**Project Design Phase-II**

**Solution Requirements (Functional & Non-functional)**

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| Date | 03 October 2022 |
| Team ID | PNT2022TMID20889 |
| 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.

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| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| FR-1 | MNIST Dataset | A training set of 60,000 instances and a test set are included in the modified National Institute of Standards and Technology dataset (MNIST) database of handwritten digits. |
| FR-2 | Website | Web hosting makes the code, graphics, and other items that make up a website accessible online. A server hosts every website you have ever visited. The type of hosting determines how much space is allotted to a website on a server. Shared, dedicated, VPS, and reseller hosting are the four basic varieties. |
| FR-3 | Cloud | The cloud offers a range of IT services, including virtual storage, networking, servers, databases, and applications. In plain English, cloud computing is described as a virtual platform that enables unlimited storage and access to your data over the network. |
| FR-4 | GUI | Allows for the digitalization of the numbers and the user to enter a handwritten image. meant to make virtualization easier. |
| FR-5 | Digit Classifier Model | Train a neural network to predict a digit from an image using the MNIST collection of handwritten digits. Gather the training and validation data first. |
| FR-6 | Evaluation | Make that the model recognises the digit correctly and generates the correct result. |

**Non-functional Requirements:**

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

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| **FR No.** | **Non-Functional Requirement** | **Description** |
| NFR-1 | **Usability** | The problem in pattern recognition application is the recognition of handwritten characters. Application for handwritten digit recognition include filling out forms, processing bank checks and sorting mail. |
| NFR-2 | **Security** | The generative models are capable of segmentation driven by recognition. The system generates a description of the instantiation parameters which might reveal information like the writing style in addition to the categorization of the digit. |
| NFR-3 | **Reliability** | The samples are used by the neural network to automatically generate rules for deciphering handwritten digits. The network may learn more about handwriting as a result of additional training cases, which will also increase its accuracy. |
| NFR-4 | **Performance** | Performance is high because artificial neural networks used in deep learning are trained on the training set of images. |
| NFR-5 | **Availability** | Through a web application, anyone may easily access the system, making it incredibly accessible for desktop and mobile browsers. |
| NFR-6 | **Scalability** | Works with numerous additional datasets with distinct linguistic and writing types |