**Project Design Phase-I**

**Proposed Solution**

| Date | 19 September 2022 |
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| Team ID | PNT2022TMID39952 |
| Project Name | Project - Novel method for handwritten digit recognition |
| Maximum Marks | 2 Marks |

**Proposed Solution:**

Project team shall fill the following information in proposed solution template.

| **S.No.** | **Parameter** | **Description** |
| --- | --- | --- |
|  | Problem Statement (Problem to be solved) | The handwritten digits are not always of the same size, width, orientation and justified to margins as they differ from writing of person to person, so the general problem would be while classifying the digits due to the similarity between digits such as 1 and 7, 5 and 6, 3 and 8, 2 and 5, 2 and 7, etc. |
|  | Idea / Solution description | 1.Image Acquisition  2.Pre-processing  3.Segmentation  4.Feature Extraction  5.Classification  6.Post Processing |
|  | Novelty / Uniqueness | 1.Support Vector Machine  2.Multilayer Perceptron  3.Convolutional Neural Network |
|  | Social Impact / Customer Satisfaction | 1..The impact of image resolution reduction on recognition accuracy for handwritten digits  2. 1% accuracy degradation impact  3.Reduction of the size for the features vector due to image rescaling |
|  | Business Model (Revenue Model) |  |
|  | Scalability of the Solution | The US Postal (USPS) handwritten digit dataset is derived from a project on recognizing handwritten digits on envelopes [ 7, 8 ]. The digits were downscaled to 16 × 16 pixels and scaled without distortion (i.e., retaining the aspect ratio; 1 : 1 scaling). The training set has 7291 samples, and the test set has 2007 samples. |