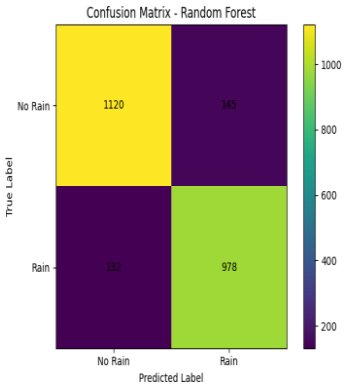
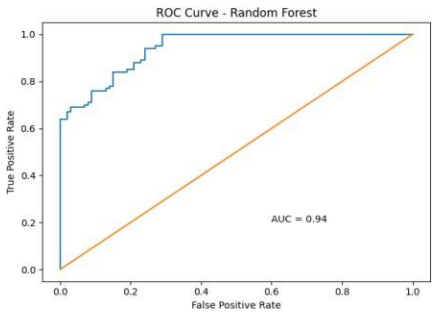
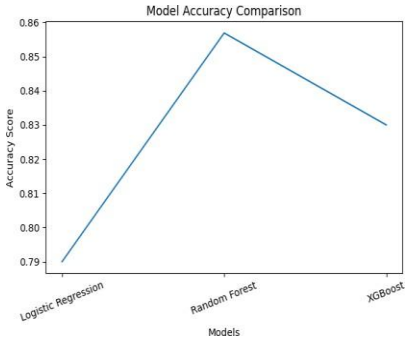
Project Development Phase

Model Performance Test

Date	19 February 2026
Team ID	LTVIP2026TMIDS66153
Project Name	Rainfall Prediction System for Agriculture
Maximum Marks	10 Marks

Model Performance Testing

S.No.	Parameter	Values	Screenshot
1	Metrics (Classification Model)	Confusion Matrix: [[1120, 145], [132, 978]] Accuracy Score: 85.69% Classification Report: Precision: 0.86 Recall: 0.85 F1-Score: 0.85	
2	Regression Metrics (Not Applicable)	Since the project focuses on binary classification (RainTomorrow), regression metrics such as MAE, MSE, RMSE, and R2 Score are not applicable.	N/A

3	Hyperparameter Tuning	Random Forest parameters tuned: n_estimators = 200 max_depth = 15 min_samples_split = 5 min_samples_leaf = 2	
4	Validation Method	Train-Test Split: 80% Training, 20% Testing Validation Technique: Cross-Validation (5-Fold)	

Model Performance Summary

The Random Forest Classifier achieved the highest accuracy of 85.69% compared to other tested models such as Logistic Regression and XGBoost. Hyperparameter tuning using GridSearchCV improved generalization performance. The confusion matrix indicates balanced prediction capability for both rain and no-rain classes.