

## **MINI PROJECT-II**

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# **Text retrieval from Image using CNN Features**

## **MID TERM REPORT**



## **Institute of Engineering and technology**

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## **Abstract**

Text detection is the method of locating areas in a picture wherever, text is present. Text detection and classification in natural pictures is very important for several computer vision applications like optical character recognition, distinguish between human and machine inputs and spam removal. Currently the challenge in text identifying is to detect the text in natural pictures due to many factors like, low-quality image, unclear words, typical font, handwritten text, image having a lot of color stroke than the background color, blurred pictures due to some natural problems like rain, sunny, snow, etc. The main aim of this work is to identify and classify the text in natural pictures with handwritten text. Here system detects the text and finds the connected regions, chain them together in their relative position.

## **Introduction**

Text Extraction is a process by which we convert Scanned page or image in which text content is available to ASCII character that a computer can recognize.

Today's world is digital with the appearance of many devices that are used in image acquisition. Nowadays, it becomes easy to store huge number of images by using image processing techniques. Since the collection of images and databases is fast and is increasing day by day, there is a need for new image retrieval techniques that should be efficient and fast.

CNN specifically designed to deal with the variability of 2D shapes, are shown to outperform all other techniques. Recognition systems are composed of multiple modules including feature extraction, classification and paradigm learning. They are allowing such multimodal systems to be trained globally using gradient-based methods so as to optimize an overall performance measure.

We tend to extract the options of the image of the text and apply the correct algorithmic rule to enhance accuracy to acknowledge the text. We tend to apply here a straightforward algorithm rule that works properly. The image of the text is captured through a camera. The hidden options of the text are highlighted within the actinic radiation. Currently, process on the image is completed thereon non-inheritable image exploitation ideas like image segmentation, edge data of image and characteristics feature extraction.

# Requirements

## Hardware and Software Requirements

### Hardware Requirements

- **Processor** :- Intel(R)Core i5 - 7500 3.8Ghz or above
- **Ram** :- 4gb or above

### Software Requirements

- Jupyter Notebook/ Google collab
- Python 3

### Technologies Used

- Digital Image Processing
- Machine Learning

### Dataset used

- [https://drive.google.com/drive/u/0/folders/15L14KyFoUHAqV\\_f1Jn-u20YYEYVH5u8Z](https://drive.google.com/drive/u/0/folders/15L14KyFoUHAqV_f1Jn-u20YYEYVH5u8Z)

## **Objective**

The main objective of the project is to identify the hand written text automatically by using some algorithm. The Objective of our Project is to develop a model that can take a text blurred or low-resolution photo as a input and gives the text as output after retrieving from it.

As of Now we will try to cover all the English fonts and the handwritten text. We will try to add on more fonts to it further.

We will also design a simple GUI for the ease of usability.

## **Methodology**

The system proposed here work here on the image of text under ultraviolet light acquired by a digital camera. The algorithm which is applied here is as follows

- a. Firstly, we will take input as an image which contains some text which is to be retrieved.
- b. Then, we will pre-process the image to reduce the noise and convert the RGB image to grayscale.
- c. Then, we will perform segmentation and recognize the textual area.
- d. Then, we will recognize the text content from that segmented area.
- e. Then, finally we get the result printed on the output screen.

## **Future Scope**

1. Development of Character Recognition considering the multiple font style needs to be developed in the future.
2. Development of Character Recognition for languages other than English needs to be researched on and developed in the future.
3. There is heavy demand for an OCR system which recognizes handwritten cursive scripts. This avoids keyboard typing and font coding for the image. This method helps in detecting handwritten characters with a precision of about 90%.
4. Once we detect languages, we can develop a converter to convert sentences from one language to another through a conversion and translation scheme.



## **Conclusion**

In this project convolutional neural network-based text detection system that learns to automatically extract its own feature set instead of using a handcrafted one. Furthermore, the network learned not only to detect text in its retina, but also to reject multiline or badly localized text. Thus, the exact text localization does not require any tedious knowledge based post-processing. Even though the network was trained with synthetic examples, experimental results demonstrated that it can compete with other methods in a real-world test set. Future work includes the inspection of the text binarization and recognition problems with Convolutional neural networks.