CROP RECOMMENDATION USING ARTIFICIAL NEURAL NETWORK

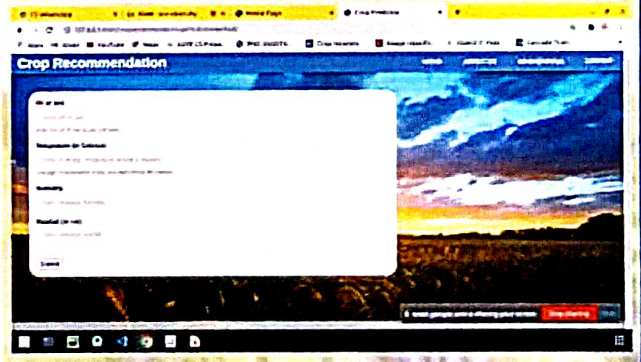
Project Instrcutor - Dr. S.D. Samantray

About the project

Agriculture in India plays a predominant role in economy and employment. The common problem existing among the Indian farmers are they don't choose the right crop based on their soil requirements. Due to this they face a serious setback in productivity. This problem of the farmers has been addressed through decisive crop recommedation. Crop recommendation method refers to a method of selecting crop(s) over a specific season depending upon various environmental factors for the maximum benefit. These factors are precipitation levels, average temperature, soil type etc. The data of the soil is given to recommendation system it will use the collect data and do ensemble model with majority voting technique using ANN(Artificial neural network) as learners to recommend a crop for specific parameter with high accuracy and efficiency.

Project Objective

Development of artificial intelligence based crop recommendation system to suggest crops for providing alternate crops which may increase the profitability of the farmers.



Department of Computer Engineering
College of Technology

Plant Disease Detection Using Deep Learning

Project Instructor :-
Dr. S. D. Samantray

Abstract

Identification of the plant diseases is the key to preventing the losses in the yield and quantity of the agricultural product. The studies of the plant diseases mean the studies of visually observable patterns seen on the plant. Health monitoring and disease detection on plant is very critical for Sustainable agriculture. It is very difficult to monitor the plant diseases manually. It requires tremendous amount of work, expertise in the plant diseases, and also require the excessive processing time. Hence, Deep Learning techniques are used for the detection of plant diseases. Disease detection involves the steps like image acquisition, image Pre-processing, Image segmentation, feature extraction and classification.

Methodology

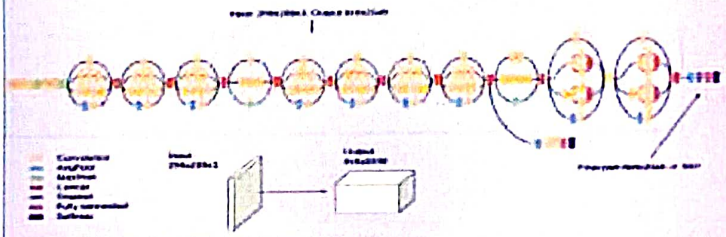
Step 1: Dataset Collection

The dataset comprises of soil specific attributes which are collected from Kaggle.com. In addition, similar online sources for general crop data were also used.

We analyzed 10,000 images of plant leaves, which have a spread of 12 class labels assigned to them. Each class label is a crop-disease pair, and we make an attempt to predict the crop-disease pair given just the image of the plant leaf. We resize the images to 256 × 256 pixels, and we perform both the model optimization and predictions on these downscaled images.

Step 2 : Selecting Deep Learning Architecture

Inception-v3 is a convolutional neural network architecture from the Inception family that makes several improvements including using Label Smoothing, Factorized 7 x 7 convolutions, and the use of an auxiliary classifer to propagate label information lower down the network.



Step 3 : Selecting Training Mechanism

Transfer learning is used in this as it focuses on storing knowledge gained while solving one problem and applying it to a different but related problem.

Step 4 : Choice if Training- Testing Set Distribution

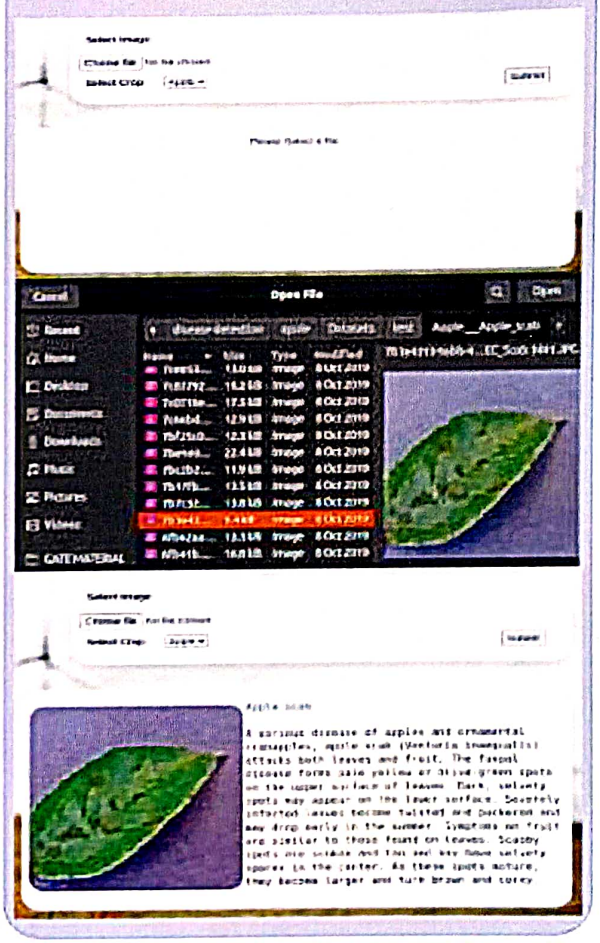
Train: 80%, Test: 20%, Train: 60%, Test: 40%,
Train: 50%, Test: 50%,

Conclusion

With very less computational efforts the optimum results were obtained, which also shows the efficiency of deep learning in recognition and classification of the plant diseases. Another advantage of using this method is that the plant Diseases can be identified at early stage or the initial stage.

Results

The overall accuracy we obtained on the dataset varied from 89% to 95%, Hence showing strong promise of Deep Learning Approach. The developed system can detect disease in plant and also provide the remedy That can be taken against the disease.



Department Of Computer Engineering , College Of Technology