

Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	18 October 2022
Team ID	PNT2022TMID08626
Project Name	A Novel Method for Handwritten Digit Recognition System
Maximum marks	4 Marks

Technical Architecture:

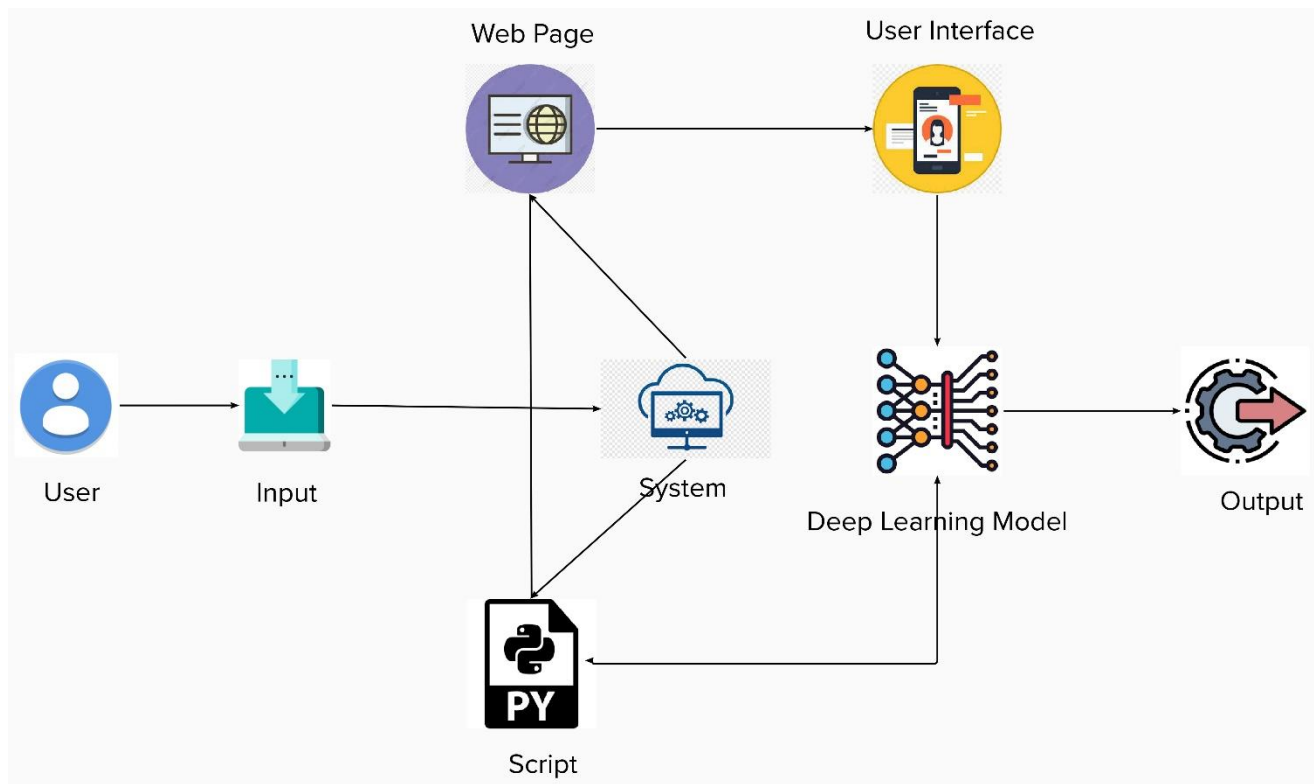


Table -1: Components & Technologies

S.NO	Component	Description	Technology
1.	User Interface	Make the user give the input and recognize that using User Interface.	HTML, CSS, JavaScript
2.	Digit Prediction	Digits that are given by the user are predicted accurately	CNN
3.	Representation	Counters, pixels, Skeleton, or others.	Java / Python
4.	Segmentation	Pixel-level classification involves partitioning images (or video frames) into multiple segments or objects.	Convolutional neural network Or Special CNN framework
5.	Machine Learning Model	The Machine Learning Model purpose is to train and tests the data and it can predict the user input.	Classifiers like KNN, NN
6.	Infrastructure	The open-source ecosystem makes it possible for anyone to build a great deep-learning infrastructure.	Local, Cloud Foundry
7.	Neural network	Neural networks are in fact multi-layer perceptron. The perceptron defines the first step in multi-layered neural networks.	Convolutional neural network

Table – 2: Application Characteristics:

S.NO	Characteristics	Description	Technology
1.	Pre-processing	Preprocessing data is a common first step in the deep learning workflow to prepare raw data in a format that the network can accept.	Real-time online handwritten Digit recognition system, based on neural networks.
2.	Open-Source Frameworks	Different frameworks come with different pre-built components which make it easy to understand and code the model. All good ML frameworks facilitate you with reduced complexity while defining the ML models.	Open source- Deeplearning Kit, Keras.

3.	Dataset	The MNIST data set consists of 70,000 handwritten digits split into training and test partitions of 60,000 and 10,000 images, respectively	MNIST
4.	Security Implementations	Deep learning algorithms are capable of detecting more advanced threats and are not reliant on remembering known signatures and common attack patterns.	Encryption
5.	Performance	It is used to train a machine learning model (using some kind of optimization like Gradient Descent), and they're usually differentiable in the model's parameters.	Convolutional Neural Networks.