

Applications of Machine Learning Algorithms in Agriculture

Abstract:-

Machine learning (ML) makes machines independent and self-learning component. Researchers applying machine learning algorithms to solve various real word 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.

Existing System:-

The methodology utilizes Principal Components Analysis (PCA) not withstanding Support Vector Machines (SVMs) and Linear Discriminate Analysis (LDA) algorithms for feature extraction and arrangement. We demonstrated that machine Learning algorithms dependent on morpho-colorimetric parameters and NIR examination independently were capable to classify leaves of 16 grapevine cultivars. Automated picture analysis for morphological and color highlights extraction of checked leaves combined with ANN displaying rendered fast, exact and modest techniques to be utilized for ampelo graphy/ cultivar characterization.

Disadvantages of Existing System:-

- 1) PCA not supporting to calculate accuracy for SVM and LDA algorithm the main problem is PCA doesnot supporting more than 10 components from the given dataset.

- 2) Existing model does not support to classify leaves of 16 and also model is not trained to predict and detect disease in leaves and plants so that ANN algorithm failed to resolve problem in Agriculture Field.

Proposed System:-

The farmers rely on the traditional ways of farming which is based on the reliability of the suggestions from the elderly and their experience. This method leaves farmers at the mercy of random climatic conditions which are already getting random due to global warming and uneven rainfall patterns. The manual spraying method for pesticides led to improper usage of resources and harms the environment.

Advantages of proposed System:-

- 1) To resolve the problems in agriculture such as lack of water, excess rain, soil pollution due to plastics, synthetic fertilizer we applied selected dataset with decision tree, Random forest , Support vector Machine Learning,
- 2) It is imperative to monitor the pH value, temperature and concentration changes in nutrient solution composition as the performance of soilless cultivation is highly dependent on these parameters. The significant variables in a nutrient solution cannot be measured directly hence these are determined with the help of auxiliary variables.

SYSTEM SPECIFICATION:

HARDWARE REQUIREMENTS:

- ❖ **System** : Pentium IV 2.4 GHz.
- ❖ **Hard Disk** : 500 GB.
- ❖ **Monitor** : 14' Colour Monitor.
- ❖ **Mouse** : Optical Mouse.

❖ **Ram** : 8 GB.

SOFTWARE REQUIREMENTS:

❖ **Operating system** : Windows 10 Ultimate.

❖ **Coding Language** : Python.

❖ **Front-End** : Python.

❖ **Designing** : Html,css,javascript.

❖ **Data Base** : MySQL.

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