



# Crop Predication and Diseases Detection Using Machine Learning

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*Abstract— Soils are perplexing combinations of minerals, water, air, natural matter, and innumerable living beings that are the rotting survives from once living things. Soils fill in as media for development of a wide range of plants. We can say soil is an important ingredient of agriculture. There are a few sorts of soils and each kind of soil can have various types of highlights and various types of yields develop on various sorts of soils. We must know which type of our soil is go better in our soil. We can apply AI procedures to group soil and to anticipate the yield reasonable.*

*Keywords- Soil series, Land type, Chemical feature, Geographical attribute, machine learning, KNN, SVM, Regression*

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## I. INTRODUCTION

There are so many soil arrangements accessible in India. Every soil series have different feature and every soil is suitable for different crop. Sometimes or we can say every time it happens that farmer soil is best for some specific crop but as he don't know. The primary motivation behind the proposed work is to make a reasonable model for ordering different sorts of soil arrangement information alongside appropriate yields recommendations. Series are recognized by machine learning methods using various chemical features and possible crops for that soil series are suggested using geographical attributes. Soil is one of the critical segments in rural field for yielding harvests. Soil classification philosophies follow the existence knowledge and practical circumstances.

## II. LITERATURE SURVEY

[1] Sk Al Zaminur Rahman, S.M. Mohidul Islam, Kaushik Chandra Mitra, “Soil Classification using Machine Learning Methods and Crop Suggestion Based on Soil Series” – In this paper we have proposed a model that can foresee soil arrangement with land type and as indicated by forecast it can recommend reasonable yields. A few AI calculations, for example, weighted k-Nearest Neighbor (k-NN), Bagged Trees, and Gaussian part based Support Vector Machines (SVM) are used for soil classification. Trial results show that the proposed SVM based strategy performs in a way that is better than many existing techniques.

[2] Gholap, J., Ingole, A., Gohil, J., Gargade, S. and Attar, V., 2012. Soil data analysis using classification techniques and soil attribute prediction. In this Paper agricultural research has been profited by technical advances such as automation, data mining. Today data mining is used in a vast areas and many off-the-shelf data mining system products and domain specific data mining application soft wares are available, but data mining in agricultural soil datasets is a relatively a young research field. It focuses on classification of soil using various algorithms available. Another important purpose is to predict untested attributes using regression technique, and implementation of automated soil sample classification.

[3] Nidhi H Kulkarni, Dr. G N Srinivasan, Dr. B M Sagar, Dr.N K Cauvery,2018. Improving Crop Productivity through A Crop Recommendation System Using Esembling Technique. – In this Paper, the esembling technique is used to build a model that combines the predictions of multiple machine learning models together to recommend the right crop based on the soil specific type and characteristics with high accuracy. The independent base learners used in the ensemble model are Random Forest, Naive Bayes, and Linear SVM.

[4] Abdullah Na, William Isaac, Shashank Varshney, Ekram Khan, “An IoT Based System for Remote Monitoring of Soil Characteristics”, This paper provides a smart phone based application which will measure the PH value of the soil, temperature and humidity in real time. The system uses a microcontroller block, sensing block and communication block. Sensors are employed in farm which can communicate with smartphones using Bluetooth in real time. This paper provides means of remote analysis of soil through various techniques.

## III. PROBLEM STATEMENT

Currently there is no such a system to find out crop and there disease so farmer get loss in farming and there is not giving proper gaudiness to farmer to take which crop on that weather. Our system will easily find out the crop by using image processing concept and machine learning concept we are collecting soil data set to find crop. Hence, we proposed a system Prediction of “Crop Prediction & Disease Detection using Machine Learning”.

## IV. EXISTING SYSTEM

The researchers implemented K-Means algorithm to forecast the pollution in the atmosphere. Classifying large datasets remains a very difficult and complicated task with an additional expectation of enhanced performance makes it more challenging.

There are some systems in which agricultural crop prediction is done using artificial neural network i.e. ANN. It is systems which can predict the more accuracy using meteorological data.

## V. PROPOSED SYSTEM

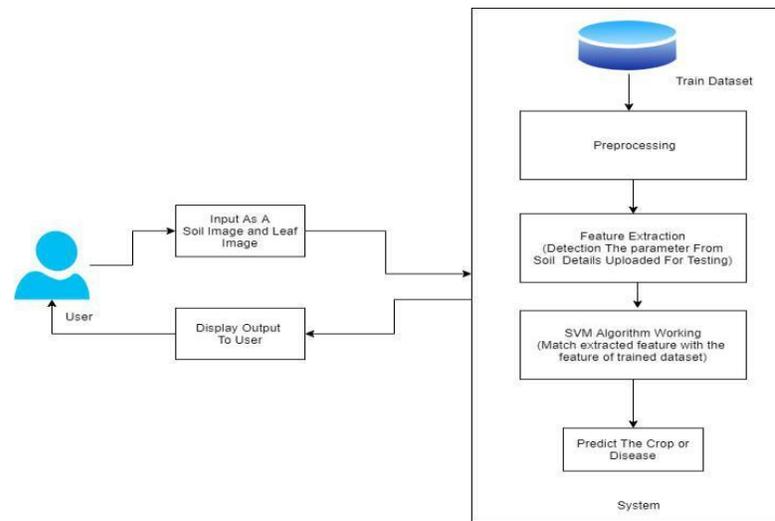


Fig-system architecture

## VI. ALGORITHMS

**In K-Nearest Neighbor (KNN)** – The k-nearest neighbors (KNN) algorithm is a simple, supervised machine learning algorithm that can be used to solve both classification and regression problems. It's easy to implement and understand, but has a major drawback of becoming significantly slower as the size of that data in use grows.

**Support Vector Machine (SVM)**-SVM is a binary classifier based on supervised learning which gives better performance than other classifiers. SVM classifies between two classes by constructing a hyperplane in high-dimensional feature space which can be used for classification.

## VII. ADVANTAGES

- This project provides soil series.
- It also helps farmer to decide which crop is suitable for that soil.
- Helps to predict the disease of the crop.
- Authentication is provided to the system.
- Better understanding of farming trends in different area
- Easy to predict crops using soil type.
- Easy to detect diseases.

## VIII. DISADVANTAGES

- They sometimes require more input information. Output may be less stable if the correct input are not provided.
- Lose due to wrong crop
- Waste of money

## IX. CONCLUSIONS

A model is proposed for predicting soil series and providing suitable crop yield suggestion for that specific soil. The model has been tried by applying various types of AI calculation. Bagged tree and K-NN shows good accuracy but

among all the classifiers, SVM has given the highest accuracy in soil classification with less time. It gives us more accuracy as compared to existing system and gives more benefit to farmers.

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