

Implementation of Artificial Intelligence Device for Grama Vikas

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Abstract: The main purpose of our project is to implement the device in Rural areas which enables the village people to use the schemes offered by the competent authorities. Here, we are training the device in the local language (Kannada) using AI and ML, so that the rural people who are more comfortable with their local language (Kannada) will be able to get the information about the government schemes. This device is trained to tell the usage of particular tablets. It helps the farmer in the detection of crop disease (leaf) and gives suitable remedies for the particular disease.

Keywords: Disease prediction, pre-trained model, deep learning, agriculture.

1. Introduction

The complexity is increased in the implementation of AI systems due to the development in information technology and communication. The systems now are able to approach human activities such as robotics, decision support systems, expert systems, natural language processing, etc. There are adaptive methods and hybrid methods in the AI field that results in more complex methods. Not just that but we can also find the hybrid of intelligent systems and natural language that understands human language. These systems are able to gain new knowledge by themselves and also renew them by reading the electronic articles that are previously existing on the internet. The systems can be asked by the humans like the way it is usually done with other humans. Hence, these systems are popularly known as internet answering engines.[1], [3].

Approximately 58% population in India depends on Agriculture. Due to unawareness of Agricultural schemes offered by the government, 25% of Indian farmers are not able to make use of it. To overcome this problem, we proposed a voice assistant system that recognizes their voice and finds the solution for the particular queries asked by the people. AI device aims to update new government schemes in the local language. It helps in detecting leaf disease and giving remedies for the same. It also tells the usage of the particular tablets. This device is built by using Python, Open Cv, and Raspberry-pi. [3]

2. Literature Survey

The voice-controlled robot designed by Jishnu U. K, Indu V. along with others works as the assistant to the elderly people.

Manual efforts of humans can be reduced in their day-to-day life tasks. Their paper narrates the design of the personal assistant robot, which is developed in such a way that it is controlled by voice commands to grab long or short-distance objects. Via Bluetooth, the voice communication between the android smartphone and the robot is done. The four-wheeled robot is given a camera and a robotic arm. The camera is used for distance measurement and object detection. The robotic arm is used to perform pick and place actions.[2], [3], [5].

3. Proposed Methodology

The AI device consists of a Raspberry pi, Camera, Speaker, Microphone, and Power Supply. The Raspberry pi acts as a heart for the project. The main aim of this project is to build the communication between the AI device and the village people. It can be useful for people who are semi-literate or illiterates. The Kannada language has been trained by using AI and ML. Our system is proposed for the detection of leaf disease by taking input from the Camera, once the farmer shows the leaf to the camera, it will detect the disease and gives suitable remedies for the particular disease.[4] Whenever any tablet sheet has been shown to the camera, it will tell for what purpose it can be used. If an answer is not found for any question, that question will be forwarded to the member behind the device and further, he will update the answer. [5]

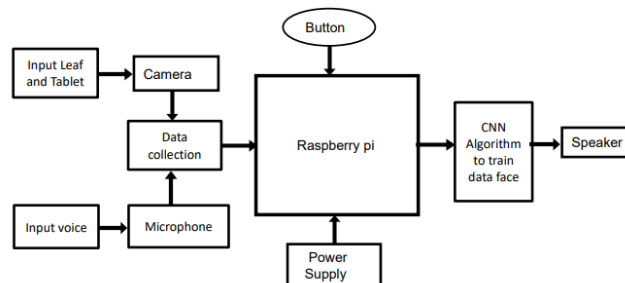


Fig. 1. Block diagram of AI device

4. Requirements

A. Hardware Requirements

- Raspberry-Pi
- Camera

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- Speaker
- Microphone
- Buttons
- Power Supply

B. Software Requirements

- Open Cv (AI, ML)
- Python

5. Implementation

The AI device consists of a Raspberry pi, Camera, Speaker, Microphone, Switches, and Power Supply. The Raspberry pi acts as a heart for the project. The main aim of this project is to build the communication between the AI device and the village people. It can be useful for people who are semi-literate or illiterates. The Kannada language has been trained by using AI and ML. Our system is proposed for the detection of leaf disease by taking input from the Camera, once the farmer shows the leaf to the camera, it will detect the disease and gives suitable remedies for the particular disease.[2], [3]. Whenever any tablet sheet has been shown to the camera, it will tell for what purpose it can be used. If an answer is not found for any question, that question will be forwarded to the member behind the device and further, he will update the answer. [2], [5].



Fig. 2. Hardware setup

6. System Outcomes

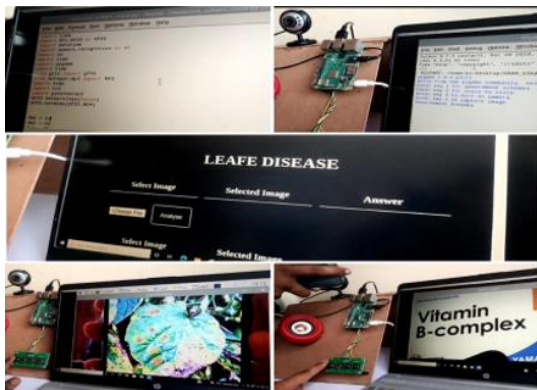


Fig. 3. Result of leaf disease identification and prescription reading

As discussed above initially the proposed model will be helpful in voice-to-voice communication i.e., when village people communicate through the microphone, it compares with the data which is previously stored, if input voice data matches,

then the system gives the output in the local language. If an answer is not found for any question, that question will be forwarded to the member behind the device and further, he will update the answer. next comes the leaf disease identification, in leaf disease identification system is proposed for the detection of leaf disease by taking input from the Camera, once the farmer shows the leaf to the camera, it will detect the disease and gives suitable remedies for the particular disease. It helps the farmer in the detection of crop disease(leaf) and gives suitable remedies for the particular disease. next comes with medicine prescription reading when any tablet sheet is shown to the camera, it tells the usage of a particular tablet.

Advantages:

- Easy to implement
- User-friendly model
- Cost-effective system
- More accurate
- Low maintenance

Future enhancement:

- Taking in mind the uses of the farmers and also the agricultural sectors, the following system was proposed.
- This system can detect the leaf, identify the disease if any, and also provide a suitable cure for the disease.
- The correctness of the result is around 78% as the process is based on Python.
- By using Google's GPU for processing, the accuracy and speed can be increased.

7. Conclusion

This project aims to reduce the communication gap between the device and human interaction which helps them to lead a quality lifestyle. The device converts text or images to voice which is helpful for the semi-literates or illiterates, also it converts speech to text for human and device interaction. This project is designed as the prototype model for humans and robots into a single compact device. The device makes its advantage in being easy to carry because of its less weight and size. The device can be used as a smart assistant for village people to communicate with the device and it is a language-independent system.

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