**Project Design Phase-II**
**Functional Requirements**

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| **Date** | **2 NOV,2022** |
| **Team ID** | **PNT2022TMID19405** |
| **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.

| **ÏR 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.. |
| FR-3 | **Digit_Classifieí_Model: Use the MNISl' database of handwritten digits to train a convolutional network to predict the digit given an image**. First obtain the training and validation data. |

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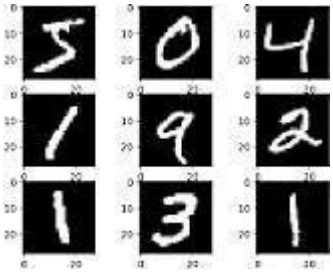
| FR-4 | **MNISl' dataset:** the MNIST dataset is an acronym that stands for the **Modified National Institute of Standards and Technology dataset**. It is a dataset of 60,000 small square 28×28 pixel grayscale images of handwritten single digits between 0 and 9.<br>  |
| FR-5 | **Cloud:** The cloud provides a number of IT services such as servers, |
| | 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:**

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

| **NİR 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 in **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 relatively. |

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| 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, Gaussian Naive Bayes, KNN, Decision lees, Random Joists**, 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 inequalities of handwriting causes less accurate character recognition. |