# PROJECT DESIGN PHASE-II

## FUNCTIONAL & NON-FUNCTIONAL REQUIREMENTS

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| **Date** | **14 OCT 2022** |
| **Team ID** | **PNT2022TMID47342** |
| **Project Name** | **A Novel Method for Handwritten Digit Recognition System** |
| **Maximum Marks** | **4 Marks** |

## Functional Requirements:

| FR No: | Functional Requirement and description |
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| FR-1 | **Image Data**: Handwritten digit recognition is **the ability of a computer to recognize the human handwritten digits from different sources like images, papers, touch screens, etc, and classify them into 10 predefined classes (0-9)**. This has been a topic of boundless-research in the field of deep learning. |
| FR-2 | **Website:** Web hosting **makes the files that comprise a website (code, images, etc.) available for viewing online**. Every website you've ever visited is hosted on a server. The amount of space allocated on a server to a website depends on the type of hosting. The main types of hosting are shared, dedicated, VPS and reseller. |
| FR-3 | **Digit_Classifier_Model: Use the MNIST database of handwritten digits to train a convolutional network to predict the digit given an image**. First obtain the training and validation data. |
| FR-4 | **MNIST dataset:** The MNIST dataset is an acronym that stands for the **Modified National Institute of Standards and Technology dataset**. |

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| FR-5 | databases, software, virtual storage, and networking, among others. In layman's terms, Cloud Computing is defined as a virtual platform that **allows you to store and access your data over the internet without any limitations**. |

## Non-functional Requirements:

| NFR No. | Non-Functional Requirement |
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| NFR-1 | **Usability:**<br>Handwritten character recognition is one of the practically important issues in pattern recognition applications. The applications of digit recognition include postal **mail sorting, bank check processing, form data entry**, etc. |
| NFR-2 | **Reliability:**<br>1) The system not only produces a classification of the digit but also a rich description of the instantiation parameters which can yield information such as the writing style.<br>2)The generative models can perform recognition driven segmentation.<br>3) The method involves a relative. |
| NFR-3 | **Performance:**<br>The neural network **uses the examples to automatically infer rules for recognizing handwritten digits**. Furthermore, by increasing the number of training examples, the network can learn more about handwriting, and so improve its accuracy. There are a number of ways and algorithms to recognize handwritten digits, including **Deep Learning/CNN, SVM,** |

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| | **Gaussian Naive Bayes, KNN, Decision Trees, Random Forests**, etc. |
| NFR-4 | **Accuracy:**<br>**Optical Character Recognition** (OCR) technology provides **higher than 99% accuracy** with typed characters in high quality images. However, the diversity in human writing types, spacing differences, and irregularities of handwriting causes less accurate character recognition. |