Objective:

a complex Internet of Things environment of crop diseases and insect pests identication model is established. Through the deployment of sensors and cameras in complex mountainous environment, the environmental information and image information of the scene are collected, and the basic database of crop pest identication is established. Through the deep learning network model, the image information is learned and recognized, which is used to identify and collect leaf images, and then identify pests and diseases.

Abstract:

Agricultural diseases and insect pests are one of the most important factors that seriously threaten agricultural production. Early detection and identication of pests can effectively reduce the economic losses caused by pests. In this paper, convolution neural network is used to automatically identify crop diseases. The data set comes from the public data set of the AI Challenger Competition in 2018, with 27 disease images of 10 crops. In this paper, the Inception-ResNet-v2 model is used for training. The cross-layer direct edge and multi-layer convolution in the residual network unit to the model. After the combined convolution operation is completed, it is activated by the connection into the ReLu function. The experimental results show that the overall recognition accuracy is 86.1% in this model, which veries the effectiveness. After the training of this model, we designed and implemented the Wechat applet of crop diseases and insect pests recognition. Then we carried out the actual test. The results show that the system can accurately identify crop diseases, and give the corresponding guidance.

Existing System:

Although with the development of science and technology, agricultural production is progressing. But due to various natural factors and non-natural factors, the yield of crops has not been greatly improved. Among the various factors, the largest proportion is the problem of crop diseases and insect pests. According to statistics, the area of crops affected by pests and diseases in China is as high as 280 million km2 every year, and the direct yield loss is at least 25 billion kg [1]. In recent years, this problem is on the rise and seriously threatens the development of planting industry. Timely diagnosis and prevention of crop diseases has become particularly important. At present, agricultural workers often use books and network, contact local experts and use other methods to protect and manage crop diseases. But for various reasons, misjudgments and other problems often occur, resulting in agricultural production is deeply affected.

Proposed System:

In this paper author is applying deep learning convolution neural network (CNN) to predict crop disease and its pests to reduce economical loss in crop business. To build disease recognition model author is applying RESNET CNN model which consists of 3 parts

1. Feature Extraction: CNN compose of multiple layers and first layer define for feature extraction and this features will be extracted from given input image dataset or any other multidimensional dataset.
2. Feature Selection: Using this layer features will be selected by applying a layer called pooling or max polling.
3. Activation module: using this module RELU will be applied on input features to remove out unimportant features and hold only relevant important features
4. Flatten: This layer will be define to convert multidimensional input features into single dimensional input array
5. Dense: This layer can be used to connect one layer to other layer to receive input features from previous layer to new layer to further filter input features in next layer to get most important features from dataset to have best prediction result.