Ideation Phase
Literature Survey

Date	19 September 2022
Team ID	PNT2022TMID05335
Project Name	A Novel Method Of Handwritten Digit Recognition System
Maximum Marks	4 Marks

TITLE : Handwritten Character Recognition

AUTHOR : Ayush Purohit

DESCRIPTION : Handwriting recognition has gained a lot of attention in the field of pattern recognition and machine learning due to its application in various fields. Optical Character Recognition (OCR) and Handwritten Character Recognition (HCR) has specific domain to apply. Various techniques have been proposed to for character recognition in handwriting recognition system. Even though, sufficient studies and papers describes the techniques for converting textual content from a paper document into machine readable form. In coming days, character recognition system might serve as a key factor to create a paperless environment by digitizing and processing existing paper documents.

PUBLISHED IN : 2016

TITLE : Automatic Handwritten Digit Recognition

AUTHOR : Akkireddy Challa

DESCRIPTION : The main purpose of this thesis is to build an automatic handwritten digit recognition method for the recognition of connected handwritten digit strings. To accomplish the recognition task, first, the digits were segmented into individual digits. Then, a digit recognition module is employed to classify each segmented digit completing the handwritten digit string recognition task. In this study, different machine learning methods, which are SVM, ANN and CNN architectures are used to achieve high performance on the digit string recognition problem. In these methods, images of digit strings are trained with the SVM, ANN and CNN model with HOG feature vectors and Deep learning methods structure by sliding a fixed size window through the

images labeling each sub-image as a part of a digit or not. After the completion of the segmentation, to achieve the complete recognition of handwritten digits.

PUBLISHED IN : 2019

TITLE : Handwritten Numeral Recognition

AUTHOR : Stuti Asthana

DESCRIPTION : An extensive literature review on Neural Network based numeric recognition by describing the survey of some research articles have been involved for better analysis in order to enhance the system efficiency. Handwritten Numeric Recognition is very interesting area of Pattern Recognition and it deals with Offline Handwriting Recognition. Handwriting Recognition has kept on continuing as a method for correspondence, gathering, recording and transmitting data in everyday life since the hundreds of years even with the appearance of the new advancements. Machine recognition has numerous functional applications, perusing manually written postal envelopes, sum written in bank checks, bill handling, government records, business frames, signature confirmation, disconnected from the net archive acknowledgment and so on. This Paper portrays the best in class study of the work accomplished for the Numeric recognition.

PUBLISHED IN : 2017

TITLE : Neural Network Based Handwritten Digit Recognition

AUTHOR : Ankit Sharma

DESCRIPTION : Recognition of handwritten character is a difficult task in the field of image processing, artificial intelligence since the handwriting varies from person to person. In proposed paper, we are training the neural network to recognize the off-line strategies for the isolated handwritten character (0 to 9). This work improves the character recognition and pre- processing of the Character is done by image rendering, character extraction and training and testing steps. The proposed method is based on the use of linear regression algorithm to classify the characters and is used to train the given dataset. After training a network performance curve is generated along with the individual required characters. In given system, numerical character is represented by

binary numbers that are used as input then they are fed to an ANN. Neural network followed by the linear regression Algorithm which compromises Training.

PUBLISHED IN : 2016

TITLE : Handwritten Optical Character Recognition

AUTHOR : Jamshed Memon

DESCRIPTION : Given the ubiquity of handwritten documents in human transactions, Optical Character Recognition (OCR) of documents have invaluable practical worth. Optical character recognition is a science that enables to translate various types of documents or images into analyzable, editable and searchable data. During last decade, researchers have used artificial intelligence/machine learning tools to automatically analyze handwritten and printed documents in order to convert them into electronic format. The objective of this review paper is to summarize research that has been conducted on character recognition of handwritten documents and to provide research directions. In this Systematic Literature Review (SLR) we collected, synthesized and analyzed research articles on the topic of handwritten OCR (and closely related topics) which were published between year 2000 to 2019. We followed widely used electronic databases by following pre-defined review protocol. Articles were searched using keywords, forward reference searching and backward reference searching in order to search all the articles related to the topic. After carefully following study selection process 176 articles were selected for this SLR. This review article serves the purpose of presenting state of the art results and techniques on OCR and also provide research directions by highlighting research gaps.

PUBLISHED IN : 2020