Ideation Phase
Ideation

Date	24 September 2022
Team id	PNT2022TMID46204
Project Name	A Novel Method For Handwritten Digit Recognition System
Maximum marks	4 Marks

A Novel Method For Handwritten Recognition System

Team Leader :

Problem statement:-

Handwritten character regcongition is an active area research with application on is numerous fields. Past and recent works in this fields have concentrated on various languages.Arabic is one language where the scope of research is site widespread.

s.no	Ideas
1.	**BACKGROUND** A novel method for recognizing Arabic numerals has been devised by [1]. This method utilizes an MLP where a set of 88 features is used.
2.	**DATASET** Deep learning is solely depended on the data and hence it needs a large amount of data to function properly.
3.	**PROPOSED METHODS** In this section we discuss our two different methods and how they improve the recognition performance of the given dataset.Input layer and intermediate layer have a dropout percentage of 25% to prevent overfitting.
4.	**METHOD** The proposed CNN method outperforms both the proposed MLP method as well as the MLP used in [1], the latter two yielding identical results for the dataset used in this paper.

Team members 1:

Problem statement:-

Traditional systems handwriting recognition have relied on handcrafted features and a large amount of prior knowledge. Training an Optical character recognition (OCR) system based on these prerequisites is a challenging task. . Research in handwriting recognition field is focused around deep learning techniques and has achieved breakthrough performance in the last few years. the rapid growth in the amount of handwritten data and the availability of massive processing power demands improvement in recognition accuracy and deserves further investigation

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1.	**RELATEDWORK** Handwriting recognition has already achieved impressive results using shallow networks [15–24]. Many papers have been published with research detailing new techniques for the classification of handwritten numerals, characters and words.
2.	**CONVOLUTION NETUAL NETWORK ARCHITECTURE** A basic convolutional neural network comprises three components, namely, the convolutional layer, the pooling layer and the output layer. The pooling layer is optional sometimes. The typical convolutional
3.	**EXPERIMENTAL SETUP** To accomplish the task of handwritten digit recognition, a model of the convolutional neural network is developed and analyzed for suitable different learning parameters to optimize recognition accuracy and processing time.
4.	**MNIST HANDWRITTEN DIGIT** ion, centering, slanting and skew estimation, were used. In general, many algorithms work better after the data has been normalized and whitened. One needs to work with different algorithms in order to find out the array

Team members 2 :

Problem statement :

The purpose of this study is to create an automated framework that can recognize similar handwritten digit strings. The starting the experiment, the digits were separated into different numbers. The process of defining handwritten digit strings is then concluded by recognizing each digit recognition module's segmented digit. This research utilizes

various machine learning techniques to produce a strong performance on the digit string recognition challenge, including SVM, ANN, and CNN architectures.

S.No	Ideas
1.	**RELATED WORK** The list is a compilation of terminology and meanings used in this report. Manysimilar studies wereinfluenced by our work on digital identification using machine learning techniques such as anSVM(support vectormachine), an artificial neural network,and a convolutions neural networ
2.	**METHODOLOGY**This segment discusses the various methods and strategies used to create modelsandhow models are learned and tested. This section would go through the algorithms used and illustrate the suggested scheme's
3.	**DATASET USED**The dataset is needed for both training and testing purposes[42]. Datasets include colored images used to represent data images. The dataset contains a total of 9096 images. We included 70% of the photographs in the available data for classification and the remainder 30% for inspection.
4.	**CONTRIBUTION** The primary objective of this research is to use a recognition system to identify distorted handwritten digits. Sub-images of attached digits, disjoint digits, and overlapped digits were developed. Then, using sub-images, a classifier was trained

Team members 3 :

Problem statement :-

Handwriting recognition process understand handwritten text by a computer or other computing devices. The handwriting recognition system comprises various phases like data collection, preprocessing of data,

segmentation of long strokes, extraction, classification and post-processing etc. Handwriting recognition has a variety of applications as electronic form filling, signature verification, automated music symbol notation reader, handwritten ancient document reading, write and send SMS in mother tongue and alternative to realistic keyboards etc. The present study explains the scope and applications of handwriting recognition in scop.

S.No	Ideas
1.	**ELECTRONIC FROM FILLING** One of the applications of online handwriting recognition is electronic form filling.Internationally, the expenditure for entry of data from handwritten forms, notes and records is trillions of dollars. If we look at 2010 census of our country, more than fifty thousand enumerators were employed to collect data .
2.	**WRITING ELECTRONIC APPLICATION IN ONES OWN HANDWRITING AND NATIVESCRIPT**There are a number of native language/script speakers/writers who want to exchange information with the computer system. These writers know their native script only, but don't know typing in their script.
3.	**AUTOMATED MUSIC SYMBOL NOTATION READER** One of the applications of handwriting recognition is the development of automated music symbol notation reader. In this way, a composer can write his composition using all the notations directly.
4.	**MATHEMATICAL EQUATION BY SIMPLE HANDWRITING**The handwriting recognition is assumed to achieve the goal of automatic conversion of online handwritten mathematical equations to typed form or student notes. So it will not be wrong to imagine the happiness that would be experienced by a chemist, mathematician or an academician .