

LITERATURE SURVEY

A Novel Method for Handwritten Digit Recognition System

Author name: K.H. Aparna, Vidhya Subramanian, M. Kasirajan, G. Vijay Prakash, V.S. Chakravarthy and Sriganesh Madhvanath

Year of Publishing: 2003

Description:

A system for online recognition of handwritten Tamil characters is presented. A handwritten character is constructed by executing a sequence of strokes. A structure- or shape-based representation of a stroke is used in which a stroke is represented as a string of shape features. Using this string representation, an unknown stroke is identified by comparing it with a database of strokes using a flexible string matching procedure. A full character is recognized by identifying all the component strokes. Character termination, is determined using a finite state automaton. Development of similar systems for other Indian scripts is outlined.

Author name: Meenu Alex and Smija Das

Year of publishing: 2016

Description:

The handwriting recognition in Malayalam is a challenging as well as emerging area of pattern recognition. It is a tedious process mainly due to its enormous character set. Here we propose a novel method for handwriting recognition by using two dissimilar classifiers. It can also be called as an ensemble method in which multiple classifiers are combined to solve a particular problem and thereby improve the performance of the system. The experiment is conducted in 2 phases. In the first phase, 33 isolated characters in Malayalam were used. In the second phase, Malayalam sentences were used. From the preprocessed image, we were extracted two features: SURF feature and Curvature feature. These features were fed as input to a neural network and an SVM classifier. Finally, the result of both the classifiers was combined to get the final results. The system showed an accuracy of 89.2% in the first phase. An accuracy of 81.1% was exhibited in the second phase.

Author name: C Shanjana and Ajay James

Year of publishing: 2015

Description:

This paper discusses a method to convert the handwritten Malayalam document into a computer recognized text file format. The scanned image of the handwritten Malayalam text document is given as input in this method and the output is the corresponding Malayalam text document. All the existing systems for Malayalam handwritten text are for recognizing individual characters separately and also they deal only with a subset of Malayalam characters. Here, the handwritten document should be first segmented into individual lines. The segmentation of handwritten documents into lines should address many problems like different handwriting styles, overlapping lines and characters, skewed characters and lines, different font sizes etc. These issues are considered during the segmentation process. These segmented lines are segmented into words and afterwards segmented to characters. Then, the unique features for identifying each character is extracted and given to a classifier. The classifier identifies each character and the corresponding Malayalam character is obtained.

Author name: Pranav P Nair, Ajay James and C Saravanan

Year of publishing: 2017

Description:

Optical Character Recognition is the process of converting an input text image into a machine encoded format. Different methods are used in OCR for different languages. The main steps of optical character recognition are pre-processing, segmentation and recognition. Recognizing handwritten text is harder than recognizing printed text. Convolutional Neural Network has shown remarkable improvement in recognizing characters of other languages. But CNNs have not been implemented for Malayalam handwritten characters yet. The proposed system uses Convolutional neural network to extract features. This is method different from the conventional method that requires handcrafted features that needs to be used for finding features in the text. We have tested the network against a newly constructed dataset of six Malayalam characters. This is method different from the conventional method that requires handcrafted features that needs to be used for finding features in the text.

Author name: Neeraj Kumar

Year of publishing: 2017

Description:

Deep learning (Deep Networks) is presently an exceptionally lively area of research in the field of machine learning and pattern recognition. It has gained massive success in an expansive vicinity of applications like image processing and speech recognition. In this article a detailed methodology for recognition of handwritten Gurmukhi characters including broken characters using deep learning has been explained. Due to variations in handwriting styles and speed of writing it is very difficult to recognize the handwritten Gurmukhi characters. A majority of the work has already been reported on the online handwritten scripts like English, Bangla etc. Now research is being shifted towards the recognition of offline handwritten scripts. In the proposed work the feature extraction has been done using three types of features, namely Local binary pattern (LBP) features in addition to directional features and regional features. A total of 117 features have been extracted in order to correctly recognize the text. Furthermore, in order to map the Gurmukhi text with Devanagari text a suitable mapping technique has also been implemented. A total of 2700 samples have been taken for training and testing purpose. The proposed system is achieving an accuracy of 99.3%.

SUBMITTED BY: Vivek A