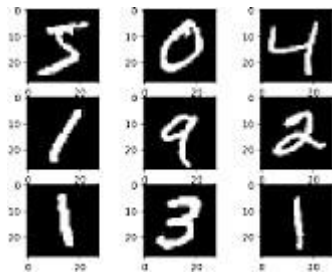


**Project Design Phase-II**  
**Solution Requirements (Functional & Non-functional)**

<b>Date</b>	<b>14 OCT 2022</b>
<b>Team ID</b>	<b>PNT2022TMID12666</b>
<b>Project Name</b>	<b>A Novel Method for Handwritten Digit Recognition System</b>
<b>Maximum Marks</b>	<b>4 Marks</b>

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

<b>FR No:</b>	<b>Functional Requirement and description:</b>
FR-1	<b>Image Data:</b> Handwritten digit recognition is <b>the ability of a computer to recognize the human handwritten digits from different sources like images, papers, touch screens, etc, and classify them into 10 predefined classes (0-9).</b> This has been a topic of boundless-research in the field of deep learning.
FR-2	<b>Website:</b> Web hosting <b>makes the files that comprise a website (code, images, etc.) available for viewing online.</b> Every website you've ever visited is hosted on a server. The amount of space allocated on a server to a website depends on the type of hosting. The main types of hosting are shared, dedicated, VPS and reseller.
FR-3	<b>Digit_Classifier_Model:</b> Use the <b>MNIST database of handwritten digits to train a convolutional network to predict the digit given an image.</b> First obtain the training and validation data.
FR-4	<p><b>MNIST dataset:</b> The MNIST dataset is an acronym that stands for the <b>Modified National Institute of Standards and Technology dataset</b>. It is a dataset of 60,000 small square 28×28 pixel grayscale images of handwritten single digits between 0 and 9.</p> 
FR-5	<b>Cloud:</b> The cloud provides a number of IT services such as servers,

	databases, software, virtual storage, and networking, among others. In layman's terms, Cloud Computing is defined as a virtual platform that <b>allows you to store and access your data over the internet without any limitations.</b>
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### Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

NFR No.	Non-Functional Requirement
NFR-1	<b>Usability:</b> Handwritten character recognition is one of the practically important issues in pattern recognition applications. The applications of digit recognition include in <b>postal mail sorting, bank check processing, form data entry</b> , etc.
NFR-2	<b>Reliability:</b> 1) the system not only produces a classification of the digit but also a rich description of the instantiation parameters which can yield information such as the writing style. 2) the generative models can perform recognition driven segmentation. 3) the method involves a relatively.
NFR-3	<b>Performance:</b> the neural network <b>uses the examples to automatically infer rules for recognizing handwritten digits</b> . Furthermore, by increasing the number of training examples, the network can learn more about handwriting, and so improve its accuracy. There are a number of ways and algorithms to recognize handwritten digits, including <b>Deep Learning/CNN, SVM, Gaussian Naive Bayes, KNN, Decision Trees, Random Forests</b> , etc.
NFR-4	<b>Accuracy:</b> <b>Optical Character Recognition (OCR)</b> technology provides <b>higher than 99% accuracy</b> with typed characters in high-quality images. However, the diversity in human writing types, spacing differences, and irregularities of handwriting causes less accurate character recognition.