Optimization of crop disease classification using convolution neural network

ABSTRACT

This paper presents the deep learning model by Convolution Neural Network (CNN) in training the crop disease classifier via image classification. A camera will be equipped and applied in artificial intelligent drone to operate as a crop monitoring system used for agriculture. Agriculture productivity is a key component of country economy. Crop diseases can lead to a drop in the quality and quantity of agricultural products. Famers are facing problems to detect the crop diseases accurately in huge region of crops. Therefore, CNN based method for crop disease detection is proposed. Dataset contains of 16,257 color images which has a total of categories have been fed into the model, out of which 10 categories are of diseased crop leaves. The CNN model contains 7 convolution layers with the number of filters 32, 64, two layers with 128 filters, three layers with 256 filters and filter size 3×3 is the proposed approach to perform crop disease classification, with the best testing accuracy of 99.02%. The crops are classified correctly using the suggested CNN design. The suggested CNN design is validated and evaluated which achieves accuracy of 99.02%, 0.98% error, 99% recall, 99% precision and 0.99 score of F-measure. In this paper, achievement of the proposed CNN model is reaching a promising result and simulated successfully in classifying the crop disease.