Project Design Phase-I
Proposed Solution Template

Date	23 September 2022
Team ID	PNT2022TMID03640
Project Name	A Novel Method For Handwritten Digit Recognition System

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Handwriting recognition is one of the compelling research works going on because every individual in this world has their own style of writing. It is the capability of the computer to identify and understand handwritten digits or characters automatically. Because of the progress in the field of science and technology, everything is being digitalized to reduce human effort. Hence, there comes a need for handwritten digit recognition in many real-time applications. MNIST data set is widely used for this recognition process and it has 70000 handwritten digits. 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 analyzed by the model and the detected result is returned on to UI
2.	Idea / Solution description	HANDWRITTEN digit recognition is the ability of a computer system to recognize the handwritten inputs like digits, characters etc. from a wide variety of sources like emails, papers, images, letters etc. This has been a topic of research for decades. Some of the research areas include signature verification, bank check processing, postal address interpretation from envelopes etc

3.	Novelty / Uniqueness	One of the techniques that can be used to recognize handwritten Chinese characters is using **Optical Character Recognition (OCR)**. Here, OCR uses probabilistic neural network to recognize Chinese characters[3]. The training of the classifier starts with using the distortion-modeled characters from four fonts.
4.	Social Impact / Customer Satisfaction	1) the system not only produces a classification of the digit but also a rich description of the instantiation parameters which can yield information such as the writing style; 2) the
		generative models can perform recognition driven segmentation; 3) the method involves a relatively small number of parameters and hence training is relatively easy and fast.
5.	Business Model (Revenue Model)	In business, System Analysis and Design refers to the process of examining a business situation with the intent of improving it through better procedures and methods. System analysis and design relates to shaping organizations, improving performance and achieving objectives for profitability and growth. The emphasis is on systems in action, the relationships among subsystems and their contribution to meeting a common goal.
6.	Scalability of the Solution	• The first layer of the architecture is the User layer. User layer will comprise of the people who interacts with the app and for the required results. • The next three layers is the frontend architecture of the application. The application will be developed using Bootstrap which is the open source platform for HTML, CSS and JavaScript. The application is deployed in the localhost which is shown on the browser. Through the app, the user will be able to upload pictures of the handwritten digits and convert it into the digitalized form.