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

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|---|---|
| Team ID | PNTIBMOr11 |
| 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 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).<br>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.<br>Every website you've ever visited is hosted by a server.<br>The amount of server space provided to a website depends on the hosting type.<br>The four primary types of hosting are shared, dedicated, VPS, and reseller. |
| FR-3 | Use the MNIST database of handwritten digits to train a neural network to predict the digit from a picture.<br>assemble the data for training and validation first. |
| FR-4 | Cloud: The cloud provides a variety of IT services, such as server, database, virtual storage, networking, and servers.<br>Cloud computing is defined as an internet-<br>based virtual platform that allows for limitless data storage and access. |
| FR-5 | modified dataset from the National Institute of Standards and Technology<br>The MNIST dataset is referred to by the acronym MNIST.<br>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 |
|---|---|---|
| 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 so rting mail are a few uses for digit recognition. |
| NFR-2 | **Security** | 1) In addition to classifying the digit, the system also giv es a full description of the instantiation parameters, whi ch could reveal details like the writing style.<br><br>2) Segmentation powered by recognition is a feature of the generative models.<br><br>3) A relatively is used in the process. |
| NFR-3 | **Reliability** | The neural network uses the data to automatically determ ine rules for deciphering handwritten numerals. By increasing the number of training instances, the netwo rk may also learn more about handwriting and hence impr ove its accuracy. To recognise handwritten numbers, a variety of methods and algorithms can be employed, including Deep Learnin g/CNN, SVM, Gaussian Naive Bayes, KNN, Decision Tre es, Random Forests, etc. |
| NFR-4 | **Accuracy** | Optical character recognition (OCR) technology offers ac curacy rates of more than 99% for typed text in high-quality pictures. Less accurate character identification is caused by variati ons in spacing, anomalies in handwriting, and the diversit y of human writing styles. |
| NFR-5 | **Availability** | Availability **describes how likely the system is accessible to a user at a given point in time**. While it can be expressed as an expected percentage of successful requests, you may also define it as a percentage of time the system is accessible for operation during some time period. |