

Project Design Phase-I
Proposed Solution

Date	19 September 2022
Team ID	PNT2022TMID52603
Project Name	Project – A Novel Method for Handwritten Digit Recognition System
Maximum Marks	2 Marks

Proposed Solution:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Developers are putting all their strength to make machines more intelligent, and smarter than humans. One such method that helps engineers improve machines is Deep Learning. In modern world the Handwritten pattern recognition has made a great impact towards the field of pattern recognition systems and sorting data. The process of giving machines the ability to recognise human handwritten digits is known as handwritten digit recognition. Handwritten digits are imperfect, differ from person to person, and can be constructed with a variety of tastes, making it difficult for the machine to complete the task. The main problem is the ability to create an efficient algorithm that can detect handwritten numbers sent by users in the form of scanners, tabs, and other digital devices. To increase efficiency and accuracy in identifying and recognising patterns, numbers, and characters is the basic objective of all these character or digit recognition systems.
2.	Idea / Solution description	Handwritten digit recognition is performed using the MNIST dataset which has 10 different classes. This project proposes a handwritten digit recognition system trained using the Convolutional Neural Network model. Then a web application is built where the user gives the handwritten digit as input. The system recognizes and the result is displayed immediately.
3.	Novelty / Uniqueness	An ideal translation tool would be able to recognise individual characters in an image and identify any aesthetic differences that might appear in texts. Even the most reliable machine learning-based algorithms have demonstrated to be severely hindered by the presence of novelty. Novelty in handwritten text might take the form of a shift in style, character traits,

		writing characteristics, or the entire look of the document. We think that using an integrated agent that can handle novelties concurrently is a better method than looking at each component separately.
4.	Social Impact / Customer Satisfaction	It is helpful for reading postal addresses, bank check amounts and license plates. Additionally, it is employed in the detection of fraud since it makes it simple to compare two texts and identify which is a copy. As it employs an innovative technique for identifying handwritten digits, this system ensures high accuracy for the model and meets all customer expectations. As the users in rural areas will be speaking their own regional language, the proposed system should not be affected by language constraints. It should be quick, extremely dependable, and trustworthy in every aspect since it is intended to solve real-life issues, and it should be usable by users all over the world.
5.	Business Model (Revenue Model)	Sales, government funding, and contributions from the general public make up our main revenue sources. The introduction of fresh concepts, such as adding gesture or touch elements, voice reading out of recognised digits/characters, etc., improves revenue sources.
6.	Scalability of the Solution	Making use of cloud-native techniques is one way to scale the handwritten digit recognition system. IBM Cloud supports decision-making by managing and running AI models. We can deploy our AI application on the specific cloud environment that best supports our business needs, which is an advantage of leveraging the cloud to scale solutions. We can benefit from AI model monitoring and built-in security features. We can run models with one-click integration and create models visually and programmatically.