Agricultural Helper Chatbot

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Abstract:
India is regarded as the world's agricultural powerhouse and has historically had a heavily agricultural-based economy, despite the fact that many farmers and their respective families face difficulties in the field due to a lack of knowledge about agricultural production, including poor farming practises, insufficient crop materials, improper crop planning, and failure to maintain a proper balance of fertilizer[2]. This project is a chatbot structure prototype that aids people or farmers in crop management and foretells the crop's requirements. Predictions about crop nutrition, fertiliser application rates, and other factors help people have enough information to take care of their fundamental requirements[7]. In order to provide answers to questions based on specified data, this structure employs natural language processing. The chatbot evaluates prior feeds and data sources from "The Indian Council of Agricultural Research" It operates through its network of 114 institutes, 71 agricultural universities and 683 krishi vignan kendras across the country[1]. Its main function include conducting basic and applied research in agriculture in order to ensure that the Structure is correct[1].

Keywords: Chatbot, artificial intelligence, natural language processing, crop diseases identification, agroprocessing, sustainability.

1. INTRODUCTION

A chatbot is a chat interface-based help that people may interact with[4]. By writing questions, just as you would ask someone in person, you might offer inquiry. In general, the chatbot will respond in a conversational manner, and it may take action in response to your dialogue (for model, request something for you)[5].

It often operates inside a well-known messaging service, such as SMS, Facebook Messenger, or Slack[5].It responds to your question rather than pointing you to a website.

Chatbots are expected to dominate the industry as online life entry and web network readiness to increase together with advances in human-made reasoning and language handling[2]. It's crucial for a designer to know what the chatbot will give and what category it belongs to. Choosing the computations, phases, and tools to create the bot would be aided by this. Also, it aids end users in understanding what is planned. Here, we discuss the numerous chatbot types, the tools and computations that can be used to different chatbot types, and provide a general engineering that can be used while creating bots. We also talk about the areas where there are no chatbots and identify the areas that need to be explored as a result[6].This arrangement incapacitates the aforementioned problems via providing a operator boundary that enables agriculturalists otherwise additional operators to interrelate well and become the required results in fewer steps. Such a programme

"TalkBot" stands a chatbot, or simulated subordinate, that allows operators near become accessible answers to their inquiries. The input is provided by the user, pre-processed to identify the category of the question it belongs to, and then the proper response is provided[3].Farmers are suffering from

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infections spread by infected plants or fields, which is causing them to produce less and lose a lot of money.Since they can ask questions, receive answers to their uncertainties, and spray pesticides at the right moment, farmers will be pleased with this agricultural chatbot and will produce more. As a result, there will be no loss for the industry.A chatbot is being introduced to assist farmers and provide answers to their questions. Farmers may converse with the chatbot, bringing computers closer to human intelligence. The chatbot gathers keywords, then engages people in conversation by asking questions and offering suggestions[4].Without any human involvement on the server side, an artificial intelligence (AI) programme known as a Chabot converses with users through text. With this project, we only included a few restricted features, such text-based conversation that is solely intended for farmers who are engaged in agriculture farming[7].

Related Work
"Farm TalkBot Using AI"
The IT sector is changing due to artificial intelligence and machine learning. This issue is solved by the system "The TalkBot," which gives farmers more user-friendly access to the information they need and greater opportunities to catch up with emerging market trends and innovations. TalkBot is a chatbot, or artificially intelligent chatbot, which allows users to have conversations with it much as they would with real people.

The goal is to build the bot in a more intelligent approach so that it can even identify statements that are poorly constructed grammatically, misspelt words, missing phrases, etc. People will be able to communicate with the bot more readily as a consequence, since the system employs Usual Verbal Giving out to interpret operator inquiries, detect important phrases, competition them by the Information Corrupt, then provide correct responses. In order to give users with non-textual answers that are simple to understand and to improve the responses' comprehension, responses are created utilising categorization algorithms. The bot may also answer by speaking using text-to-speech techniques.

"A chat-oriented discussion system with a customised long-term memory."
This paper proposes a long-term memory-based personalization framework for a chat-based, discussion-oriented example-based system. Simple keyword and pattern matching approaches are used by previous representative chatbots. In order to preserve the integrity of systems, a variety of heuristic rules must be produced utilising human labour. To construct such rules and matching patterns, linguistic specialist knowledge is also required. Building a chat-oriented conversation system uses example-based dialogue management to reduce excessive annotation costs. In addition, we suggest three features: back-off replies for user utterances that are not matched, tokens with POS tags to match sentences, and NE sorts and values to look for suitable answers. Moreover, our system ingests phrases from the user and automatically gathers user-related data, long-term memory storage for the information. The reactions of the system may be altered by employing user-related data that has been stored in the lasting recall. A system response's bearing notch is recommended in order to choose replies that contain operator-linked data before are often used. We have discovered via a number of trials that the characteristics we have suggested help to increase performance, and our system outperforms ALICE with the same training corpus.

"Creating a Chat-Bot that Simulates a Historical Person,"
The information of the conversational bot stands often maintained in a file built through social professionals, despite the fact that many apps have a human look and aim to replicate human conversations. The notion of building a chat-bot with a fake personality and character using online sites or plain text about a certain individual has, however, only been the subject of a very small number of studies. In order to create a informal manager that may remain utilised in CSCL situations for central seminary students, this study discusses a method for locating the key information in texts that describe the lifespan (counting the character) of a past character.

System Architecture
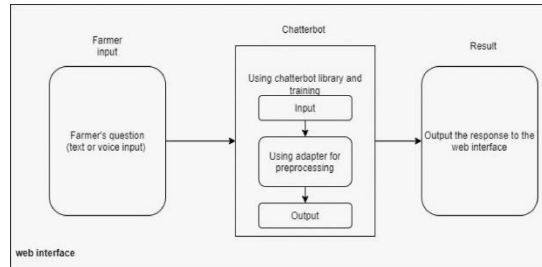
2. METHODOLOGY
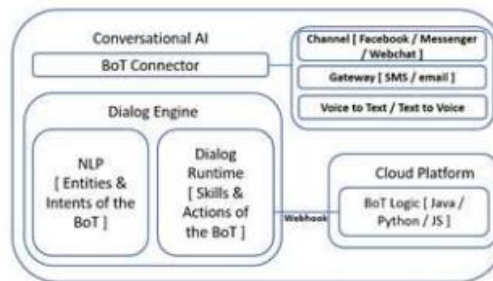
Informal AI's core technology is NLP. The conversational AI's high-level architectural elements are shown in Figure 1. NLP Engine: A statement or phrase may be more fully understood using artificial intelligence thanks to the Natural Language Processing (NLP) engine, which analyses user input to do so. Chatbots stay established founded happening a rule-based train that needs full inquiries toward remain if which consequences in consequences existence big then incompetent. NLP train excerpts information then revenues tortious consequences that includes of expectable intentions, objects (together usual then tradition) besides operator appeals as of lexes.The user may design the interaction flow in the Bot manufacturer, too known by way of the runtime of the conversation, which remains a Graphical User Interface (GUI). The operator would instruct the bot here on how to react to user input messages. The whole bot creation process is sped up by a bot builder's unique user experience environment. Robot Logic The bot sense may remain developed in addition provided by way of a net API in somewhat software design linguistic of the designer's choosing. The cloud platform is in charge of calling in addition overwhelming OData facilities before APIs after the back-termination file in addition scheme besides revealing that info towards informal AI. Bot Connector: This adapter allows CAI to link up with several networks of statement, including runner, webchat, slack, Microsoft Teams, and so on The Bot connection might alternatively remain held on an on-premises scheme, depending on the requirements of the client.

Existing System
The existing system for agriculture assistance often involves manual monitoring and analysis of crops, which can be time-consuming, labour-intensive, and prone to errors. Additionally, traditional methods of crop management often rely on guesswork and past experiences, rather than data-driven insights.

Disadvantages
1. Less Accuracy.
2.There is no proper resources to suggest the farmers for how to overcome any problem.
3.There is no specific pesticides for one specific leaf disease.

Problem Statement:

As the world population continues to grow, the demand for food is also increasing rapidly. Agriculture, being the primary source of food, has become more critical than ever before. However, farmers face several challenges such as unpredictable weather patterns, pests and diseases, lack of access to information and resources, etc. These challenges make it difficult for farmers to increase their productivity, yield and profitability.To address these challenges, there is a need for an Agriculture Helper Chatbot that can provide farmers with timely and accurate information on farming techniques

Proposed System

The designing chatbot for farmers where chatbot ask farmer to upload crop image and then application will apply deep learning CNN algorithm to predict disease from that crop leaf and display possible remedies. After getting remedies user can ask question related such as crop name and then chatbot will display soil, rainfall and other details. User can ask question chatbot in their voice and application will use speech recognition algorithm to understand farmer question and then display answer.

Advantages

1.High Accuracy.
2.Helps in decision making.
3.Improve agriculture production, profitability, sustainability and food quality.

Algorithms

KNN: K nearest neighbour is a simple algorithm that stores all available cases and classifies new cases based on a similarity measure.
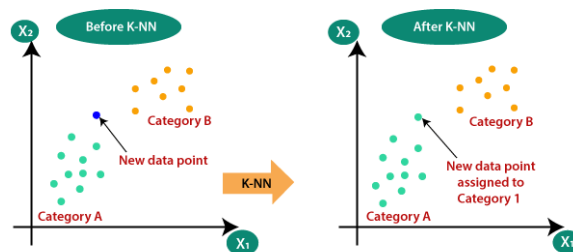
CNN: Convolution neural network is a kind of network architecture for deep learning algorithms and is specially used for image recognition and tasks that involve the processing of pixel data.
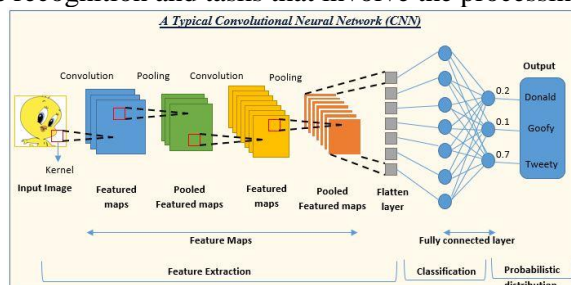
3.   **RESULT AND DISCUSSION**
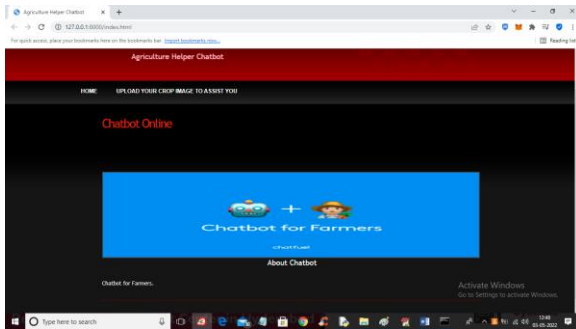
To submit a crop illness picture like the one below, click the button on the previous page labelled "Upload Your Crop Image to Help You.

Processing of KNN:

Data collection: The chatbot collects data on crops, diseases and other relevant information from various sources such as agriculture database or experts.

Data preposing: The collected data is then preprocessed to remove any missing values or irrelevant information. The data is also standardized or normalised to ensure that the features are on the same scale.

Training the KNN model: The preprocessed data is then split into training data is then split into training and testing sets.

Predicting Results: When a user inputs a query, the chatbot preprocesses the input and passes it to the trained KNN model.

Providing recommendations: Once the KNN algorithm has made a prediction, the chatbot can provide recommendations to the user based on the predicted class.

Processing of CNN:

Data collection: The chat bot collects images of healthy and diseased crops from various sources such as agricultural databases or experts.

Data Preprocessing: The collected images are then preprocessed to ensure that they are in the correct format and are on the same scale.

Training the CNN model: The preprocessed images are split into training and testing sets. The CNN model is trained using the training dta, where the algorithm learns to recognize patterns and features in the images.

Predicting results: When a user uploads an image, the chatbot preprocesses the image and passes it to the trained CNN model.

Providing results: Once the CNN algorithm has made a prediction, the chatbot can provide recommendations to the user based on the predicted class.
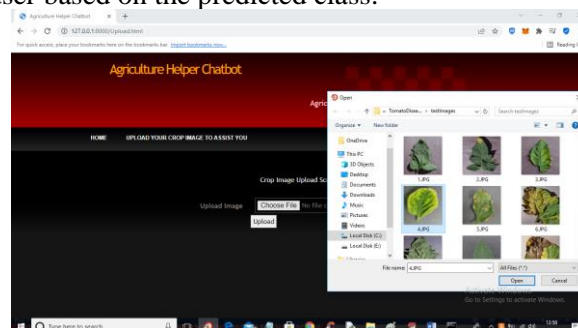
choosing the "4.JPG" file in the aforementioned screen, clicking the "Open" button to load the picture, and then clicking the "Upload" button will result in the results seen below.
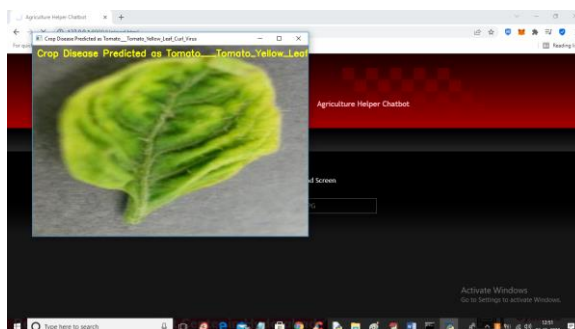
Close the above picture to get potential treatments from the chatbot. On the above screen, we can observe crop disease projected as "Tomato Yellow Leaf curl disease."

4.CONCLUSION

An agriculture helper chatbot can be a valuable tool for farmers and other individuals in the agriculture industry. It can assist and provide valuable insights recommendations to improve efficiency and productivity. An agriculture helper chatbot has the potential to revolutionize the industry and help farmers to navigate the complex challenges of modern agriculture.

Future Scope

The future scope of an agriculture helper chatbot looks very promising. It could be also integrated with other technologies like drones and sensors, to collect real-time data and offer more accurate insights. Furthermore, the chatbot could be designed to support multiple languages, making it accessible to farmers globally.

5. REFERENCES

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