DIGITALIZED PAPER CORRECTION USING OPENCV

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*Abstract*—

Keywords— handwritten text recognition,cost to company

Introduction

Nowadays everything has become online oriented .In This system I have proposed a concept to detect the handwritten text and to verify whether the solution written by the coed is correct or not. Handwriting text recognition (HTR) is that the process of adjusting handwritten characters or phrases into a format that the PC understands. it's a vigorous network of educational researchers studying it for the past few years as advances during this subject help to automate differing kinds of habitual tactics and job work. An example may be a painstaking seek of a scientific document inside tons of handwritten ancient manuscripts by a historian, which is requires an enormous amount of your time. Converting these manuscripts right into a virtual layout using HTR algorithms could permit the historian to search out the information within some seconds. The key advances in HTR in mail communication are primarily geared toward finding solutions to the issues of recognition of the region of interest within the images, text segmentation, elimination of interference when working with text background noises, like missing or ambiguous bits, spots on paper, detection of skew. In handwriting recognition the device interprets the user's handwritten characters or words into a format that the computer understands (e.g., Unicode text). The input device typically comprises a stylus and a touch-sensitive screen. There are many levels of HWR, starting from the recognition of simplified individual characters to the recognition of whole words and sentences of cursive handwritingThis paper proposes a technique to digitalize the paper correction and makes the teacher’s work easy.This project acts as an integration so we are able to boost any existing system so no new UI is required to interact.This can be easily utilized by all the users with little knowledge on computer.The image file may be anywhere within the system to access the system advantage.

# Literature survey

## TitleCharacter Recognition System for Devanagari Script Using Machine Learning Approach.

* Author:Shilpa Mangesh Pande, Bineet Kumar Jha
* Year: 2021
* The proposed research work attempts to automate the character recognition system for Nagari script using various machine learning classifiers like Decision Tree classifier, Nearest Centroid classifier, K Nearest Neighbors classifier, Extra Trees classifiers and Random Forest classifier

## Title :CNN based Optical Character Recognition and Applications

* Author **Naragudem Sarika, Nageswararao Sirisala, Muni Sekhar Velpuru**
* Year: 2021
* To translate text in a picture into text format, the Optical Character Recognition system is employed. There are three key aspects of OCR approach: pre-processing, character recognition, character segmentation and presentation of knowledge. Convolutional Neural Network could be a deep learning method which is employed for character recognition.
* assisted and non-assisted drivers co-exist in the parking ﬁeld. We will study the tradeoff between the global optimization and the greedy approximation algorithm, so that even more practical solutions can be achieved. We also expect to apply this spatio temporal assignment scheme to other resource shortage problems (e.g., [4, 22]), while a global optimization is desired.

## Title : **Classification of Handwritten Names of Cities and Handwritten Text Recognition using Various Deep Learning Models** Author: [**Daniyar Nurseitov**](https://arxiv.org/search/cs?searchtype=author&query=Nurseitov%2C+D)**,**[**Kairat Bostanbekov**](https://arxiv.org/search/cs?searchtype=author&query=Bostanbekov%2C+K)**,**[**Maksat Kanatov**](https://arxiv.org/search/cs?searchtype=author&query=Kanatov%2C+M)**,**[**Anel Alimova**](https://arxiv.org/search/cs?searchtype=author&query=Alimova%2C+A)**,**[**Abdelrahman Abdallah**](https://arxiv.org/search/cs?searchtype=author&query=Abdallah%2C+A)**,**[**Galymzhan Abdimanap**](https://arxiv.org/search/cs?searchtype=author&query=Abdimanap%2C+G)

* Year: 2021
* The first model uses deep convolutional neural networks (CNNs) for feature extraction and a fully connected multilayer perceptron neural network (MLP) for word classification. The second model, called SimpleHTR, uses CNN and recurrent neural network (RNN) layers to extract information from images
* D.Title A Scalable Handwritten Text Recognition System Author : R. Reeve Ingle, Yasuhisa Fujii, Thomas Deselaers, Jonathan Baccash, Ashok C. Popat
* Year : 2019
* This paper addresses three problems in building such systems: data, efficiency, and integration. Firstly, one in all the largest challenges is obtaining sufficient amounts of top quality training data. We address the matter by using online handwriting data collected for an oversized scale production online handwriting recognition system. We describe our image data generation pipeline and study how online data is wont to build HTR models

## E.Title : Decoupled Attention Network for Text Recognition

* Author :Tianwei Wang,Yuanzhi Zhu, Lianwen Jin, Canjie Luo, Xiaoxue Chen
* Year : 2019
* The system proposes a decoupled attention network (DAN), which decouples the alignment operation from using historical decoding results. DAN is a good, flexible and robust end-to-end text recognizer which consists of three components

# system architecture

# See the source image

# Results and discussions

We've got experienced many fundamental breakthroughs within the past years and yet, despite all this progress within the underlying technologies, HTR is much from being a solved problem. However, given recent trends on how briskly we are able to move forward, this might change relatively soon. And just to say that additionally. Already today we are able to provide companies meaningful technology which will help reduce manual efforts significantly. Using higher-quality images that are easier for character recognition as inputs.Removing background using machine learning algorithms or improved photography practices.Developing more advanced recognition algorithms to manage handwriting OCR tasks more accurately.Designing documents in an OCR-friendly way.

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# conclusion

We discussed a NN which is in a position to acknowledge text in images. The NN consists of 5 CNN and a couple of RNN layers and outputs a character-probability matrix. This matrix is either used for CTC loss calculation or for CTC decoding. An implementation using TF is provided and a few important parts of the code were presented. Finally, hints to enhance the popularity accuracy got.  
 This technique supports image file to as input therefore the future enhancement will e like pdf to image file transfer so pdf types even be supported by the system.  
This project is an integration of already contained application so doesn't contain any UI .UI design part is made also as a enhancement.

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