A NOVEL METHOD FOR HANDWRITTEN DIGIT RECOGNITION SYSTEM

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ABSTRACT:

Handwritten Digit Recognition System involves reception and interpretation of handwritten digits by a machine. Due to variation in shape and orientation of handwritten digits, it is difficult for a machine to interpret handwritten digits. Handwritten digit Recognition has a wide area of research due to its vast applications like automatic bank cheque processing, billing and automatic postal service. In this thesis, an Offline Handwritten Digit Recognition System is presented. The recognition system is broadly divided into 2 parts, first part is feature extraction from handwritten images and the second one is classification of feature vector into digits. We propose descriptors for handwritten digit recognition based on Histogram of Oriented Gradient (HOG) feature. It is one of the widely used feature vector for object detection in computer vision. For classification of features, linear Proximal Support Vector Machine Classifier is proposed. This is a binary class classifier which is further converted to a 10 class classifier by means of One against all algorithm. Due to small training time, PSVM classifier is preferable over standard Support Vector Machine (SVM) Classifier. The handwritten images both for training and testing are taken from MNIST database. The performance of the system is measured in terms of Sensitivity, Accuracy, Positive Predictively and Specificity.

LITERATURE SURVEY:

AUTHOR	TITLE	CONCEPT	ISSUES
T. Wakabayashi and F. Kimura 2007	Handwritten Digit recognition	Digit recognition is used in post offices, in banks for reading cheques, for license plate recognition The digit recognition can be divided into two groups, printed digit. digit recognition and handwritten digit recognition .	That is on the other hand, there are numerous handwriting styles for the same digit; hence more effort is required to find the accurate handwritten digit.
J.Pradeep,E.Srinivasan and S.Himavathi /2011	Diagonal based feature extraction for handwritten alphabets recognition system using neural network	This is an offline handwritten alphabetical character recognition system using multilayer feed Forward neural network is described in paper.	Here the process of extraction was complicated.
Purohit and Chauhan, 2016	Recognition of Handwritten English Numerals Based on Combining	The actual character analysis is performed	There are numerous handwriting styles for the same digit, so the accuracy

	Structural and Statistical Features		plays a major role here.
Ishani Patel,Virag Jagtap ,Ompriya Kale 2015	A Survey on Feature Extraction Methods for Handwritten Digits Recognition	A survey on handwritten digit recognition systems with recent techniques, with three well known classifiers namely MLP, SVM and k-NN used for classification.	This survey has over came all the difficuties of the digit recognition.