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

Date	16 October 2022
Team ID	PNT2022TMID09905
Project Name	Project - - 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	Implementation	To import all the modules need for training our model. Import the libraries and load the MINST dataset.
FR-2	User Registration	Registration through Gmail
FR-3	User Confirmation	Confirmation via Email
FR-4	Pre processing	Model cannot take the image data directly so we need to perform some basic operations and process the data. The CNN model will require one more dimension so we reshape the matrix to shape (60000,28,28,1)
FR-5	Create and Train the model	Creating CNN model in Python data science project. A CNN model generally consists of convolutional and pooling layers. Keras will start the training of the model.
FR-6	Evaluation	We have 10,000 images in our dataset. The MNIST dataset is well balanced so we can get around 99% accuracy.

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Handwritten character recognition is one of the practically important issues in pattern recognition applications. The applications of digit recognition include in postal mail sorting, bank check processing, form data entry, etc.
NFR-2	**Security**	Most PC efforts to establish safety include information encryption and passwords, OCR plays an important role for digital libraries, allowing the entry of image textual information into computers by digitization, image restoration, and recognition methods.
NFR-3	**Reliability**	The overall highest accuracy 90.37% is achieved in the recognition process by Multilayer Perceptron.

NFR-4	**Performance**	Most standard implementations of neural networks achieve an accuracy of ~(98–99) percent in correctly classifying the handwritten digits.
NFR-5	**Availability**	The established CNN model can determine and recognize handwritten digits with high accuracy, as it combines the weights of convolution layers during feature extraction with fully connected layers.
NFR-6	**Scalability**	High speed, robustness, flexible and suitable for text and document formats.