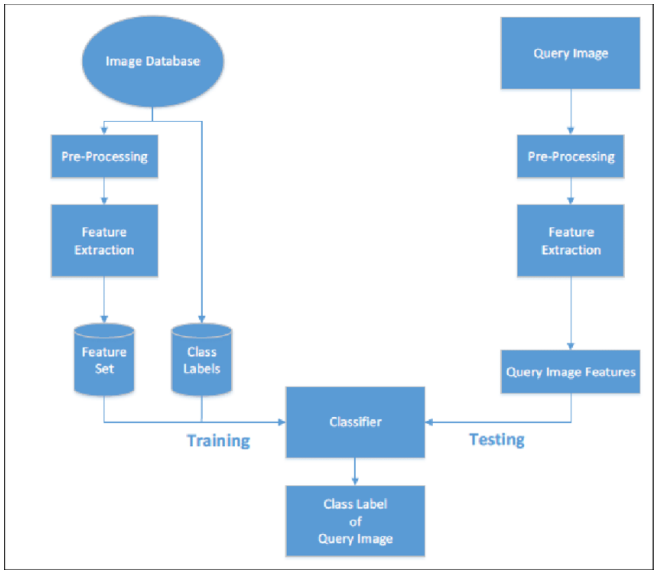
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	20 February 2026
Team ID	LTVIP2026TMID583775
Project Name	Exploratory Analysis of Rain Fall Data in India for Agriculture
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



Guidelines:

- Include all the processes (As an application logic / Technology Block)
- Provide infrastructural demarcation (Local / Cloud)
- Indicate external interfaces (third party API's etc.)
- Indicate Data Storage components / services
- Indicate interface to machine learning models (if applicable)

Table-1 : Components & Technologies:

Component	Description	Technology
User Interface	Allows user to enter weather parameters and view prediction result	HTML, CSS
Application Logic	Handles form submission, input processing, scaling, and model prediction	Python, Flask
Data Processing Module	Scales input features using StandardScaler	Scikit-learn
Machine Learning Model	Predicts whether it will rain tomorrow	Random Forest Classifier (Scikit-learn)
Model Storage	Stores trained model files	Local Storage (.pkl file)
Backend Server	Handles HTTP requests and runs prediction logic	Flask
File Storage	Temporarily stores uploaded images	Local File System
Dataset	Used to train the machine learning model	Kaggle Dog Breed Dataset
Deployment Environment	Environment where system runs	Local System / Windows 11
Development Environment	Used to develop and test system	Python 3.x, Jupyter Notebook, VS Code

Table-2: Application Characteristics:

Characteristic	Description	Technology
Open-Source Frameworks	Uses open-source libraries for ML and web development	Python, Scikit-learn, Flask
Security	Validates numeric input and prevents invalid data submission	Flask input validation
Scalability	Can be deployed to cloud platforms like Heroku or AWS in future	Flask (Cloud deployable)
Availability	Accessible through web browser on local host	Localhost (127.0.0.1:5000)
Performance	Provides prediction results within seconds	Scikit-learn (Random Forest)