

Lab VIEW based OCR algorithm with web & audio interface

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Abstract- Today web surfing plays pivotal role in our day to day life. All the information is far away from just one click. Same way reading also plays important role in our life. But it becomes easier to us when someone could read texts for us. Especially for people with visual disability, as they have to depend upon the braille script for reading. They can easily understand the text if they receive the text into an audio form. Hence this paper represents the idea to read the text in audio form and with the web interface to know more about the text. Thus OCR, stands for optical character recognition, is implemented using LabVIEW. OCR is a process of extracting textual data from an image in an editable form, whether the image is from scanned copy of handwritten notes or from computerized written. To make this more efficient proper training of each character is required. So that OCR can recognize maximum characters from an image. Therefore, string output is then processed for producing an audio output and generating a file in which will have the database of all the characters of an image.

Index Terms- OCR, LabVIEW, NI Vision Assistant, Audio Output, Web interface, Database file.

I. INTRODUCTION

Optical character recognition is a very interesting and challenging job for the researchers. Computerized written texts can be simply recognized by the machine. But it becomes difficult to recognize the handwritten texts. Many algorithms are made to read the handwritten texts. Challenges in handwritten text recognition is the variation of handwriting of different person. So, in this paper I have implemented the algorithm to read the text from an image. You will not only able to read the text but also can edit the text as it creates the database file and also you can listen the text as it also includes the audio output. It's web interface allows you to know more about the particular texts on image. For example, if there is an important information is written on an image and you

want to know more about this information, instead of typing text on your search engine, all you need click the button on the panel. It will navigate to you a browser and will find results for you. The default browser in this case is internet explorer, as it comes default in windows operating system.

To insert images in this algorithm you will need dataset of images in your computer and have to assign path in programming, which is one-time effort. Later you can add more images in your folder.

II. LITERATURE SURVEY

A. Book reader for blind people using LabVIEW.

This paper was introduced by J. Rubamathy, A. Kamala Sherlin, R. Dharshini & Prof. G. Vijayalakshmi [1]. In this paper they had installed a droid cam which connected the smartphone and computer wirelessly and it can be used as a webcam. In which the user gets an audio feedback.

B. An advanced LabVIEW based OCR system for handwritten scripts.

This paper was introduced by Arun Panda, Prof. Mishra & Prof. Das [2]. In this paper they had convert the handwritten scripts, which were in Odia language, into English language.

III. REQUIREMENTS

A. Hardware requirement:

The only hardware requirement is a P.C. with good enough memory space and RAM.

B. Software requirement:

The software required for this algorithm is LabVIEW and NI Vision Assistant.

LabVIEW is a graphically programming language developed by National Instruments.

Vision assistant is a tool for prototyping and testing image processing applications, in which algorithm is recorded in script file. Vision assistant is also developed by National Instruments [3].

IV. FLOWCHART

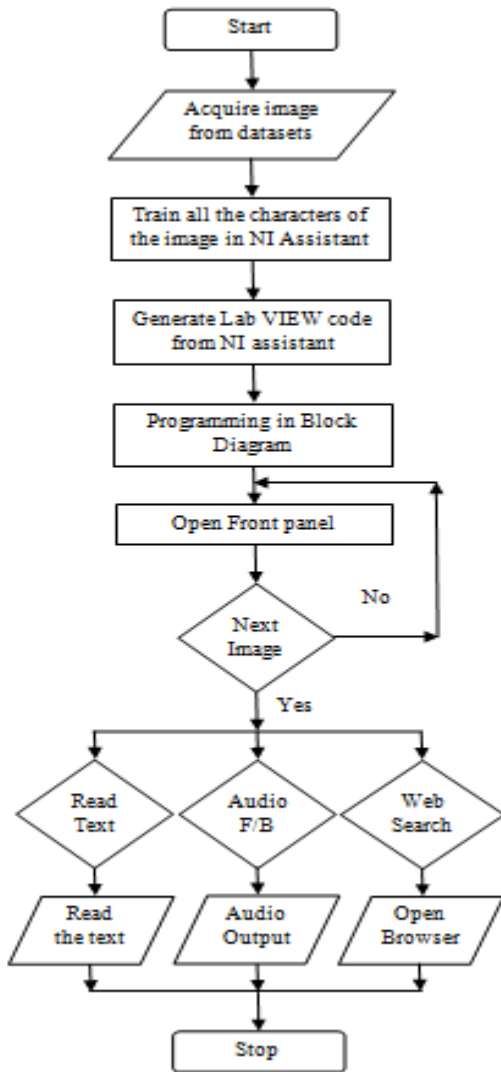


Figure 1: Process flowchart of algorithm

V. IMPLEMENTATION

A. Block Diagram:

After training all the alphabets in NI vision we will save the vision script file (in .abc format) and will use this file in programming. Then we will assign the path of vision script file and dataset of images. Then

we will run our program. It will fetch the image from the datasets and continuously feed the images.

The functions I have used to make this algorithm in LabVIEW are while loop, event structure, Image acquisition VI's, String outputs, Boolean inputs and Image output VI. Figure 2 represents the Block diagram.

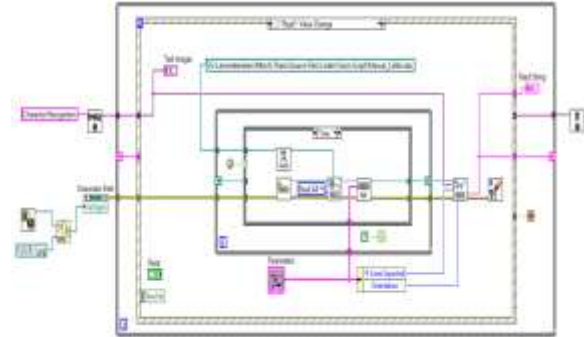


Figure 2: Block diagram

B. Front Panel:

The displayed inputs in the front panel is the control reference of VI used in block diagram. Figure 3 represents the front panel.

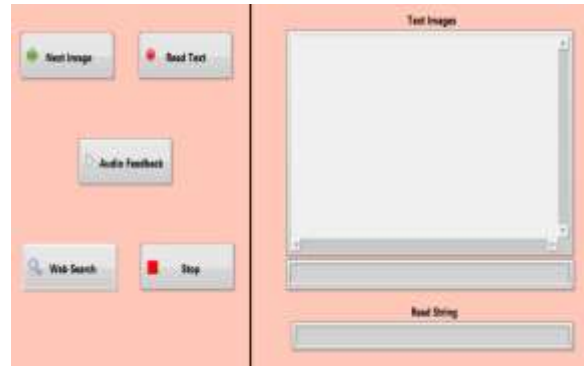


Figure 3: Front panel

Now here in front panel, we will read the text in the image by pressing the "Read Text" button on the front panel. Figure 4.

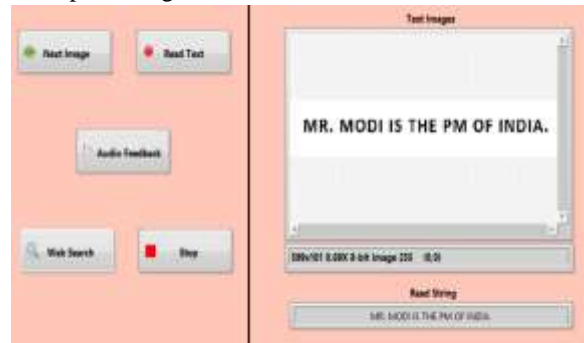


Figure 4: String output from an image

The OCR recognizes and matches the letters in images with the trained letters and then it produces the string output. The string output is then stored in a shift register inside a while loop and event structure. The shift register will further send the output with respect to the input called.

If I call input “Audio Feedback” button. It will speak the text for you. Now if you click on the “Web Search” it will open a browser for you to know more about information written on the image. For example, in case of Figure 4, I have considered the example of Indian PM, now if we click on “Web Search” it will google it for you.

For the next image we have to click “Next Image”. After clicking on this button on front panel, it will write the value in a database, which is generally a text file, and that too with date, time and the text on the image. Figure 5.

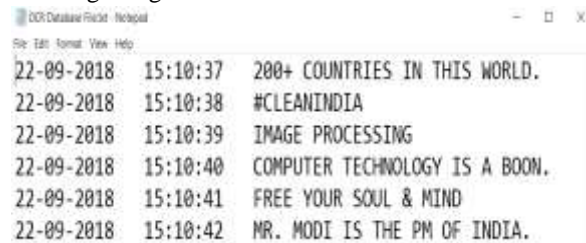


Figure 5: Database of images in text file

This algorithm can also identify the space between the characters and special characters. Figure 6.



Figure 6: String output of special character

VI. CONCLUSION

There is always a scope of improvement of a project. Therefore, better and more accurate results can be achieved by appropriate training of the characters. Further, other scripts like Hindi, Tamil, Punjabi & many more can be added.

The text to speech functionality empowers the people with visual disability. It makes them more independent.

And also, we can also add a translator which can translate the text in other languages like German, French etc. and vice versa.

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