

Optical Character Recognition Using Python

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ABSTRACT

Optical Character Recognition is a process of classifying optical patterns with respect to alphanumeric or other characters. It also includes segmentation, feature extraction and classification.

Deep learning is part of a broader family of machine learning methods based on artificial neural networks with representation learning

The idea of the project is to extract text from image using Deep Learning by OCR

KEYWORDS: OCR-EASYOCR-DEEP LEARNING-TEXT DETECTION-TEXT RECOGNITION-IMAGE EXTRACTION

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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.

2. Existing system

In the running world there is growing demand for the users to convert the printed documents into electronic document for maintaining the security of their data.

Hence the basic OCR system invented to convert the data available on papers into computer process-able documents.

So the documents can be editable and reusable. Drawback-In early OCR systems is that they only have capability to convert & recognize only the documents of English or specific.

3. Motivation And Scope

Optical Character Recognition is needed when the information should be readable both to humans and to a machine.

The scope of this project is to provide an efficient and enhanced software for the users to perform Document Image Analysis, document processing by reading and recognizing the characters in research, academic, governmental and business organizations that are having large pool of document, scanned images.

4. SYSTEM ARCHITECTURE

components of the system consist of: Preprocessing, Feature extraction, Preprocessing: This sub-system performs noise removal, deploring, filtering and linearization on the input image. Next samples out characters from preprocessed ancient documents. Feature Extraction: This component extracts features from the input image and stores the extracted features in a feature vector.

5. ARCHITECTURE OF OCR



6. LIST OF MODULES

The recognition system has two main modules:

Text detection based on Connectionist Text Proposal Network

Text recognition based on Attention-based Encoder-Decoder.

Text detection based on Connectionist Text Proposal Network

Connectionist Text Proposal Network (CTPN) that accurately localizes text lines in natural image. The CTPN detects a text line in a sequence of fine-scale text proposals directly in convolution feature maps.

The CTPN works reliably on multi-scale and multi-language text without further post-processing, departing from previous bottom-up methods requiring multi-step post filtering

Text recognition based on Attention-based Encoder-Decoder

Accurate and rich semantic information carried by the text is important for many application scenarios such as image searching, intelligent inspection, product recognition and autonomous driving. For these reasons, scene text recognition has been an active research field in computer vision

Although optical character recognition in scanned documents has been considered as a solved problem

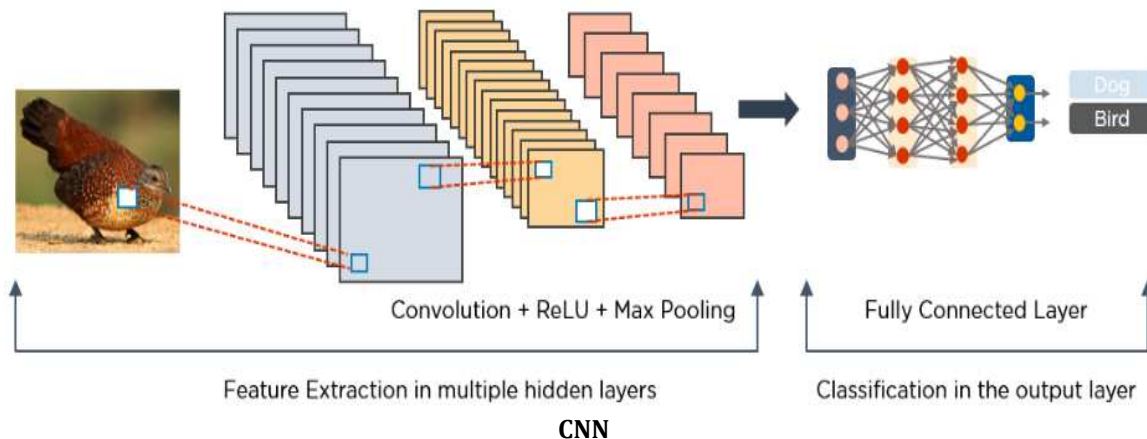
7. ALGORITHM

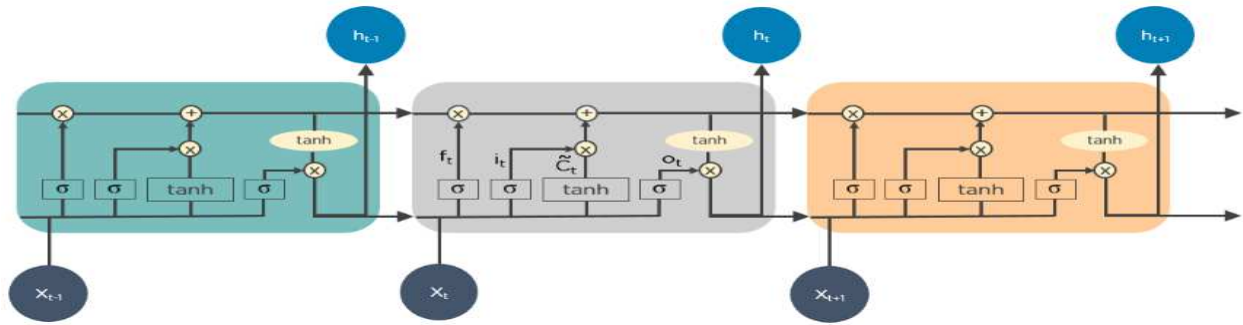
Convolution Recurrent Neural Networks

➤ Convolution Neural Networks (CNN).

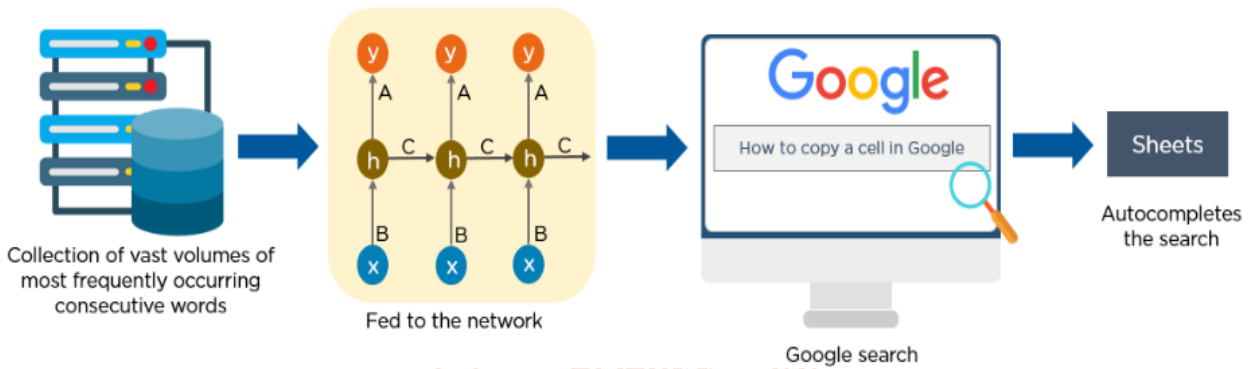
➤ Recurrent Neural Networks (RNN).

➤ Long Short Term Memory Networks (LSTMs).





RNN



LSTMs

8. RESULT



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9. RELATED WORK

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