

Text Fetching App by Image Processing

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Abstract - Processing of image is one of the main domains which have been getting a boon these days. Generally for documents we need to have sentences and paragraphs in text format. Sometimes it happens that the information is in the form of image and we need the sentences from the image data. For this we have to type whole data again by seeing in the image and that makes the work even tedious. Thus to overcome this problem we will be designing a graphic user interface application which will convert the written text in the image to the actual text format. We will use Image processing concept and programming for the same. The application will be given the access to the camera to click the photo. The application will be given the access to the system's files to fetch the photo. The user just has to open the application and just fetch a photo from files which will contain some text. When the photo will be imported to the application, it will be scanned and the text in the photo will be converted to actual text format and will be opened in a local note editor. This application will be involving a Computer system, Programming with required packages and modules, GUI design and an application building platform. So this will be main work the application to fetch text from image.

Keywords: Image Processing, Application, App, Text Fetching, Optical Character Recognition, Graphical User Interface, GUI, OCR.

I. INTRODUCTION

Now-a-days there is a great demand of software that could recognize the character and identify them. There is a need to store the paper document and data in digital form. But the paper documents when scanned come in form of images that cannot be edited. So software which can identify the characters and print them as it is in textual form which can also be edited when needed. For this the paper document should be converted into images and that image has to be processed and this process is called Image Processing.

When the image is processed identification of the character is being done. This can be done by Optical Character Recognition (OCR) which works on machine learning and Image Processing.

II. MOTIVATION

Generally people suffer for changing paper data into digital form which can be easily accessible and can be edited. This process makes the works even more tedious for accurate output. So research on development of software for OCR is being done in this paper by reviewing and studying the methodology and papers on Optical Character recognition.

III. LITERATURE REVIEW

As discussed the fetching text from an images that is text recognition is still is being in research in the field of pattern recognition an image processing. To address the issues related to this text recognition system many researches have been done and different technologies are proposed. In forthcoming section we present a detailed survey of approaches proposed to handle the issues related to character recognition. The literature papers referred are mentioned in the Reference section.

IV. METHODOLOGY

An image or document is selected in which there is some written text. The image is uploaded to the application through gallery or camera of the mobile phone. After the image is uploaded in the application, the image is scanned and processed for further operation. When the image is processed; it is checked for the color difference in the background and the foreground. Then the Optical Character Recognition comes into the picture. In OCR the input image is converted into the binary image and the foreground and the background are separated. And in this binary image a pattern is recognized based on the alignment and pattern of the zeros and ones in the image. When the all characters are separated from the image, then these characters are been compared to the input characters of the alphabets which are already present in the OCR program for comparison of characters for recognition. Once a pattern of a character is matched with a character present in OCR program, then this particular pattern is recognized as a character. Once the character recognition is done, it is converted into the appropriate text format. When all the characters are converted into text format, then the present text is converted into .txt format as a whole so that now it can be used by the user as per their convenience.

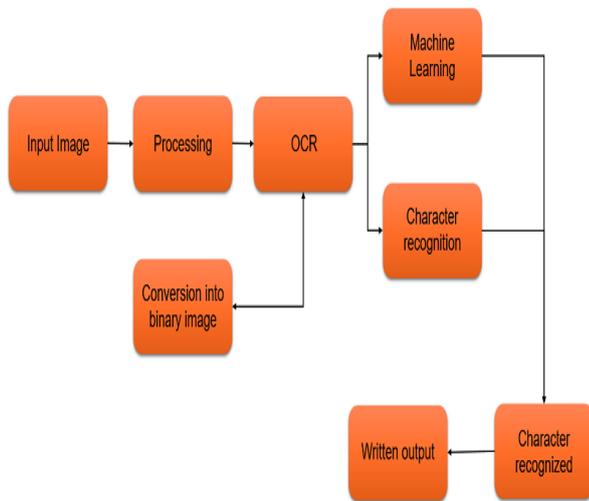


Figure 1: Block diagram of character recognition app

V. OPTICAL CHARACTER RECOGNITION (OCR)

OCR is Optical Character Recognition or it can also be termed as Optical Character Reader. It basically converts the handwritten, typed or printed text into a machine text form. It uses a photograph or scanned document which contains text that has to be converted. It works on the principal of Image Processing and Machine Learning.

In OCR the input image is converted into the binary image and the foreground and the background are separated. And in this binary image a pattern is recognized based on the alignment and pattern of the zeros and ones in the image. When the all characters are separated from the image, then these characters are been compared to the input characters of the alphabets which are already present in the OCR program for comparison of characters for recognition. Once a pattern of a character is matched with a character present in OCR program, then this particular pattern is recognized as a character.

VI. MAJOR COMPONENTS USED

As this is a software based project, the major components used are as following:

- Computer/Laptop
- PyCharm(Python Programming Platform)
- Images that contains text

VII. ELEMENTS

As it is done by using python program, so a Python programming platform and many python packages are required to do so.

The platform used here is PyCharm. PyCharm is designed software which work as a integrated development environment (IDE) in computer programming, used for the Python language. It is developed by the Czech company named JetBrains. It provides a graphical debugger, code analysis, an integrated unit tester, integration with version control systems (VCSes). PyCharm is a cross-platform, with Windows, macOS and Linux versions. The Community Edition of PyCharm is released under the Apache License and it also provides a Professional Edition with extra features – released under a proprietary license.

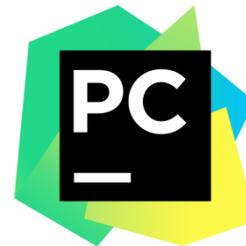


Figure 2: PyCharm platform

The Packages used in the python program are:

1. Os: The Os Module in python provides the access to the operating system of the computer. It gives the functions for interacting with the operating system.
2. Shutil: The shutil module offers a number of high-level operations on files and collections of files. It gives the access of individual file operation through the program.
3. Pytesseract: This Pytesseract package is the OCR tool. This package is used to apply OCR to the image that has to be converted to the text format. Tesseract is the Optical Character Recognition engine for various operating systems.
4. PIL: PIL stands for Python Imaging Library. It is a free library for the Python programming language that adds support for opening, manipulating, and saving many different image file formats. It is available for Operating Systems like Mac OS X, Linux and Windows.
5. Kivy: It is a Python Library that is used for developing any android based mobile Applications and other multi-touch application and software's with a Natural User Interface (NUI). It is an open source software package that is free to the users. It can be distributed under the terms and conditions of the standard MIT License. It can run on any Android, IOS, Linus, OSX and Windows.
6. Tkinter: It is toolkit that works over Graphical User Interface. It provides many system tools to design the GUI of an application. Taking Python language in

consideration of tkinter library is the easiest and fastest way to create the GUI applications. GUI creation using tkinter is feasible and very easy.

VIII. RESULTS

The output obtained from the software for text fetching from the given sample input image from the user is as shown correspondingly in the figure 3 to 6.

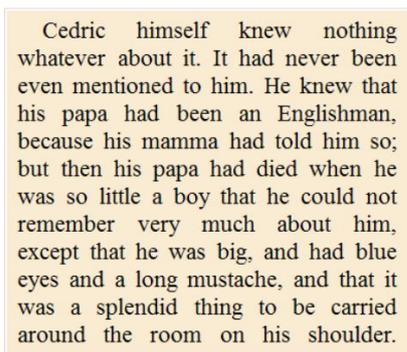


Figure 3: Sample Image Used

The sample image to be loaded to the input of the software application for image processing and text fetching is as shown in figure 3.

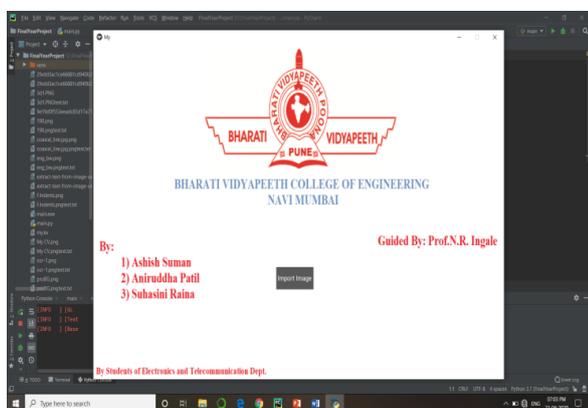


Figure 4: Application User Interface

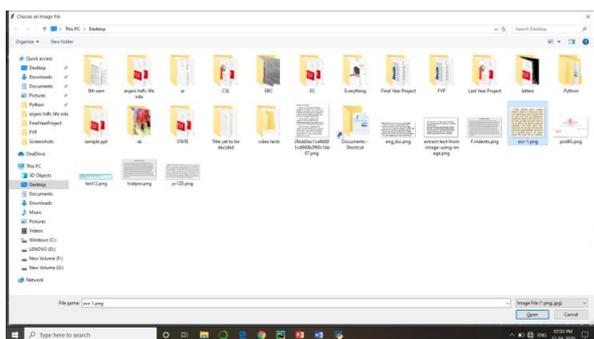


Figure 5: File Access Interface

The software file access interface is used to navigate and load the input file from the system through the file browser as shown in figure 5.

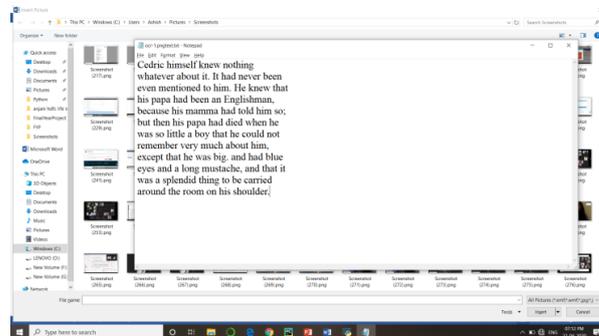


Figure 6: Final Output Interface

The texts that are fetched and extracted from the given input sample image are produced as output through the final software interface in which the identified texts are displayed finally.

IX. CONCLUSION

We have presented an approach to make use of OCR in an efficient way. This Strategy builds software that can be used in day to day life. This method can also be used for the wide range of languages with high accuracy.

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