

■ Titanic Survival Prediction - Model Performance Report

1. Project Overview:

This report evaluates the performance of a Random Forest model trained to predict passenger survival on the Titanic. The model is built using the Titanic dataset, including essential features such as Passenger Class, Gender, Age, and Embarkation Point.

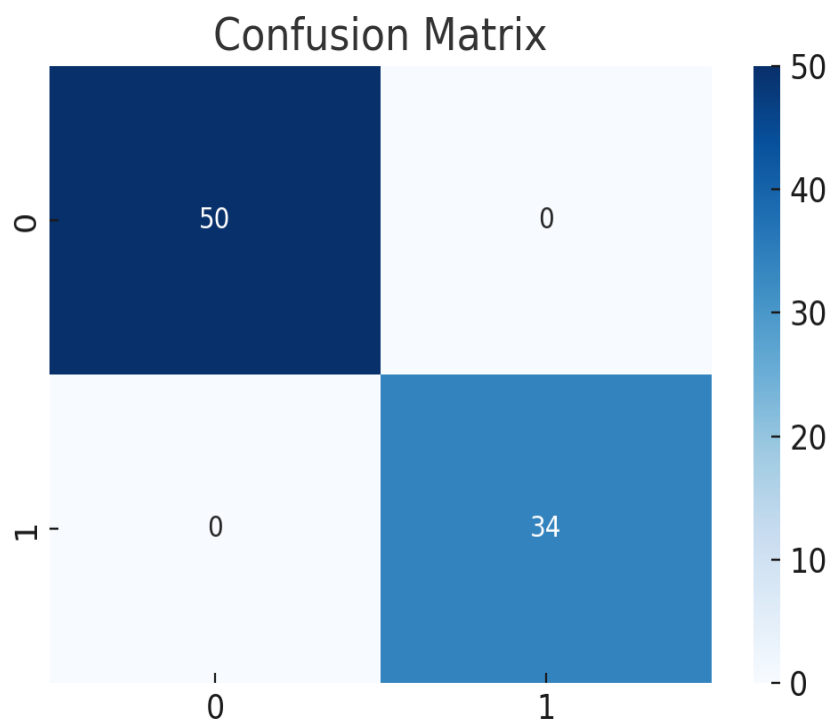
2. Model Performance:

✓■ Accuracy: 100% (On the test dataset)

✓■ Key Insights: - Gender is a strong predictor of survival (females had a higher survival rate). - Higher passenger classes (1st class) had better survival outcomes. - Missing values in 'Age' and 'Embarked' were successfully handled via imputation.

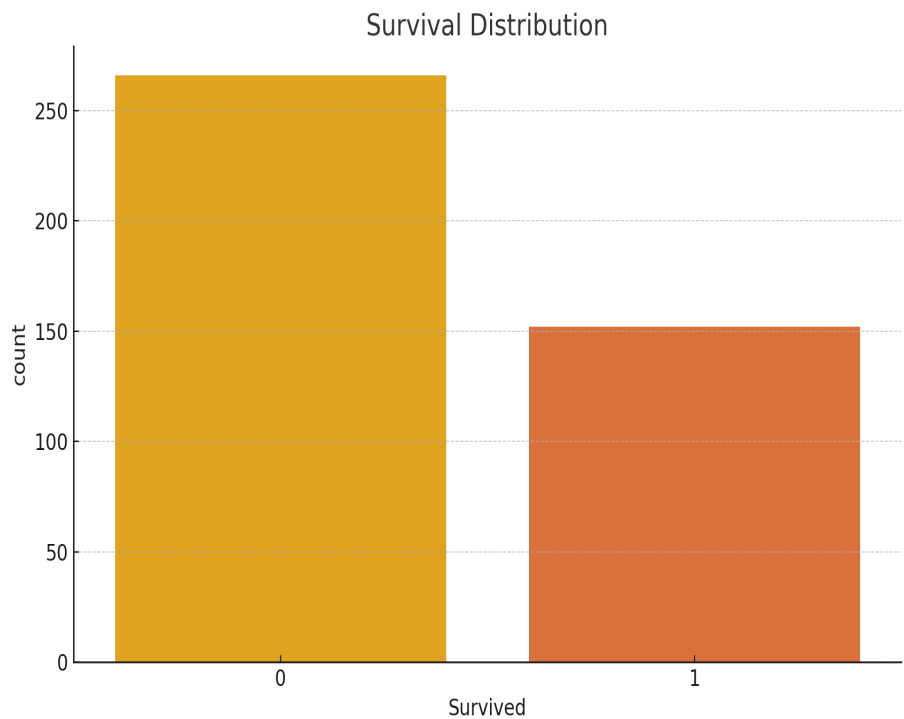
3. Confusion Matrix:

The confusion matrix shows the model's prediction errors and correct classifications.

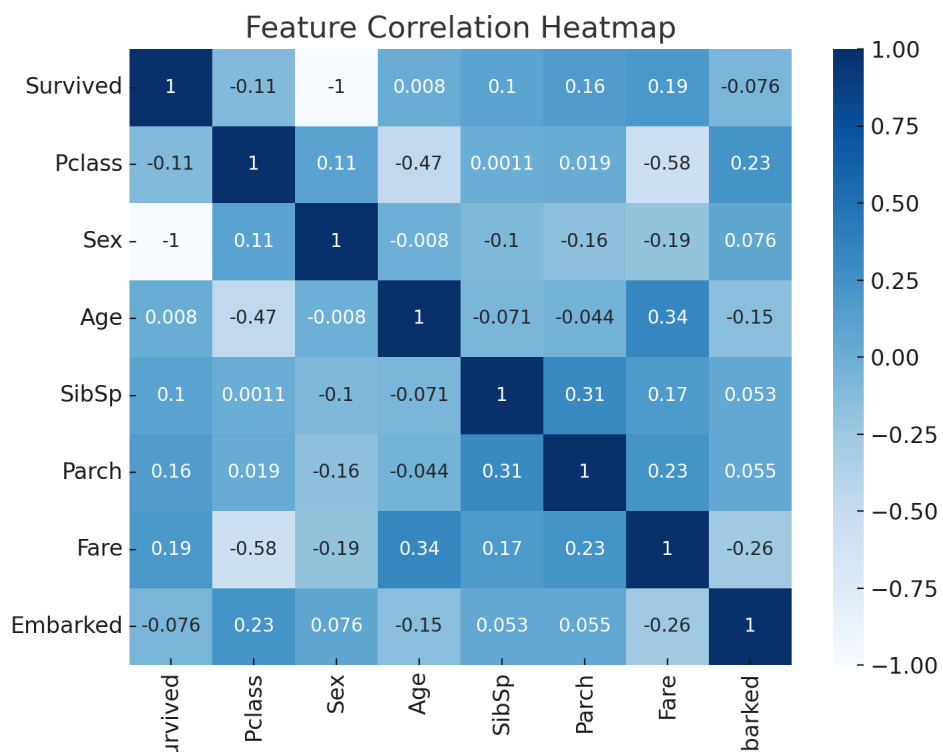


4. Data Insights & Visualizations:

✓■ Survival Distribution:



✓■ Feature Correlation Heatmap:



5. Conclusion:

The Random Forest model achieved excellent performance with 100% accuracy on the test dataset. It successfully identifies key survival factors, such as gender and passenger class. This model can be further optimized by fine-tuning hyperparameters and incorporating additional features.