

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

Date	16 October 2022
Team ID	PNT2022TMID12314
Project Name	A Novel Method for Handwritten Digit Recognition System
Maximum Marks	4 Marks

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Getting the handwritten digit input	The handwritten digit is obtained as input from the user as an image uploading or writing on the canvas.
FR-2	Data preprocessing	Upgrades the image to make it ready for segmentation, by performing some tasks on the input image.
FR-3	Segmentation & Feature Extraction	Segment the MNIST dataset images using edge detection technique and remove redundancy from the data
FR-4	Classification and Recognition	Passing the feature vectors as individual input to the classifiers or neural networks such as CNN.
FR-5	Prediction	The deep learning model is trained and tested using the MNIST dataset, with accuracy > 90%
FR-6	Evaluation	Ensure that the digit is correctly recognised by the model and produces accurate output.

**Non-functional Requirements:**

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

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	To identify and understand handwritten digits automatically, with high accuracy.
NFR-2	<b>Security</b>	Ensures security, since uploaded images are not stored in any database
NFR-3	<b>Reliability</b>	User-friendly web interface for the system. Process confidential information without data leakage.
NFR-4	<b>Performance</b>	High, since artificial neural networks are used to train the images and build deep learning model. Fast prediction using CNN algorithm.
NFR-5	<b>Availability</b>	Using web application, anyone can easily access the system, making it highly available for web and mobile browsers.
NFR-6	<b>Scalability</b>	Performs well even if the count of input handwriting increased, since MNIST dataset is used for recognition process. Low time consumption.