International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 08 Issue: 07 | July 2021 www.irjet.net p-ISSN: 2395-0072

Voice Assistant and Its Implementations in the Life of Especially Abled People

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Abstract : In the past few years, Artificial Intelligence (AI) has grown so much in the field of science and technology. Voice assistant incorporate AI by using cloud computing and Natural Language Processing (NLP). In AI, NLP is used to communicate with the user in natural language. There are lots of devices which use AI nowadays such as AI Voice assistant. There are millions of households who have been using voice assistants for their personal use. Most common devices which uses voice assistant are smart speakers. The main idea of this paper is to make a personal assistant to provide security to especially abled and elderly people.

Keywords: artificial intelligence, voice assistant, image processing, natural language processing, smart speakers, especially abled people.

Introduction

In today's world of growing technologies like, Augmented Reality (AR), Virtual Reality (VR), IOT, cloud computing, block chain, Quantum computing and voice interactions are reshaping the way people engage with the world and transforming digital experiences. In coming years, voice control will be the medium of human-computer interaction. In 2020, near about 1.38 billion smartphones were sold worldwide. In the year 2018, 1.56 billion smartphones were sold, which is the maximum number of smartphones sold all over the world ever. The heavy use of smartphones led to the appearance of many voice assistants like Apple's Siri, Google's Assistant, Amazon's Alexa, and

Microsoft's Cortana. Other than smartphones, personal voice assistants are now accommodated in speaker to communicate with the user, which is also called smart speakers.

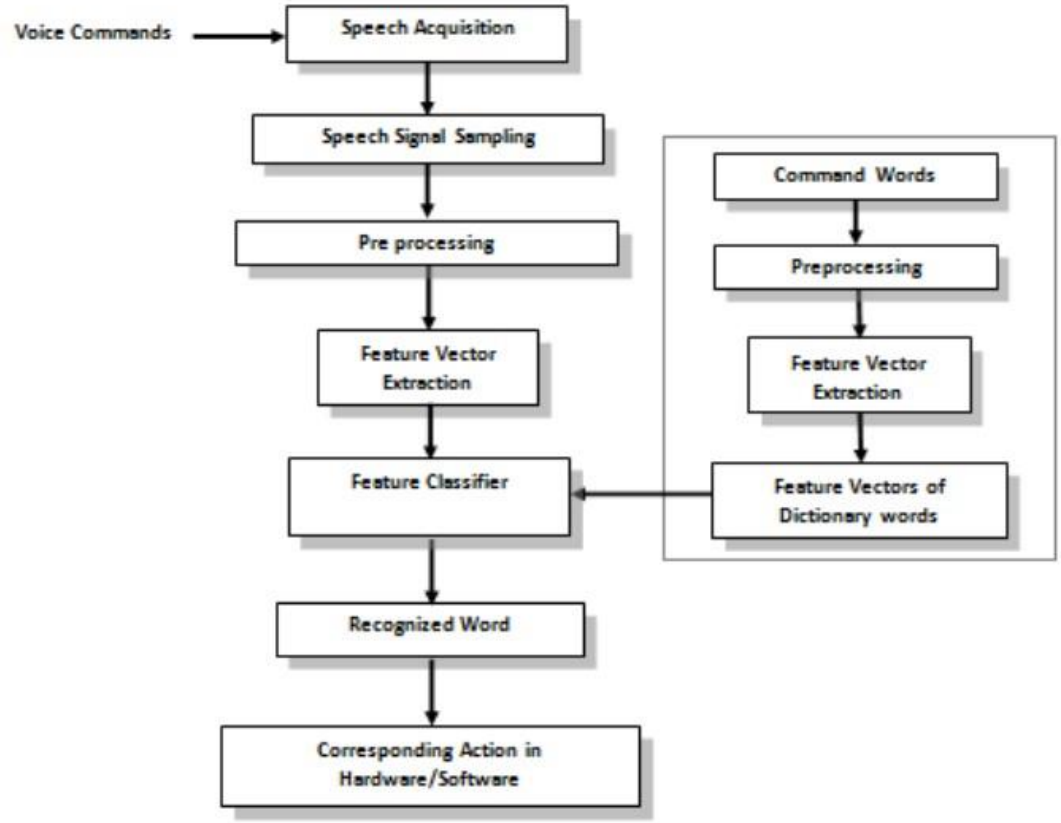
Since data has to be sent back and forth to the centralized data centres, voice assistants rely totally on cloud-based architecture. So, most of the artificial intelligence processing happens in the cloud and not in the device itself. The idea behind this is that, user makes request by the voice-activated device, and then, the voice request is streamed in the cloud, and there voice is converted into text. Then the text goes to backend and after processing there, backend replies with text response. Lastly, the text response goes through the cloud and gets transformed into voice, which will be streamed back to the user in voice. So, for example the user is blind and can't see that who is at the door , then by using image processing the image of the person will be matched with the stored database that whether the person at the door is a friend or a stranger. If the face of the person will get matched with the stored database than the person is a friend or otherwise a stranger.

Methodology

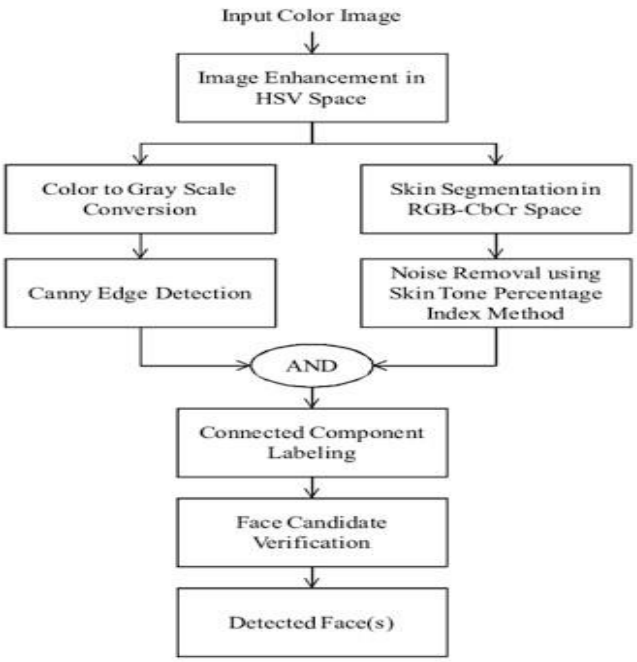
IT is an IOT based project in which coding has been done through python; there is an Arduino Uno microcontroller, speaker, web cam, connecting wires, power bank. The code of the entire project is divided into several parts:-

1. First part contains image recognition programming (in which face will be cropped and saved in the folder)
2. Second part contains recognition code and already existing data base (in which crop face will identified by the system that the person is known or unknown)
3. Third part contain voice assistant (through which a blind can ask assistant e.g.: Raman what Is cos30, search anything on Google and it will also tell the blind person if the person is known or unknown by giving any signal)

Speech To Text



Face Recognition Process



Advantages:

1. Minimize the human error and effort
2. Hands free system
3. Real time monitoring
4. Accurate and saves time
5. Promotes tech security
6. Low maintenance

Discussion

A differently abled person with any kind of disability would be able to communicate with another person suffering from similar or dissimilar disabilities as per the following examples:

If a person is blind person, and wants to communicate with a dumb person then he (blind) will be sending an audio message and dumb person will listen but will reply in text message format and this text message will then be converted into audio message so that the blind may be able to hear the word said by dumb person.

Taking another scenario, if a person who is suffering from all the three disabilities i.e., he is blind, deaf as well as dumb and wants to communicate with a person who is deaf and dumb then he will be sending a message in braille script which will be converted to text message and then the other person(deaf and dumb) would reply in text message format which will be then converted to braille script for the first person, to complete the conversation.

Conclusion

In this paper, research regarding the AI voice assistant is presented for especially abled people. The system can be furthered improved by adding more complex artificial intelligence and also with the help of advance IOT techniques the entire system can be converted into a robot. In future the system can be used in many applications by adding functionality using different kind of sensors and instrument. Currently it only supports English as communication language but in future we can add more languages like Hindi, Tamil, etc.

As a conclusion, the role of these types of devices and their use in real life scenarios are still at an early stage of research and more studies need to address this topic.

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