Project Development Phase
Model Performance Test

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Team ID	LTVIP2026TMIDS90283
Project Name	Rising waters: a machine learning approach to flood prediction

Model Performance Testing:

Model building is the core phase of the project where machine learning algorithms are applied to the prepared dataset to develop a predictive model.

After completing data cleaning and preprocessing, the dataset was divided into input features (X) and target variable (Y). The target variable represents whether there is a possibility of severe flood (1) or no severe flood (0).

Multiple supervised learning algorithms were used to build the model:

Decision Tree

Random Forest

K-Nearest Neighbors (KNN)

XGBoost

Each model was initialized using Scikit-learn and trained using the training dataset. The objective was to compare different models and identify the one with the best prediction performance.

The evaluation metrics used for model comparison included:

Accuracy Score

Confusion Matrix

Classification Report

R2 Score (if treated as regression)

After evaluating all models, XGBoost showed better performance compared to other algorithms. Therefore, XGBoost was selected as the final model for deployment.

The selected model was saved using Joblib as:

floods.save (trained model)

transform.save (scaler)

This saved model was later integrated into the Flask web application for real-time prediction.
