Project Design Phase-I

Proposed Solution Template

Date	25 September 2022
Team ID	PNT2022TMID27279
Project Name	Project - A Novel Method For Handwritten Digit Recognition System
Maximum Marks	2 Marks

Proposed Solution Template:

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

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 digits are not always accurate and can be produced in a variety of ways, the machine has a challenging task. Handwritten digit identification, which uses an image of a digit to identify the digit represented in the image, offers a solution to this problem.
2.	Idea / Solution description	The MNIST dataset, which includes 10,000 test images and 60,000 training images of handwritten digits from zero to nine, is used to perform handwritten digit recognition. Thus, there are 10 separate classes in the MNIST dataset. In this project, we'll put into practise a Convolutional Neural Networks model–trained application for handwritten digit recognition. In the end, a GUI is created in which the user enters a handwritten digit, which is then identified, and the answer is shown right away.
3.	Novelty / Uniqueness	In this study, a practical method for addressing novelty in the field of handwriting visual recognition is introduced. A flawless transcription agent would be able to recognise recognised and unrecognised characters in a picture as well as any aesthetic differences that might exist within or across texts. The presence of novelty has shown to be a significant roadblock for even the most

		robust techniques based on machine learning for these tasks. Novelty in handwritten documents can take many different forms, such as a change in the author, character traits, writing skills, or overall document appearance. We think that an integrated agent that can handle well-known characters and innovations simultaneously is a better approach than looking at each aspect separately. The optical character recognition (OCR) problem includes the handwritten digit recognition problem as a subtask.
4.	Social Impact / Customer Satisfaction	With the handwriting recognition system 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. Because it employs an innovative technique for identifying handwritten numbers, this system meets all client expectations and ensures the model's high accuracy. If the system offers numerous synonyms for the terms recognised, users will significantly save their time and effort spent searching. This proposed system ought to be able to recognise those digits because users in rural areas will speak their own regional language.
5.	Business Model (Revenue Model)	Knowing a startup's revenue model involves knowing how to make money. 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 numerals, 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, for instance, is one of the cloud-based AI scalability options. Run and manage AI models, as well as optimise decisions at scale across any cloud, with the aid of IBM Cloud Build. We can install our AI application on the cloud, which is a benefit of using it to scale solutions.

		the particular cloud setting that best meets our company's demands. We can benefit from AI model monitoring and built-in security features. With ModelOps pipelines, we can automate the AI lifecycles, deploy and run models with one-click integration, and prepare and create models visually and programmatically. Considering these benefits, we can improve business outcomes by making the best decisions possible and scaling our solution via the cloud.