Project Design Phase-I
Proposed Solution Template

Date	19 October 2022
Team ID	PNT2022TMID51176
Project Name	A Novel method for handwritten digit recognition system.
Maximum Marks	2 Marks

Proposed Solution Template:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	• Preventable medication errors affect more than 1.5 million people around the world annually. These errors are caused by unclear abbreviations and doses, and illegible handwriting. • Some research studies have indicated that electronic prescriptions do not prevent common prescription errors made in manual handwritten prescriptions. • Illegible handwriting causes loss of information and prevents better care for patients. • It may lead to death of the patients sometimes. • So, it is very important to have a good handwritten recognition system.
2.	Idea / Solution description	• MNIST database is a large database of handwritten digits specially used for training and testing the machine learning projects. • MNIST data set is widely used for this recognition process and it has 70000 handwritten digits. • The MNIST database contains 60,000 training images and 10,000 testing images • We use Artificial neural networks to train these images and build a deep learning model. • Web application is created where the user can upload an image of a handwritten digit. • This image is analysed by the model and the detected result is returned on to UI.

3.	Novelty / Uniqueness	• Spending minimal time and effort on data pre-processing and formatting. MNIST is very simple and easy to use. • The CNN model gives above 99% recognition accuracy both in compact MNIST digit datasets and in extensive Kaggle datasets for alphabets. • In the proposed CNN model, four 2D convolutional layers are kept the same and unchanged to obtain the maximum comparable recognition accuracy into two different datasets, Kaggle and MNIST, for handwritten letters and digits, respectively. This proves the versatility of the proposed model.
4.	Social Impact / Customer Satisfaction	• The novel method for handwritten recognition system will create a great impact in the society and its people. • It is a novel method for recognizing handwritten digits, ensuring high accuracy for the model and meeting all customer expectations. • This system can be used to recognise their own regional language. • This system will help us to avoid the death occurred due to unclear prescriptions. • This can be used in Bank sectors and Fraud detection as well to compare the original and duplicate.
5.	Business Model (Revenue Model)	• Recognition of characters and digits is vital in today's digitized world, especially in organizations that deal with Handwriting documents that they need to analyse using computer systems. • Systems that are used for classification and recognition of handwriting help organizations and individuals to solve complex tasks. • It will surely generate more revenue since it helps to complete the complex task earlier.
6.	Scalability of the Solution	• IBM Cloud Bare Metal Servers offer a security-rich environment, maximum flexibility to scale up or down and the performance you need to succeed. • Organizations can scale their computing power up or down at any time, which is a more cost-effective solution when compared to adding servers in a data centre.