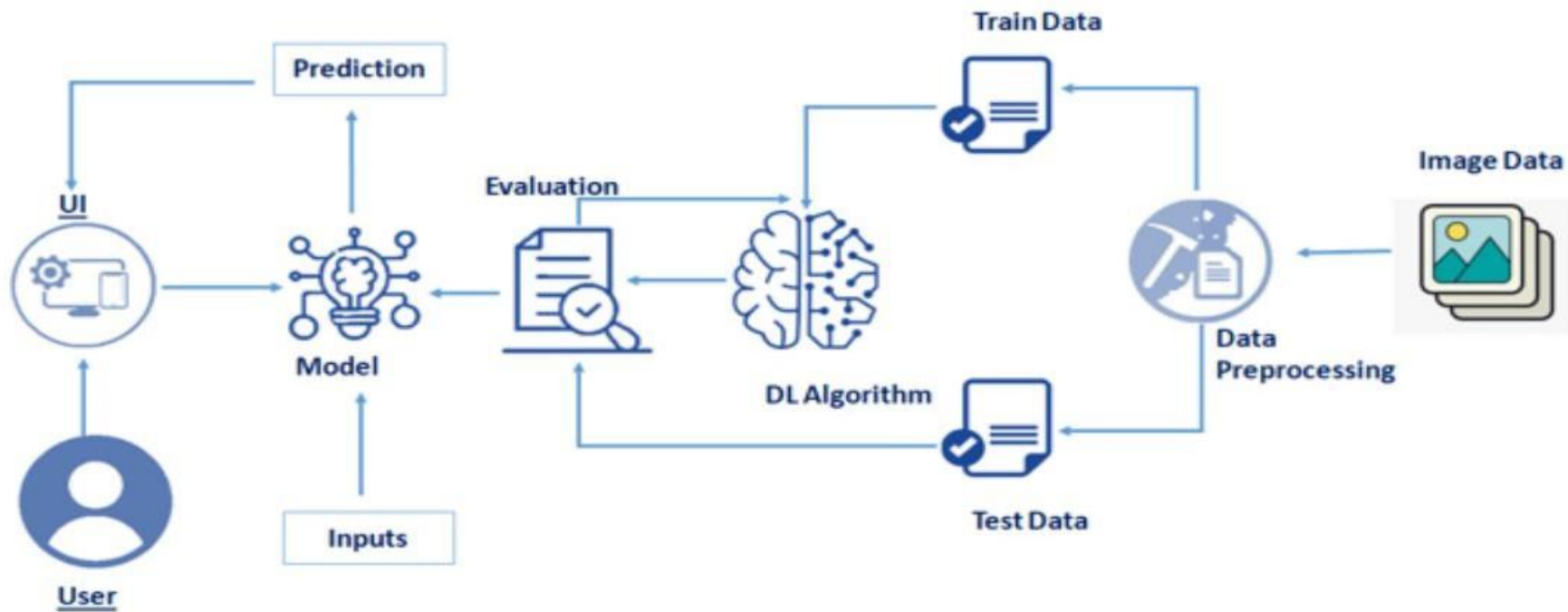


**Project Design Phase-II**  
**Technology Stack (Architecture & Stack)**

Date	03 November 2022
Team ID	PNT2022TMID07259
Project Name	Project - A Novel Method for Handwritten Digit Recognition System
Maximum Marks	4 Marks

**Technical Architecture:**



**Table-1: Components & Technologies:**

<b>S.No</b>	<b>Component</b>	<b>Description</b>	<b>Technology</b>
<b>1.</b>	<b>User Interface</b>	<b>Web App</b>	<b>HTML, CSS, AngularJs, Flask, Python -, libraries: keras, tensor flow, Numpy</b>
<b>2.</b>	<b>Data Collection</b>	<b>Inputting of sample data sets to train model</b>	<b>MNIST, Kaggle, Python - libraries: keras, tensor flow</b>
<b>3.</b>	<b>Cloud access</b>	<b>Storing and retrieving results</b>	<b>IBM Watson STT service, IBM Watson Assistant</b>
<b>4.</b>	<b>Database</b>	<b>Data Type, Configurations etc.</b>	<b>NoSQL - MongoDB</b>
<b>5.</b>	<b>Cloud Database</b>	<b>Database Service on Cloud</b>	<b>IBM DB2, IBM Cloudant etc.</b>
<b>6.</b>	<b>File Storage</b>	<b>File storage requirements</b>	<b>IBM Block Storage or Other Storage Service or Local Filesystem</b>
<b>7.</b>	<b>Machine Learning Model</b>	<b>Purpose of Machine Learning Model</b>	<b>Object Recognition Model, (CNN)</b>
<b>8.</b>	<b>Infrastructure (Server / Cloud)</b>	<b>Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration:</b>	<b>Local, Cloud Foundry, Kubernetes</b>

**Table-2: Application Characteristics:**

<b>S.No</b>	<b>Characteristics</b>	<b>Description</b>	<b>Technology</b>
<b>1.</b>	<b>Open-Source Frameworks</b>	<b>Keras TensorFlow NumPy Libraries installed in python</b>	<b>Technology of Open source framework</b>
<b>2.</b>	<b>Security Implementations</b>	<b>Security / access controls implemented, Firewalls used.</b>	<b>SHA-256, Encryptions, IAM Controls, OWASP etc.</b>
<b>3.</b>	<b>Scalable Architecture</b>	<b>Architecture that organizes applications into three logical and physical computing tiers: the presentation tier, or user interface</b>	<b>3-tier</b>
<b>4.</b>	<b>Availability</b>	<b>High availability with the use of load balancers &amp; distributed servers.</b>	<b>SLB (Server Load Balancing)</b>
<b>5.</b>	<b>Performance</b>	<b>Automation to improve business performance. – automated testing</b>	<b>Testim</b>