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

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| Team ID | PNT2022TMID27279 |
| Project Name | A Novel Method for Handwritten Digit Recognition System |

**Functional Requirements:**

The functional specifications for the suggested solution are listed below.

| FR No. | Sub Requirement (Story / Sub-Task) |
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| FR-1 | Image Data: Handwritten digit recognition is the ability of a computer to recognise human handwritten digits from a number of sources, including pictures, papers, touch screens, etc., and classify them into ten predetermined categories (0-9). This has been the focus of innumerable studies in the field of deep learning. |
| FR-2 | Website: Web hosting enables online access to the HTML, graphics, and other components of a website. Every website you've ever visited is hosted by a server. The amount of server space provided to a website depends on the hosting type. The four primary types of hosting are shared, dedicated, VPS, and reseller. |
| FR-3 | Digit Classifier Model: Utilize the MNIST collection of handwritten digits to train a convolutional network to predict a digit from an image. assemble the data for training and validation first. |
| FR-4 | Cloud: A variety of IT services, such as virtual storage, networking, servers, databases, and applications, are available in the cloud. Cloud computing is defined as an internet-based virtual platform that allows for limitless data storage and access. |
| FR-5 | Modified National Institute of Standards and Technology dataset: The MNIST dataset is referred to by the acronym MNIST. It is a collection of 60,000 extremely small square grayscale photos, each measuring 28 by 28, with handwritten single numerals from 0 to 9. |

**Non-functional Requirements:**

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

| FR No. | Non-Functional Requirement | Description |
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| NFR-1 | **Usability** | 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 | **Security** | 1) In addition to classifying the digit, the system also gives a full description of the instantiation parameters, which could reveal details like the |

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| | | writing style.<br>2) Segmentation powered by recognition is a feature of the generative models.<br>3) A relatively is used in the process. |
| NFR-3 | **Reliability** | The neural network uses the data to automatically determine rules for deciphering handwritten numerals. By increasing the number of training instances, the network may also learn more about handwriting and hence improve its accuracy.<br>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. |
| NFR-4 | **Accuracy** | 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. |
| NFR-5 | **Availability** | |