

D1.3 Sensors which monitor plant health

What are sensors which monitor plant health?

Detecting diseases by AI (artificial intelligence):

Controlling the diseased leaves during the growing stages of crops is a crucial step. The disease detection, classification, and analysis of diseased leaves at an early stage, as well as possible solutions, are always helpful in agricultural progress.

Nutrition in plants:

Monitoring the different stages of the plant's development makes it possible to gauge the dosage of use of compost according to the nutrient's absorption capacity.

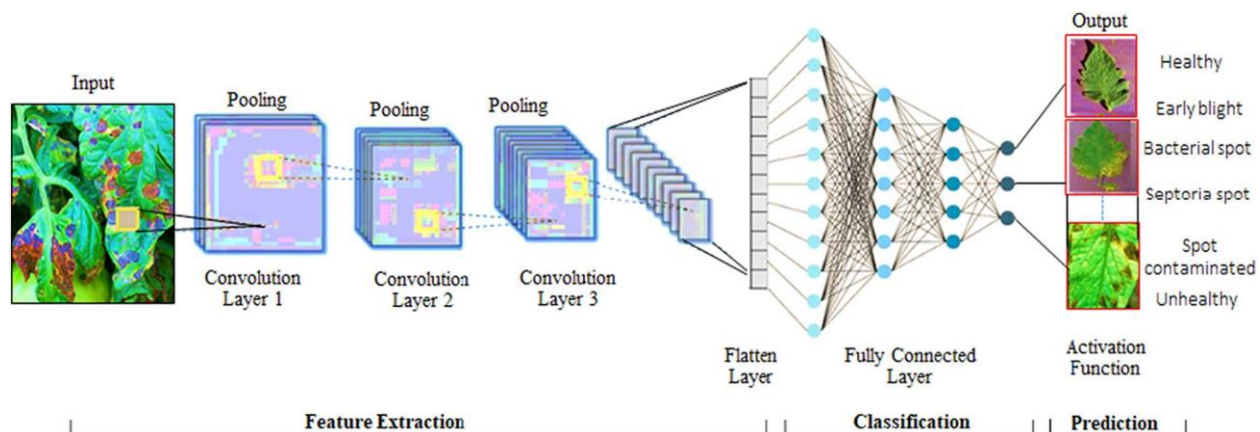
Other equipment has been used as a cultivation development indicator that helps monitor leaf and crop health.

By measuring the NDVI (Normalized Difference Vegetation Index) continuously, dynamically, and effectively, farmers can analyze the development of the nutritional conditions of the crop in real time for quickly diagnosing and adjusting the compost.

How to monitor plant health?

Monitoring diseases:

The important objective is to forecast the sort of illnesses in the crop's leaves at an early stage. The Convolutional Neural Network (CNN) methods are used for detecting Multi-Crops Leaf Disease (MCLD). The features extraction of images using a deep learning-based model classified the sick and healthy leaves.



Monitoring nutrition:

The equipment can be installed in vehicles suitable for measurements, such as motorcycles or quadricycles, and in vehicles for field operations, such as sprayers, tractors, or compost spreaders. There are diverse options to facilitate your work.

Data collected by measures a circular area of approximately one meter in diameter. Thus, the equipment must be installed about one meter away from the crop to be analyzed. It takes a reading per second to ensure more complete information.



Benefits

With disease control, detection and recognition of crops illnesses quickly and effectively is very important because it could be capable of monitoring huge fields of crops and detecting disease symptoms as soon as they occur on plant leaves.

With plant nutrition, rational use of fertilizers not only promotes the healthy development of plants but also reduces costs by avoiding unnecessary interventions.

Limitation

Using the machine for testing and analyzing plant health may reduce the farmer's abilities for self-practice in the observation and experience in agricultural works.

Summary of the topic

To understand what are sensors which monitor plant health, how to monitor plant health. To understand the benefits and limitations of sensors which monitor plant health. Plant health has been indicated by the fulfillment of nutrition and the absence of diseases.

List of relevant topics

<https://www.sciencedirect.com/science/article/pii/S2589721721000416>

https://www.falker.com.br/en/plant_analysis

Key words

plant health

monitoring nutrition

monitoring diseases

NDVI

MCLD

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