Project Design Phase-I

Proposed Solution Template

Date	25 September 2022
Team ID	PNT2022TMID35755
Project Name	Project - A Novel Method For Handwritten Digit Recognition With Neural Networks
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. Novelty has shown to be a significant roadblock for even the bestrobust 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 s eparately. The optical character recognition (OCR) problem i ncludes the handwritten digit recognition problem as a subtask.
4.	Social Impact / Customer Satisfaction	The handwriting recognition system offers a wide r ange of advantages. It is helpful for reading forms in addition to reading postal addresses and bank check amounts. Additionally, it is employed in the detection of frau d since it makes it simple to compare two texts an d identify which is a copy. Because it employs an innovative technique for id entifying handwritten digits, this system ensures hi gh accuracy for the model and meets all customer expectations. If the system offers a variety of synonyms for the words recognised, users will save a great deal of ti me and work. This proposed system should be able to recognise those digits because users in rural areas will spea k their own regional language. The method must be quick and dependable becau se it will be utilised in socially populated settings li ke banks to check quantities. It should be extremely dependable and trustworthy in every manner, and users all over the world sho uld be able to use it efficiently because it is made t o address real-life issues
5.	Business Model (Revenue Model)	Given that it is intended to address real- life issues, it must be completely trustworthy and extremely reliable in all respects, and it must be used by users all over the world.
6.	Scalability of the Solution	Making use of cloud- native techniques is one way to scale the handwrit ten 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 d ecisions at scale across any cloud, with the aid of I BM Cloud Build. The benefit of using the cloud to scale solutions is that we can install our AI programme there. the particular cloud setting that best meets our co mpany'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 vi sually and programmatically.

		Considering these benefits, we can improve business outcomes by making the best decisions possible and scaling our solution via the cloud.