Project Synopsis

OPTICAL CHARACTER RECOGNITION FOR VISUALLY IMPAIRED PEOPLE USING TENSOR FLOW

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ABSTRACT

There are many cultural, governmental, commercial and educational organization that manage large number of manuscript textual information. English being one of the most widely used language such organization include English documents. Text line segmentation in such document remains an open document analyses problem.

In this project, the model takes English text scanned image as an input. This image is analyzed in order to identify each letter or digit. When a character is recognized it converts it into braille language as well as in English language. The output is in the form of well recognized and understandable document.

Modules used in this project are input image,pre-processing, segmentation, extraction. Text document undergoes segmentation whose output is given to background cleansing in this stage all the noise is removed based on the area for the accurate detection of the text line.The textline is detected and segmented,each detected line is indicated by bounding box .It includes rescaling, increases in brightness, contrast, greyscaling, binarization.The system eliminates small text fragment in the background cleansing stage. After pre-pocessing step it finds all the connected documents then grouping and text line extraction and then conversion to braille language.

1.INTRODUCTION

OCR, or optical character recognition, is one of the earliest addressed computer vision tasks, since in some aspects it does not require deep learning. Therefore there were different OCR implementations even before the deep learning boom in 2012. This makes many people think the OCR challenge is "solved", it is no longer challenging. Another belief which comes from similar sources is that OCR does not require deep learning, or in other words, using deep learning for OCR is an overkill.

Text line segmentation of a document image is considered as a critical stage towards unconstrained document recognition. Line segmentation is the first and the most critical pre-processing step for a document recognition, followed by word segmentation, word recognition and other indexing steps. Different types of documents give arise to different types of problem.

 The following are the steps of OCR model

A) Input Image.

B) Pre-processing

C) Segmentation

D)Background Cleaning

E)Extraction

F)Conversion to Braille Language

The above steps gives the overview of the proposed system, a text document undergoes pre-processing steps: Brightness increasing,Contrast increasing,Rescaling,Greyscaling and Binarisation.This output is given to the Segmentation process where every line following the words and letters are being Segmented by using bounding boxes.This output is given to the background cleaning

step. In this stage, all the noise is removed. Then the Extraction step is done.Lateron,the identified text is converted to Braille language.

2.LITERATURE REVIEW

SN	PAPER TITLE	AUTHOR	SUMMARY
1	Kannada text line Exraction Minimisation and skew correction (2014)	1.Sunanada Dixit 2.Suresh Narayan 3.Mahesh bellur	1.Segmentation of handwritten document. 2.Extraction of document 3.This work also uses skew Correction of the extracted text line.
2	Line and Ligature Segmentation of Urdu Nastaleeq Text (2017)	1.Ibrar Ahmad 2.Xiaojie Wang 3.Ruifanli,Manzoor Ahmed and Rahat Ullah	1.The proposal mainly introduces two algorithms for line and ligature segmentation of Nastaleeq text. 2.The proposal line segmentation algorithm places dots and diacritics more accurate;y as compared to Prevailing work relied more on zonal information and heuristics for the line and ligature segmentation respectively.
3	Text line segmentation of handwritten document of	1.Sunanda Dixit 2.Sneha 3.Nilotpal utkalit 4.Suresh h n	1.In this paper a method to detect and segment unconstrained hand written document in

	hindi and english(2014)		english and hindi where document image is first binarized and connected components are identified. 2.Based on the hough lines the text lines are identified. 3.Skew angle is determined and then the Skewness is minimized.Segmentation is the performed and result is then refined by removing the noise which basically conprises component from adjacent line.

3.PROBLEM STATEMENT

The problem in the project is to mainly convert the document into Braille Language.Many methods have been proposed but most of them are restricted and complicated.To improve the efficiency of OCR segmentation plays a vital role

The text line segmentation in the documents remains an open document analysis problem.Hence in this project,the problem is the problem is to segment,extract the English document and also convert to Braille language.

4.OBJECTIVE

- Recognize text in scanned text documents,text images, and any picture taken which is in English.The primary goal is to speed up the purpose of character recognition in document

processing.As a result the system can process huge number of documents with-in-less time and hence saves the time.

- To extract and convert to Braille Language.

5.Scope

OCR model is conversion of images of typed or printed text into machine-encoded text, whether from a scanned document, a photo of a document, a scene-photo (for example the text on signs and billboards in a landscape photo) .OCR is a field of research in pattern recognition, artificial intelligence and computer vision.

The scope of our project Optical Character Recognition is to provide an efficient and enhanced software tool for the users to perform Document Image Analysis, document processing by reading and recognizing the characters in research, academic, governmental, business organizations and for blind people that are having large pool of documented, scanned images. Irrespective of the size of documents and the type of characters in documents, the product is recognizing them, searching them and processing them faster according to the needs of the environment.

The model takes english text scanned image as an input. This image is analysed in order to identify each letter or digit. When a character is recognised it converts it into braille language as well as in english language. The output is in the form of well recognised and understandable document.

6. Benefits for environment

• Paperless revolution- The project troes the documents in softcopy and hence the paper work is reduced.

• Environment friendly- Due to reduction in use of paper, deforestation is also reduced.

• Reduced cost- Besides helping organisation in cutting down the cost of hiring manpower for data extraction, OCR also helps in reducing cost like printing,copying, shipping charge, etc

7.Benefits for society

• Retyping-It reduces the work of retyping the text as it can be directly scanned and converted to document.

• Speedy digital searches -By converting scanned text into a word processing file, OCR lets you search through documents using keywords or phrases.

• Typing new text-The image of a document to function like real text, where you can add new paragraphs, copy and paste, edit out an old reference.

• Saving space -The documents can be converted to pdfs saving the space.

• Time management-Manual data entry demands hours,efforts and sanity with time dedicated for for document creation and endless forms.

• Accessibility-For the visual impaired people, OCR software can help turn books, magazines and other printed documents into accessible files that they can get printed into Braille language.

8.Applications

• The project recognises scanned image and converts it into english text document. The document would be precise and more accurate.

• Assistive technology for blind and visually impaired users- The project converts the scanned image into braille language.This is helpful for visually impared people.They can easily understand and interpret it.

9.Technology Stack

 • Tensorflow-TensorFlow is a free and open-source software library for dataflow and differentiable programming across a range of tasks. It is a symbolic math library, and is also used for machine learning applications such as neural networks.It is used for training the model.

• Open CV- Open source computer vision is a library of programming functions mainly aimed at real-time computer vision. In this project it is used for image processing.

• Python 3.7- Python is an interpreted, high-level, general-purpose programming language.It is the programming language used in this project with its basic libraries.

 • Azure jupyter notebook- It is a web-based interactive computational environment for creating Jupyter notebook documents.The source code of OCR model will be executed in this.

 • Numpy-is a library for the Python programming language, adding support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays.

REFERENCES

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