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| **TEAM ID:**  **PNT2022TMID22999** | **PREREQUISITE FOR FERTILIZER RECOMMENDATION SYSTEM** |

**PROBLEM STATEMENT:**

Agriculture is the most important sector in today’s life. Most plants are affected by a wide variety of bacterial and fungal diseases. Diseases on plants placed a major constraint on production and a major threat to food security. Hence, early and accurate identification of plant diseases is essential to ensure high quantity and best quality. In recent years, the number of diseases on plants and the degree of harm caused has increased due to the variation in pathogen varieties, changes in cultivation methods, and inadequate plant protection techniques.

**Here is a list of prerequisite for fertilizer recommendation system:**

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

**Neural Network:**

Prior knowledge on neural network is important for fertilizer recommendation system because the purpose of this work is to identify that from the basic nutrients in the soil such as Nitrogen(N), Phosphorus(P) and Potassium(K), with an MLP neural network of multiple input layers and multiple output layers trained with the back propagation algorithm, it can determine the fertilizers and amendments required for cultivation

**Natural Language Processing:**

Natural Language Processing, or NLP for short, is typically known as the electronic manipulation of natural language by software, also including speech and text. Natural Language Processing ( NLP) is perhaps the most machine-learning approach to engaging with complex agents to just use a natural speech, including certain English.In our fertilizer recommendation system ,we use NLP to recognize the disease and recommend a fertilizer for a particular crop.

**Cloudant DB:**

Protecting our application related data such as kinds of diseases and kinds of fertilizers for large-scale can be complex, especially with distributed and NoSQL databases.Just as it reduces the effort of maintaining your databases to keep them running and growing nonstop, IBM® Cloudant® for IBM Cloud® also ensures that your data stays secure and protected.

**Watson Assistant:**

IBM Watson Assistant is an AI-powered virtual agent that provides users such as farmers with fast, consistent, and accurate answers across our fertilizerr recommendation system. Using AI and natural language processing, Watson Assistant learns from customer conversations, improving its ability to resolve issues the first time while removing the frustration of long wait times, tedious searches, and unhelpful chatbots.

**Artificial Intelligence:**

Artificial intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions.our system requires Artificial intelligence for recognizing the disease by image preprocessing.

**Python:**

Python is a popular programming language. Python can be used on a server to create web applications. Python has many built-in modules and is very much useful for us to develop fertilizer recommendation system.

**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.In our fertilizer recommendation system ,it helps us in making the GUI of our fertilizer recommendation system.