

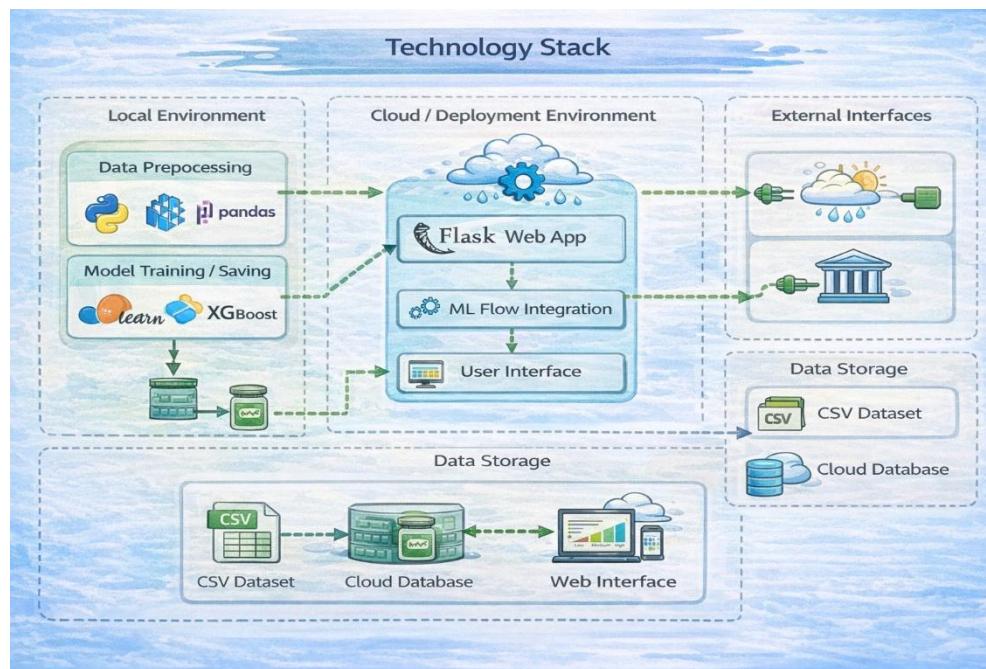
## Project Design Phase-II

### Technology Stack (Architecture & Stack)

Date	5 February 2026
Team ID	LTVIP2026TMIDS90283
Project Name	rising waters: a machine learning approach to flood prediction

#### Technical Architecture:

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



 **Table-1: Components & Technologies**

S.No	Component	Description	Technology
1	User Interface	Web page where users enter rainfall, humidity, etc.	HTML, CSS, JavaScript
2	Application Logic-1	Handles user input & connects UI to backend	Flask (Python)
3	Application Logic-2	Data preprocessing & validation	Python (Pandas, NumPy)
4	Application Logic-3	Prediction logic using trained model	Scikit-learn / XGBoost
5	Database	Stores historical flood dataset	CSV / MySQL
6	Cloud Database	Optional storage for large datasets	IBM Cloudant
7	File Storage	Stores trained ML model (.pkl file)	Local Storage / Cloud Storage
8	External API-1	Fetch live rainfall/weather data	Weather API
9	Machine Learning Model	Predicts flood occurrence	Classification Model (Random Forest / XGBoost)
10	Infrastructure	Deployment platform	IBM Cloud / Local Server

**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Backend & ML frameworks used	Flask, Scikit-learn
2	Security Implementations	Secure form handling & input validation	HTTPS, Flask Security
3	Scalable Architecture	3-tier architecture (UI, Backend, ML Model)	Flask + Cloud Deployment
4	Availability	Deployed on cloud for 24/7 access	IBM Cloud
5	Performance	Lightweight model for fast prediction	Optimized ML Model