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A Survey Study on Character Recognition using Machine Learning

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ABSTRACT: Finding the letters of the text in a picture is a very important task. Another process that uses OCR is to find text characters in a document image. However, some documents may come with embedded background images that often mislead algorithms for character acquisition. For example, small dots or sharp edges from the background image are usually tied to the box as letters and passed to the next section of the OCR pipe, resulting in a series of errors. We are inspired by this commentary, presenting a novel and an inexpensive way to process an image to accomplish a task. We will start using the images in the document and process this in advance. Which means we will turn the color images into gray and put them on the threshold. This way, the background images can be successfully deleted without losing the character of the text. Using OCR will successfully extract all the characters in the image. This idea of extracting the contents of a text image and showing that in the text area.

KEYWORDS: Document image, OCR, image preprocessing, gray image, threshold image.

I. INTRODUCTION

Nowadays, there is a growing need for software systems to recognize characters in a computer program where information is scanned through paper documents as we know we have a number of newspapers and books written in a format related to various topics. Nowadays there is a great need to "store the information contained in these papers on a computer disk and later reuse this information by searching the process". Another easy way to store information in these computerized pages is to first scan documents. Whenever we scan the documents with a scanner, the documents are saved as an image format on a computer program. These text-containing images cannot be edited by the user. But reusing this information is very difficult for the computer system to read each content and search the content creates these texts line by line and word for word.

OCR technology has a wide range of applications in text processing. Many text images are embedded with background images, e.g., checks, deposit books, driver's licenses, passports, certificates, etc. Although the background enhances document security or viewing effects, it causes difficulties for OCR applications. Some parts of the background image can be boxed as bulletproof, leading to rapid detection and causing problems in subsequent processing steps of the OCR pipe. Therefore, it is very important to process the documents by deleting the background images before the text is received. There are a number of methods available for complex text edit

GENERALIZED ARCHITECTURE

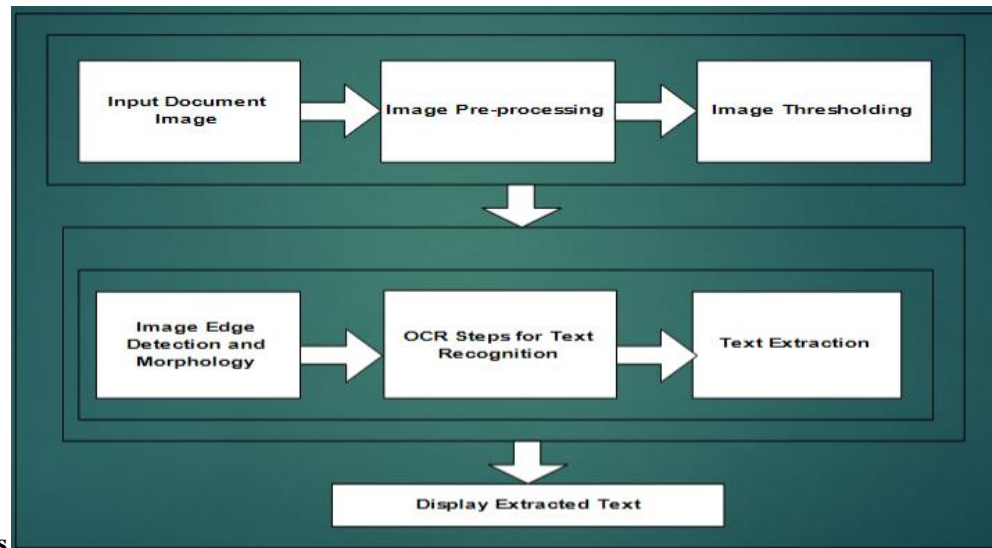


Fig.1 General Architecture Diagram

II. LITERATURE SURVEY

They present a novel and an inexpensive way to process an image to accomplish a task. They first developed document images before OCR using lightness and chromaticity as comparison parameters. Then they turn the colored pictures into gray and place them on the threshold. In this way, background images can be successfully removed without losing text quality.

For accurate recognition, certain topological and geometric features are calculated, based on where the character is classified and recognized. Also, Human Science recognizes letters in all shapes and features such as strokes, curves, protrusions, lids etc. These features, also called Features are extracted from an image by a pixel-based calculation. Neural networks are often used to solve sample recognition problems. One of these is letter recognition. The solution to this problem is one of the simplest uses of neural networks. With the help of Matlab's Neural Network Toolbox, they have tried to identify printed and handwritten characters by projected them on grids of different sizes (5x7, 7x11, and 9x13). The concept of a genetic algorithm stems from the fact that it can be used as a unique way to combine different styles of character writing and produce new styles. By examining the human mind's ability to recognize handwriting, they found that people were able to identify the characters even though they may have just begun to see that style [4]. In this project a new fuzzy intermediate method is proposed for fuzzy to process color document images. The proposed method is tested on a variety of backgrounds and textures and text in anycolor, font, size and shape.

The presented work is a work in which a simple history-based approach to the Devnagari text section is proposed in this work. Various challenges in dividing Devnagari's script are also discussed. In the present work, in this paper we propose a method mainly based on the morphological performance and run-length smearing algorithm (RLSA) to separate the lines of each text in the handwritten document images. Introduced the work by, working on a set of pre-analysis, classification, feature removal, classification and matching techniques, play a very important role in identifying the characters. A feature background that can identify letters in a unique and high degree of accuracy. There are a number of strategies proposed for front processing, feature removal, reading / segmentation, and post-processing. The task presented is the development of this approach in which we produce flexible information and provide a composite synthesizer that combines both vertical and flexible signature integration. The power is obtained through a random sample of 8 continuous connected signature trajectory, which contains, as a new item, pen-ups. The forgery generation imitates the signature by extracting the most relevant points of the actual signature given and interpreting them. Introducing the work to that, the automated diagnostic method and manifestation of dysgraphia in third grade children is described in this work. This process is based on analyzing a child's writing direction by taking a sample paper-based pencil and pen shape and adjusting using a standard digital writing pad. Ninety-nine samples were



collected from dysgraphia writers and writers skilled in this work. A comprehensive list of features that cover the flexible writing assets and writing materials (i.e., visual) was presented to each participant .

COMPARATIVE ANALYSIS

Ref. no.	Year	Algorithm/Deep Learning models	Feature Selection	Highest Accuracy
1	2018	Image recognition, Classifier, Deep Learning	Deep Learning	98.25%
2	2019	CNN, OCR, Naïve Bayes, Neural Network, Feature Extraction, OCR	OCR	82%
3	2018	OCR, Machine Learning , SVM, HOG features	HOG	94%
4	2018	LSTM,CTC,SOFTMAX	LSTM	79%

Table 1: Analysis table of previous research papers and accuracy

III. CONCLUSION

In this work we suggest and discuss how to recognize text in an image in a document. OCR is a broad field of research for pattern recognition. A lot of research work has been done and is still being done with OCR in various languages. Each phase of visual cues has its own significance and must be well-designed for best results. This program will therefore successfully extract all the characters in the document image and display it.

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