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Implementation of Handwritten Word Recognition using CNN and Convert Text to Speech

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ABSTRACT

Graphology is a method for identifying, evaluating personality traits by handwriting. Professional Handwriting analysts are called Graphologists. Handwriting is oftenly called as Mind Writing or Brain Writing. It reflects human's thought-process through his handwriting Accuracy of Handwriting depends upon intellectual of the Graphologists. The proposed System focuses on developing a software for predicting human behaviour. In this paper a method has been proposed from baseline, slanting of letters, looping of letters, pen pressure and height of the letters. The system uses CNN (Convections Neural Network) for recognize the character and convert the voice command.

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I. INTRODUCTION

There is a lot research work has done on Pattern Recognition which comes under Machine Learning, Artificial Intelligence. OCR well known as Optical Character Recognition is one of the leading branch of the Pattern Recognition [1].

The system reduces human efforts along with time. It can also be helpful for the person who doesn‟t know the language / pronunciation of particular words. The system can also be helpful for visually impaired or person with weak visual ability. Optical character recognition is the mechanical or electronic conversion of images of typed, handwritten or printed text into machine -encoded text, whether from a scanned document or a photo of document [2].

It is widely use as form as a form of information entry from printed paper data records, whether passport documents, invoices, bank statements, computerized receipts, business cards, mail, printouts of static data or any suitable document. OCR is a field of research in pattern recognition, artificial intelligence, computer vision [3].

The app uses a camera of an Android mobile device to take an input. Input is a binary image scanned by the camera. The OCR engine processes the image data and converts it into a text [4].

The respective text is then sent to Android Text-to-Speech. Android text-to-speech is an engine which has ability to convert the text into a speech. The system uses machine learning, it takes a training data and learns from it, hence the accuracy of the output grows down the pages, pass b y pass [5]

II. PROBLEM STATEMENT

OCR Stands for "Optical Character Recognition." OCR program can convert the characters on the page

into a text document that can be read by a word processing program. More advanced OCR programs can even keep the formatting of the document in the conversion. Here hand written character recognition based on English characters is used. For identification it mainly uses English capital letters, small letters, digits and some special symbols. Here we are using Convolutional Neural Networks (CNN) based character recognition method. In order to show better accuracy in character recognition and also the features need not to be extracted because the method itself extract features from the character during training phase. And the final result will be in an editable format. This is done to reduce burden on large volume of paper work on various fields and also reduce much of human efforts.

III. LITERATURE SURVEY

[4]Esmeralda C. Djamal projected Autography movement emulate the written element of each individual's periodicity and design. By analyzing all fundamentals of handwriting and interpreting them, using typical of graphology author could initiate a chart of the writer's character attribute, sentimental constitution and gracious design. In graph logical analysis's, an image is separated into two accession that graphics attributes and partition digit each character. In this research, author employ graphical accession based on signature and digit of character of consumption scheme using many-frame algorithms and artificial neural networks (ANN). The image crack into two space: the signature occupied on nine appearance and consumption scheme of letters digit space. Each space had performed preprocessing to improve the recognition accuracy.

[5]Sandeep dhang on Handwriting Analysis of Human Behaviour Based on Neural Network, Graphology or Handwriting analysis is a scientific method of identifying, evaluating and understanding of anyone personality through the stroke and pattern revealed by handwriting.

Handwriting reveals the true personality including emotional outlay, honesty, fears and defenses and etc. Handwriting stroke reflects the on paper draw of each individual's rhythm and Style. The image split into two areas: the signature based on three features and application form of letters digit area.

[6] Javier Galbally, Julian Fierrez, Marcos Martinez-Diaz, R´ejean Plamondon E´cole Polytechnique de Montre´al focus on "Quality Analysis of Dynamic Signature Based on the Sigma- Lognormal Model". In this paper author distinct that various personal ethics can be precisely illuminate as a set of influential describe sequenced together by a Markov chain. To diagnose personal ethics from sensible data and to deduce personal ethics over a few seconds time, author then use these influential Markov layout. To ensure the virtue of this designing avenue, creator report an experiment in which, author was able to achieve 95% precision at predicting automobile driver's subsequent actions from their starting preparatory movements.

IV. PROPOSED SYSTEM

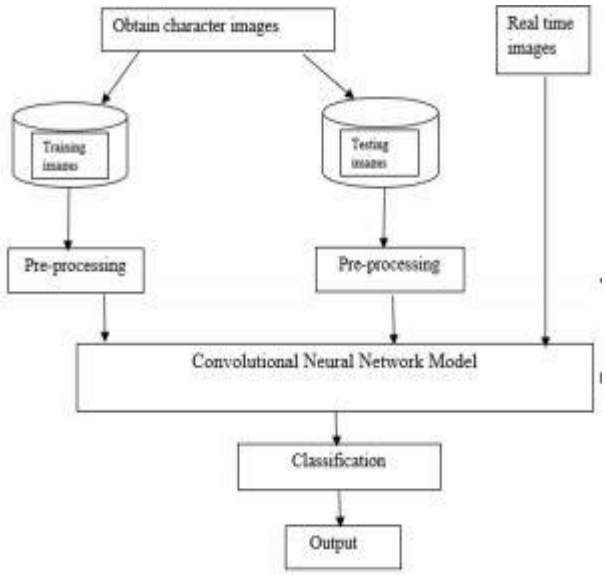


Fig 1. System architecture

A. Description:

Upload Module:

User can use system and upload image to convert text.

CNN Module:

As per the CNN convert the image to text with limited accuracy .

Voice Module:

Once CNN Convert Image to text then voice will generate to read data.

B. Algorithm:

Step 1: Start

Step 2: Add the library. It is a header only, dependency free deep learning library written in python.

Step 3: Get training files.

Step 4: Image passing through page segmenter.

Step 5: Crop exact character portion.

Step 6: Converting the image in MAT format into floating format and then to vector Format.

Step 7: Training in CNN mainly consists of four steps:

a) Adding layers such as convolution, sampling and fully connected layers.

b) Declare optimization algorithm such as AdaGrad optimizer.

c) Training

d) Save the file

Step 8: load the file.

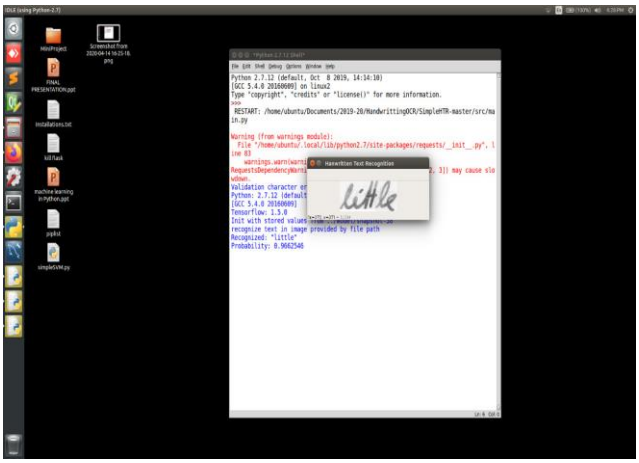
Step 9: Loop over testing files. English Handwritten Character Recognition using Convolutional Neural Network (CNN)

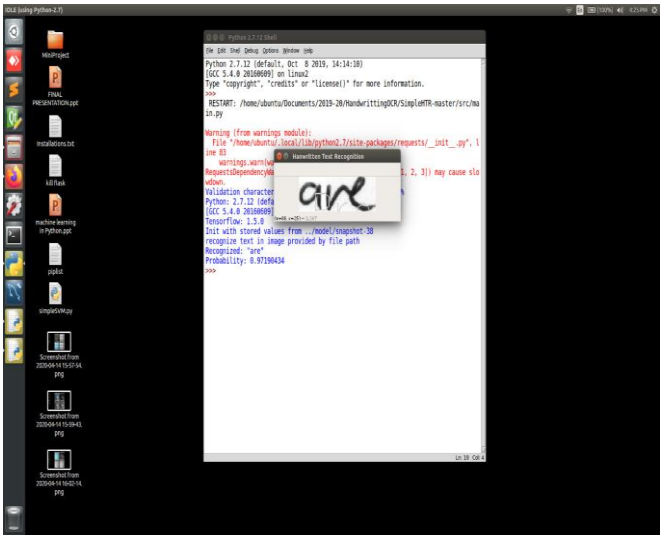
Step 10: Repeat the same steps from 3 to 6 for test file also.

Step 11: Calculate recognition accuracy and print the output.

Step 12: Stop

V. RESULT





VI. CONCLUSION

It OCR is an important field in image processing and pattern recognition. It is used for many real time applications. It can English Handwritten Character Recognition using Convolutional Neural Network (CNN) be used for office automation. Here a handwritten English character recognition system using Convolutional Neural Network (CNN) is used. Here mainly six layers of CNN is used. It uses the basic LeNet-5 Architecture. That is three convolutional layer, two average pooling layer and a fully connected layer. CNN has better accuracy in character recognition and also the features need not to be extracted because the method itself extracts features from the character during training phase.

VII.FUTURE SCOPE

In future scope use the recognized data is sent further for converting it into speech using Android text to Speech. The system reduces human efforts along with time. It can also be helpful for the person who doesn‟t know the language / pronunciation of particular words. The system can also be helpful for visually impaired or person with weak visual ability.

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