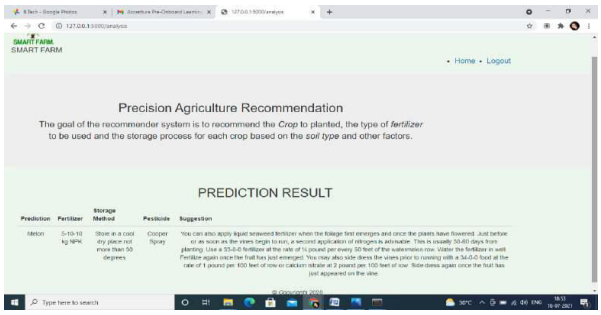

5.CONCLUSION :

Machine learning techniques are applied in various fields of agriculture. Westudied various applications of machine learning algorithms in agriculture and also classified these applications into four categories. Various features of agricultural machine learning techniques are discuses.

Future Scope

In enhancement we will add some ML Algorithms to increase accuracy

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