Project Design Phase-I
Proposed Solution

Date	22 September 2022
Team ID	PNT2022TMID53497
Project Name	Project - A Novel Method for Handwritten Digit Recognition System
Maximum Marks	2 Marks

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Digit recognition is essential in the modern world. It has the capacity to resolve problems that are getting harder and easier while facilitating human work. One instance is the recognition of handwritten digits. This is a technique that is used globally to identify zip codes or postal codes for mail sorting. A variety of methods can be used to recognise handwritten digits. Because handwritten numerals are not always accurate and can be produced in a variety of ways, the machine has a challenging task. Handwritten digit identification, which uses a picture of a digit to identify the digit represented in the image, offers a solution to this problem.
2.	Idea / Solution description	With 60,000 training photos of handwritten digits from 0 to 9 and 10,000 test images, the MNIS dataset is used to conduct handwritten digit recognition. The MNIST dataset therefore includes 10 distinct classifications. We're going to put into practise a Convolutional Neural Networks model trained application for handwritten digit recognition in this project. The user enters the handwritten digit into a GUI, which recognises it, and the answer is shown instantly.
3.	Novelty / Uniqueness	In the field of handwriting visual recognition, this study presents a practical method for addressing novelty. In addition to identifying any aesthetic differences that could exist inside or across texts, the ideal transcription agent would be able to discriminate between known and unknown characters in an image. The novelty is brought in by making use of tools and algorithms that generates multiple copies of the image with different types of altercations in width, height, skew, etc. This makes the model more accurate and reliable.
4.	Social Impact / Customer Satisfaction	With the handwriting recognition technology come a lot of advantages. In addition to reading postal addresses and bank check amounts, it is

		also helpful for reading forms. As a result of how simple it is to compare two texts and establish whether one is a copy, it is also employed in the detection of fraud. This suggested approach ought to be capable of detecting those digits as well, given that users in rural locations will speak their own regional language. Given that it is intended to address real-life issues, it must be completely trustworthy and extremely dependable in all respects, and it must be used by people all over the world.
5.	Business Model (Revenue Model)	The major revenue generating sectors are banking, healthcare, retail, tourism, logistics, transportation, government, manufacturing, and other sectors. All procedures are now quicker and easier to access as a result of digitalization in commercial organisations. Data is becoming an essential component for success as businesses experience technological breakthroughs. When information is transformed into digital form, it can be processed by computers and other computing devices, making it simple to distribute, access, and store. Hence the market value of this technology is very high.
6.	Scalability of the Solution	Scaling of the model can be achieved by expanding the dataset to regional languages. This makes it very useful especially in rural areas where people are prone to writing in the local text. Another method is to use IBM Cloud AI to optimize, train and improve the efficiency of the working model. The high accuracy and reliability makes it more desirable to the market.