Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	19 October 2022
Team ID	PNT2022TMID07226
Project Name	A Novel Method for Handwritten Digit Recognition System

Technical Architecture:

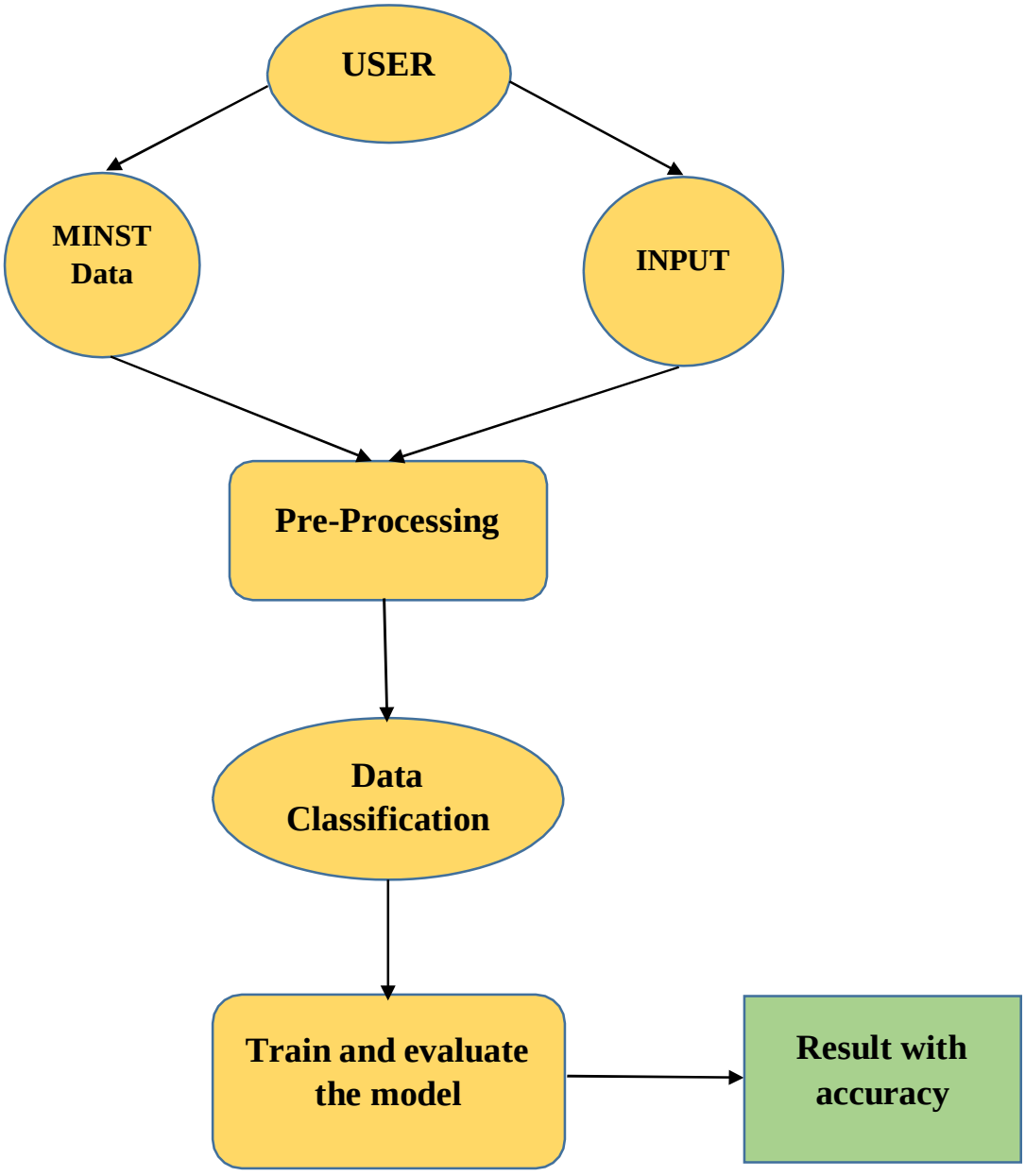

Table -1: Components & Technologies:

S.NO	Component	Description	Technology
1.	User Interface	Enables the user to enter input and recognise input using a graphical user interface.	HTML, CSS, JavaScript
2.	Digit Prediction	The digit given as an input is predicted.	Keras, CNN.
3.	Representation	Skeleton, counters, pixels or others	Java / Python
4.	Segmentation	The activity of grouping elements in a picture that correspond to the same object class.	Convolutional neural networks & super pixels.
5.	Machine Learning Model	A machine learning model's goal is to train, test, and forecast user input.	Classification.
6.	Infrastructure	Application deployment on local system Local server Configuration: Intel core i5/i3 10th Generation.	HTML, CSS
7.	Neural network	Automatically deduce guidelines for identifying handwritten numbers	Convolutional neural network

Table – 2: Application Characteristics:

S.NO	Characteristics	Description	Technology
1.	Pre-processing	Data pre-processing is the process of transforming raw data into something that can be used by a machine learning model.	Real time online handwritten character recognition system, based on an ensemble of neural networks.
2.	Open-Source Frameworks	Enables developers to develop complex code and web application quickly.	Open source-Jupyter, anaconda navigator, flask framework.
3.	Dataset	Contains 60,000 training images.	MNIST
4.	Security Implementations	We don't save any data after forecasting the data, preventing future data manipulation.	Encryption
5.	Performance	Neural networks achieve an accuracy of ~(98–99) percent in correctly classifying the handwritten digits.	Convolutional Neural Networks.