**Project Design Phase-I**

**Problem-Solution Fit**

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| **Team ID** | PNT2022TMID09375 |
| **Project Name** | Project –A Novel method for handwritten digit recognition |
| **Maximum Marks** | 2 Marks |

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| **S.No.** | **Parameter** | **Description** |
|  | **Problem Statement (Problem to be solved)** | The problem is recognizing the human handwritten digits by system. It is hard for the machines to identify the digits because handwritten digits are not perfect and can be of many different shapes and sizes which cause difficulty in recognizing them. The goal is to upload the image of the handwritten digit and identify the digit with accuracy. |
|  | **Idea / Solution description** | The training and testing has been conducted from publicly available MNIST handwritten databases. Web based, offline and online handwritten digit recognition system is developed by using Convolutional Neural Network. The steps to be involved are Image Acquisition, Pre-processing, Segmentation, Feature Extraction, Classification, Post Processing. |
|  | **Novelty / Uniqueness** | OCR technology provides higher than 99% accuracy with typed characters in high-quality images. However, the diversity in human writing, spacing differences, and irregularities of handwriting causes less accurate character recognition, as you can see in the featured image and we also try to optimize the model and decrease the pre-processing time of the model. |
|  | **Social Impact / Customer Satisfaction** | Customer satisfaction is the key to the growth of any product. Handwritten Digit Recognition has various uses such as less time consumption. So, as this system was very useful in many places such as used in the detection of vehicle number, banks for reading cheques, post offices for arranging letter, and many other tasks. So, in social places this system will help majorly to solve the problems |
|  | **Business Model (Revenue Model)** | The main objective of this work is to ensure effective and reliable approaches for recognition of handwritten digits and make banking operations easier and error free. We can provide one time purchase policy which the system can be bought for a single user per computer. As the development of this project takes lot of time to create and the datasets are difficult to collect we can arrange the mode of payment and some policy can also be implemented. |
|  | **Scalability of the Solution** | This proposed system can be scaled up and down based on the way of introducing the project in the market. Handwritten digit recognition becomes vital scope and it is appealing many researchers because of its using in variety of machine learning and computer vision applications |