

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

Team ID	PNT2022TMID01546
Project Name	A Novel Method for Handwritten Digit Recognition System

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

FR No.	Sub Requirement (Story / Sub-Task)
FR-1	Image Data: Handwritten digit recognition refers to a computer's capacity to identify human handwritten digits from a variety of sources, such as photographs, documents, touch screens, etc., and categorize them into ten established classifications (0-9). In the realm of deep learning, this has been the subject of countless studies.
FR-2	Website: Web hosting makes the code, graphics, and other items that make up a website accessible online. A server hosts every website you've ever visited. The type of hosting determines how much space is allotted to a website on a server. Shared, dedicated, VPS, and reseller hosting are the four basic varieties.
FR-3	Digit Classifier Model: To train a convolutional network to predict the digit from an image, use the MNIST database of handwritten digits. get the training and validation data first.
FR-4	Cloud: The cloud offers a range of IT services, including virtual storage, networking, servers, databases, and applications. In plain English, cloud computing is described as a virtual platform that enables unlimited storage and access to your data over the internet.
FR-5	Modified National Institute of Standards and Technology dataset: The abbreviation MNIST stands for the MNIST dataset. It is a collection of 60,000 tiny square grayscale photographs, each measuring 28 by 28, comprising handwritten single digits between 0 and 9.

**Non-functional Requirements:**

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

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	The recognition of handwritten characters is one of the major issues with pattern recognition applications. The processing of bank checks, filling out forms, and sorting mail are a few uses for digit recognition.

NFR-2	<b>Security</b>	<ol style="list-style-type: none"> <li>1. In addition to classifying the digit, the algorithm also generates a full description of the instantiation parameters, which could disclose details like the writing style.</li> <li>2. The segmentation capabilities of the generative models are powered by recognition.</li> </ol>
NFR-3	<b>Reliability</b>	<p>The neural network makes use of the samples to automatically determine rules for reading handwritten digits. By increasing the number of training instances, the network may also learn more about handwriting and hence improve its accuracy.</p> <p>To recognise handwritten numbers, a variety of methods and algorithms can be employed, including Deep Learning/CNN, SVM, Gaussian Naive Bayes, KNN, Decision Trees, Random Forests, etc.</p>
NFR-4	<b>Accuracy</b>	<p>Optical character recognition (OCR) technology gives accuracy rates of more than 99% for typed text in high-quality pictures. Less accurate character identification is caused by variations in spacing, anomalies in handwriting, and the diversity of human writing styles.</p>
NFR-5	<b>Availability</b>	