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CHIROGRAPHY DOCUMENTATION USING OCR IN CNN

[1] A.DIVYA SREE, [2]B.VIJAY KUMAR ,[3] A.SAI SRICHAITANYA, [4]V.SRIHITHA REDDY

[1.] Assistant Professor Department of Computer Science and Engineering, Teegala Krishna Reddy Engineering College, Rangareddy (TS).India.

Email-: adivyareddy29@gmail.com

[2,3,4.]B.Tech StudentstDepartment of Computer Science and Engineering, Teegala Krishna Reddy Engineering College, Rangareddy (TS).India.

Email-:[1,2] vijaybollarapu2015@gmail.com, [3.] Aliminetisaisrichaitanya123@gmail.com,

[4.]srihithareddy0012@gmail.com.

Abstract- Chirography documentation is the capacity of a computer to accept and analyze legible handwriting input from sources such as paper documents, touch screens,pictures, and so on. One kind of pattern recognition is chirography text recognition. orcategories. It is difficult to train an optical character recognition (OCR) system based on these conditions.

Deep learning algorithms have produced breakthrough results in the area of handwriting recognition research in recent years Convolutional neural networks (CNNs) are particularly excellent in perceiving the structure of handwritten characters/words in ways that aid in the automated extraction of distinguishing characteristics, making CNN the best solution for solving handwriting recognition difficulties.

KEYWORDS: Chirography, Deep learning algorithms, Convolutional neural networks.

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1.INTRODUCTION

Chirography documentation is the capacity of a computer to accept and analyze legible handwriting input from sources such as paper documents, touch screens, pictures, and so on. One kind of pattern recognition is chirography text recognition. or categories. It is difficult to train an optical character recognition (OCR) system based on these conditions.

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Chirography is the study of penmanship. Historically, everything was written out by hand, creating a wealth of material for chirographers to work with. In the modern era, other forms of printing and communicating are available, but the study of penmanshipis still a topic of interest and exploration. Penmanship includes basic handwriting along with script, calligraphy, and other forms of writing done by hand.

The word “chirography” combines the Greek words for “hand” and “writing.” Handwriting has a long history in human cultures, and some chirographers like to study the history of handwriting, from the earliest printed alphabets to the modern day. Topics of interest include the divergence of writing systems, the origins of writing systems, borrowed writing systems, and the evolution of such systems.

Knowledge of chirography can also be very valuable for going over old handwritten records. Handwriting in many languages has changed substantially through the ages, and it is sometimes difficult to make out or understand documents, even when they are written in a familiar language. A chirographer who is familiar with the writing modalities of the period when the document was written can examine it to decipher the text, making this field of study very valuable to historians.

2.LITERATURE SURVEY

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Connectionist Temporal Classification (CTC) is a type of Neural Network output helpful in tackling sequence problems like handwriting and speech recognition where the timing varies. Using CTC ensures that one does not need an aligned dataset, which makes the training process more straightforward as detailed in the diagram, the first step in the process is image acquisition by an imaging sensor in conjunction with a digitizer to digitize the image. The next step is the preprocessing step where the image is improved being fed as an input to the other processes.

Preprocessing typically deals with enhancing, removing noise, isolating regions, etc. Segmentation partitions an image into its constituent parts or objects. The output of segmentation is usually raw pixel data, which consists of either the boundary of the region or the pixels in the region themselves. Representation is the process of transforming the raw pixel data into a form useful for subsequent processing by the computer.

3.EXISTING SYSTEM:

In the Growing world there is a huge demand for the users to make the documents into electronic data. The OCR system is a way to convert the data on papers into system process-able data, so that the data can be used for long and change when we need. The existing system of OCR is on a grid infrastructure without in the form of grid functionality. It deals with the similar character recognition of one language.

DISADVANTAGES OF EXISTING SYSTEM:

- Chirography style of an individual person also varies time to time and is inconsistent.

Cursive chirography makes separation and recognition of documentation is challenging.

4. PROPOSED SYSTEM:

In the proposed system, after training and saving the model, the model contains four main stages in order to classify and detect the chirography.

ADVANTAGES OF PROPOSED SYSTEM:

- Preprocessing,Segmentation, Feature Extraction, Classification and Recognition.
- It we are looking to deploy the model in the form of an API, or by using any kind of deploying service into the web.
- Then we will create an interface with the model where the user will be able to access it and then it will be saved to text document then use it accordingly.

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5. MODULES:

If you want a computer to recognize text, neural networks (NN) are a good choice as they outperform all other approaches at the moment. The NN for such use-cases usually consists of convolutional layers (CNN) to extract a sequence of features and recurrent layers (RNN) to propagate information through this sequence. It outputs character-scores for each sequence-element, which simply is represented by a matrix.

Now, there are two things we want to do with this matrix:

1) Train: calculate the loss value to train the NN
2) Infer: decode the matrix to get the text contained in the input image

Both tasks are achieved by the CTC operation. An overview of the handwriting recognition system

Why we want to use CTC

We could, of course, create a data-set with images of text-lines, and then specify for each horizontal position of the image the corresponding character as shown in Fig. 2. Then, we could train a NN to output a character-score for each horizontal position. However, there are two problems with this naive solution:

it is very time-consuming (and boring) to annotate a data-set on character-level.

we only get character-scores and therefore need some further processing to get the final text from it. A single character can span multiple horizontal positions, e.g., we could get " too" because the "o" is a wide character as shown in Fig. 2. We have to remove all duplicate "t"s and "o"s. But what if the recognized text would have been "too"? Then removing all duplicate "o"s gets us the wrong result. How to handle this?

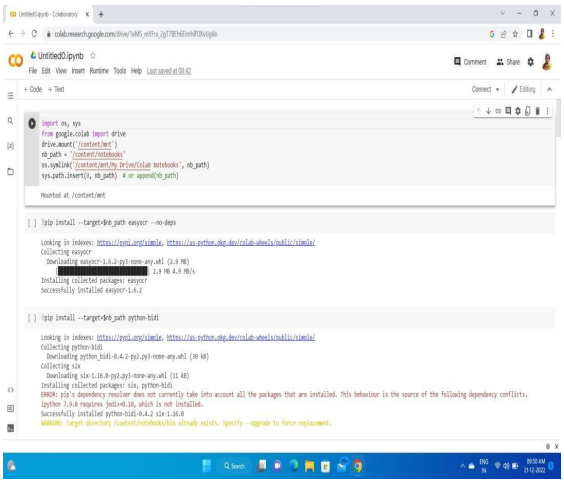
How CTC works

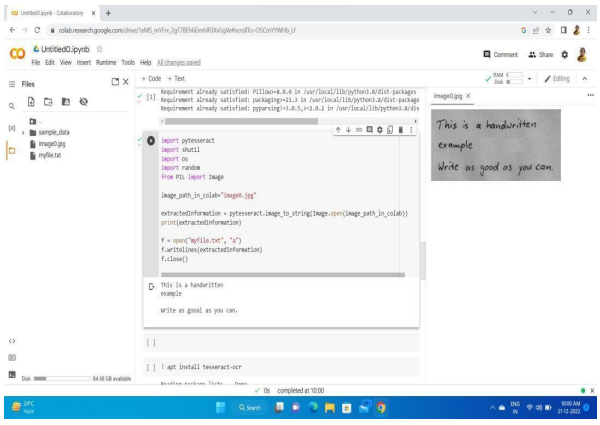
As already discussed, we don't want to annotate the images at each horizontal position (which we call time-step from now on). The NN-training will be guided by the CTC loss function. We only feed the output matrix of the NN and the corresponding ground-truth (GT) text to the CTC loss function. But how does it know where each character occurs? Well, it does not know.

Instead, it tries all possible alignments of the GT text in the image and takes the sum of all scores.

This way, the score of a GT text is high if the sum over the alignment-scores has ahigh value.

6.RESULT





7. CONCLUSION

The project "**Chorography Documentation using CTC in CNN**" has been successfully designed and tested. It has been developed by integrating features of all the hardware components used. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly using highly technology the project has been successfully implemented.

We aim to achieve highest level of accuracy that is possible for a lightweight easy to train model, with the help of freely available GPU resources and Compute time. We will be using and finalizing the best performing CRNN architecture for our model. But with the help of modern-day techniques like convolution neural networks we are able to scan and understand words with an accuracy never seen before in history.

Using modern day techniques like neural networks to implement deep learning to solve basic tasks which are done with a blink of an eye by any human like text recognition is just scratching the surface of

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the potential behind machine learning. There are infinite possibilities and application of this technology.

8. REFERENCES

- Plamondon R and Srihari S N 2000 IEEE Trans. on Patt. Anal. and Mach.

Intelligence 22 63

- Kato N, Suzuki M, Oma chi S I, Also H and NE moto Y 1999 IEEE Trans. on Pat.

Anal. and Mach. Intelligence 21 258

- Islam M Tayan O, Islam M R, Islam

M S, Nooruddin S, Kabir M N and Islam M

R 2020 IEEE Access 8 166117

- Chaudhuri B and Adak C 2017 Patt. Recognition 61 282

- Fardous A and Afroge S 2019 Proc. Int. Conf. on Elect. Comp. and Comm.

Engineering 4 1

- Bedos-Rezak, Brigitte (2010).

"Cutting Edge: The Economy of Mediality

in Twelfth-Century Chirographic Writing."

In Das Mittel alter 15: 134-161.

- Lowe, Kathryn A. (1997). "Lay Literacy in Anglo-Saxon England: the Development of the Chirograph". In Pulsiano, P.; Treharne, E. (eds.). Anglo Saxon Manuscripts and their Heritage. Alder shot: Ashgate. 161-204.