

PRIOR KNOWLEDGE

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| DATE | 10 NOVEMBER 2022 |
| TEAM ID | PNT2022TMID27540 |
| PROJECT NAME | Fertilizer Recommendation System For Disease Prediction |

Detection and recognition of plant diseases using machine learning are very efficient in providing symptoms of identifying diseases at their earliest. Plant pathologists can analyze digital images using digital image processing to diagnose plant diseases. Application of computer vision and image processing strategies assists farmers in all agriculture regions. Generally, plant diseases are caused by the abnormal physiological functionalities of plants. Therefore, the characteristic symptoms are generated based on the differentiation between expected physiological functionalities and abnormal physiological functionalities of the plants. Mainly, plant leaf diseases are caused by Pathogens positioned on the plants' stems. Different methods in image processing predict these different symptoms and diseases of leaves. These different methods include different fundamental processes like segmentation, feature extraction and classification and so on. Mainly, the prediction and diagnosis of leaf diseases depend on segmentation, such as segmenting the healthy tissues from diseased tissues of leaves.

Prior Knowledge:

- Neural Network
- Natural Language Processing
- Cloudant DB
- Watson Assistant
- Artificial Intelligence
- Python
- HTML & CSS

Flask Neural Network:

- Deep learning techniques, and in particular Convolutional Neural Networks (CNNs), have led to significant progress in image processing. These applications could serve as a basis for the development of expertise assistance or automatic screening tools. Such tools could contribute to more sustainable agricultural practices and greater food production security.

Natural Language Processing:

- Natural language processing (NLP) refers to the branch of computer science and more specifically, the branch of artificial intelligence or AI—concerned with giving computers the ability to understand text and spoken words in much the same way human beings can.

Cloudant DB:

- Cloudant is an IBM software product, which is primarily delivered as a cloudbased service. Cloudant is a non- relational, distributed database service of the same name. Cloudant is based on the Apache-backed CouchDB project and the open source BigCouch project.

Watson Assistant:

- Watson Assistant lets you build conversational interfaces into any application, device, or channel. Add a natural language interface to your application to automate interactions with your end users. Common applications include virtual agents and chat bots that can integrate and communicate on any channel or device.

Artificial Intelligence:

- Artificial intelligence (AI) is the ability of a computer or a robot controlled by a computer to do tasks that are usually done by humans because they require human intelligent discernment. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision.

Python:

Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured, object-oriented and functional programming.

HTML & CSS:

HTML (the Hypertext Markup Language) and CSS (Cascading Style Sheets) are two of the core technologies for building Web pages. HTML provides the structure of the page, CSS the (visual and aural) layout, for a variety of devices.

Flask:

Flask is a micro web framework written in Python. It is classified as a micro framework because it does not require particular tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions.

Fertilizer Recommendation

Recommend the fertilizer for affected leaves based on severity level. Fertilizers may be organic or inorganic. Admin can store the fertilizers based on disease categorization with severity levels. The measurements of fertilizers suggested based on disease severity.