Project Design Phase-
IITechnologyStack(Architecture&Stack)

Date	08 November 2022
TeamID	PNT2022TMID53827
ProjectName	A Novel Method for Handwritten Digit Recognition System
MaximumMarks	4 Marks

TechnicalArchitecture for Handwritten Digit Recognition System:

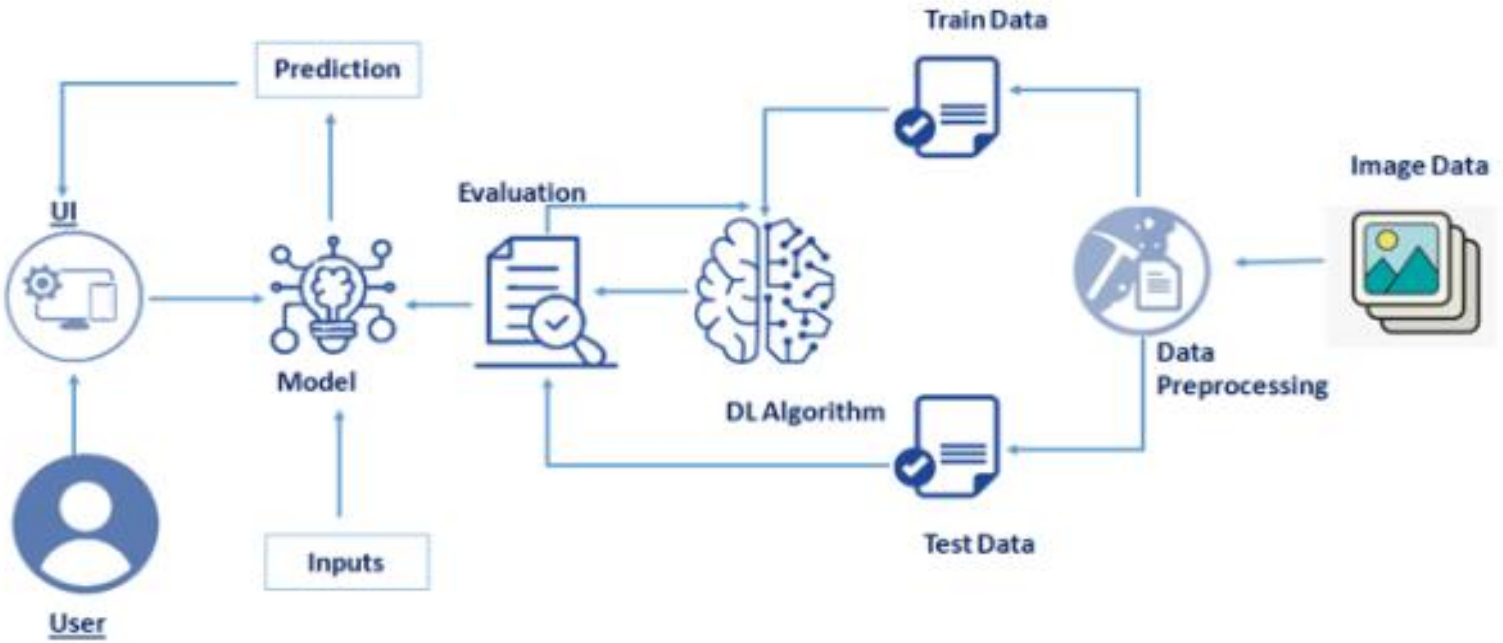

Table-1:Components& Technologies:

S.No	Component	Description	Technology
1.	UserInterface	User interacts with the application using a web app	HTML, CSS, JavaScript / Angular Js /ReactJsetc.
2.	ApplicationLogic	Login to access the application	Java/ Python
5.	Database	DataType,Configurationsetc.	MySQL,NoSQL,etc.
6.	CloudDatabase	DatabaseServiceonCloud	IBMDB2, IBMCloudantetc.
7.	FileStorage	Storage of user files of handwritten image	IBM Block Storage or Other StorageService orLocal Filesystem
10.	MachineLearningModel	Machine learning model is used to identify the handwritten image uploaded by users	ObjectRecognitionModel, etc.
11.	Infrastructure(Server/Cloud)	Application Deployment on Local System / AI Local Server Configuration AI Server Configuration	Local,CloudFoundry,Kubernetes,etc.

Table-2:ApplicationCharacteristics:

S.No	Characteristics	Description	Technology
1.	Open-SourceFrameworks	Machine learning frameworks is used to train a predictive model	PyTorch, Open-cv
2.	SecurityImplementations	The system should automatically be able to authenticate all users with their unique username and password	Password based login, Authorization
3.	Scalable Architecture	The website traffic limit must be scalable enough to support 2 lakhs users at a time	3-tier
4.	Availability	The system functionality and services are available for use with all operations.	distributed servers
5.	Performance	The application can give response to requests within 5 sec. It usesfewer features to train the neural network, which results in faster convergence.	number of requests per sec

Technology Stack & Architecture:

A complicated process with numerous sub-processes, solution architecture connects business issues with technological solutions.

Because everyone in the world has a unique writing style, handwriting identification is one of the fascinating research projects now being conducted. It is the ability of a computer to automatically recognize and comprehend handwritten numbers or letters. Every aspect of life is being digitalized to lessen the need for human labor as a resultof advancements in science and technology.

Hence, there comes a need for handwritten digit recognition in many real-timeapplications. Its goals are to:

- The MNIST data collection, which contains 70000 handwritten digits, isfrequently utilized for this recognition method.
- We train these photos using artificial neural networks and create a deeplearning model.

- A web application is developed that allows users to upload pictures ofhandwritten numbers.
- The model analyses this image, and the discovered outcome is sent back tothe user interface.

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