












A NOVEL METHOD FOR HANDWRITTEN DIGIT RECOGNITION

SCENARIO Handwritten digit given as input recognized using the model and output used for various applications		 ENTICE			 ENTRY		 ENGAGE		 EXIT		 EXTEND	
 STEPS	Classification into 10 predefined classes	Import the libraries and load the data set	Pre process the data	Create the model	Data set	Train the model	Evaluate the model	Create the GUI to predict the digits				
	Different algorithms such as SVM ,random fores t.etc.. are used	The keras libraries already contain some datasets and MNIST is one of them	Process the data and perform operations making it ready for neural network	CNN consists of convolutional and pooling layers.CNN works well for image classification	MNIST data set is the subset of the NIST data set	t takes the training data ,validation data, epochs and batch size	MNIST dataset is well balanced so we can get around 99% accuracy.	New file is created in which we build a interactive windows to draw digits on canvas				
 INTERACTIONS		The user writes the digit in the app developed for recognition.	It uses different types of neural network architectures for different types of problems. For example – object recognition, image and sound classification, object detection, image segmentation, etc.	A new file is created in which interactive window allows the user to draw and write digits.	The library function takes the image as input and uses the trained model to predict the digit	Various algorithms such as SVM,random forest,linear classification are also implemented in handwritten digit recognition.	Feature extraction is the measurement on a population of entities that will be classified.	The goal of Linear Classification is to assign observations into the classes. This can be used to establish a classifier rule so that it can assign a new observation into a class				
 GOALS AND MOTIVATIONS		It basically detects the scanned images of handwritten digits	Apart from scanning related suggestions and results for the handwritten digits can be beneficial	Second, the image of the document is segmented into lines, words, and individual characters. Third, each character is recognized using OCR techniques.	Being rotation and thickness invariant of the digit written is necessary	Unsupervised and few shot learning used in the model for recognition of various digits can be very useful at the core process	OCR plays an important role for digital libraries, allowing the entry of image textual information into computers by digitization, image restoration, and recognition methods which can be with increased accuracy					
 POSITIVE MOMENTS			the system not only produces a classification of the digit but also a rich description of the instantiate parameters which can yield information such as the writing style	the generative models can perform recognition driven segmentation	Pattern recognition systems can recognize familiar patterns quickly and accurately.	method of fitting models to images does not get trapped in poor local minima	The model trained can handle arbitrary scaling, translations and a limited degree of image rotation.	data can be anything from text and images to sounds or other definable qualities				
 NEGATIVE MOMENTS			The handwritten digits are not always of the same size, width, orientation and justified to margins as they differ from writing of person to person	the general problem would be while classifying the digits due to the similarity between digits such as 1 and 7, 5 and 6, 3 and 8, 2 and 5, 2 and 7, etc.		The disadvantage is that it is not done in real time as a person writes and therefore not appropriate for immediate text input.	The main disadvantage of the method is that it requires much more computation than more standard OCR techniques.					
 AREAS OF OPPORTUNITY		The applications of digit recognition include in postal mail sorting, bank check processing, form data entry	The task of handwritten digit recognition, using a classifier, has great importance and use such as – online handwriting recognition on computer tablets, recognize zip codes on mail			OCR plays an important role for digital libraries, allowing the entry of image textual information into computers by digitization, image restoration, and recognition methods.	One of the advantage is textual studies.	Handwriting recognition helps to transform the writings in the papers to a text document format which can also be said as readable electronic format. By this way, historical facts can be stored, reviewed and shared easily				