

# ■ Customer Churn Prediction – Project Summary

This project applies Logistic Regression and Random Forest models to predict customer churn based on the Telco Customer Churn dataset. The goal is to identify customers at risk of leaving.

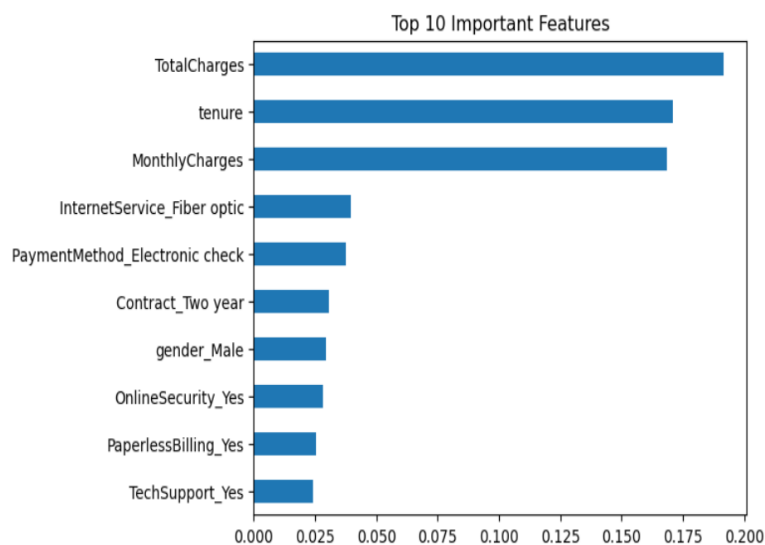
## ■ Logistic Regression Results

Accuracy: 80%  
Confusion Matrix:  $\begin{bmatrix} 917 & 116 \\ 160 & 214 \end{bmatrix}$   
Precision (Churn): 65%  
Recall (Churn): 57%  
F1-score (Churn): 61%

## ■ Random Forest Results

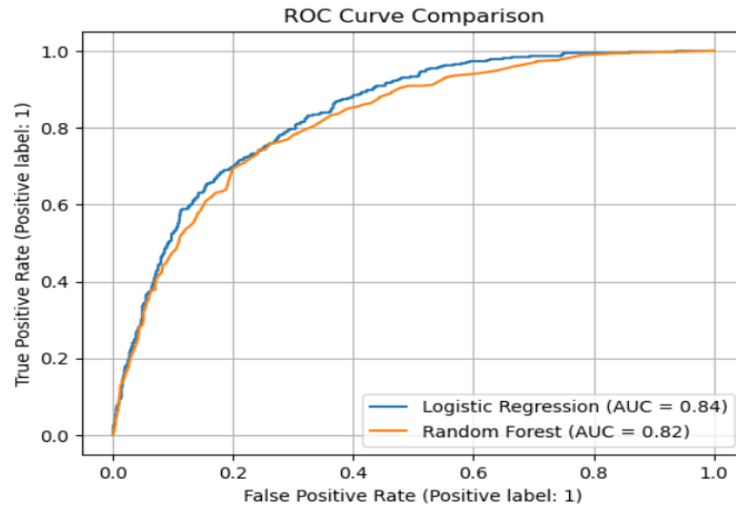
Accuracy: 79%  
Confusion Matrix:  $\begin{bmatrix} 917 & 116 \\ 180 & 194 \end{bmatrix}$   
Precision (Churn): 63%  
Recall (Churn): 52%  
F1-score (Churn): 57%

## ■ ROC Curve Comparison



AUC Logistic Regression: 0.8360  
AUC Random Forest: 0.8163

## ■ Top 10 Important Features (Random Forest)



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## ■ Conclusion

Both models performed reasonably well. Logistic Regression provides slightly better performance in this case, along with better interpretability. Important churn predictors include TotalCharges, Tenure, MonthlyCharges, and Contract type.