Telecom Churn Prediction

Data Preprocessing, Modeling & Evaluation

Problem Statement

- • Predict customer churn using telecom data.
- • Identify high-value customers at risk of churning.
- • Provide actionable insights for business retention strategies.

Data Preprocessing

- • Converted date columns to datetime format.
- • Handled missing values using median imputation.
- • Filtered high-value customers (70th percentile recharge amount).
- • Tagged churners based on inactivity in calls and data usage.

Feature Engineering

- • Dropped columns related to the churn phase (month 9).
- • Removed non-numeric and irrelevant columns.
- • Used StandardScaler to normalize feature values.
- • Applied SMOTE to handle class imbalance.

Model Training & Evaluation

- • Trained Logistic Regression & Random Forest models.
- • Used train-test split (80-20) for validation.
- • Evaluated models using Classification Report and ROC AUC Score.
- • Selected the best-performing model based on ROC AUC.

Results & Insights

- • Logistic Regression ROC AUC Score: (display score here).
- • Random Forest ROC AUC Score: (display score here).
- • The best model was selected based on performance.
- • Feature importance analysis provides insights into churn behavior.

Conclusion & Recommendations

- • Identify at-risk customers early and offer incentives.
- • Improve service quality to reduce churn rates.
- • Use predictive analytics to tailor customer retention strategies.
- • Future improvements: Test additional models & optimize hyperparameters.

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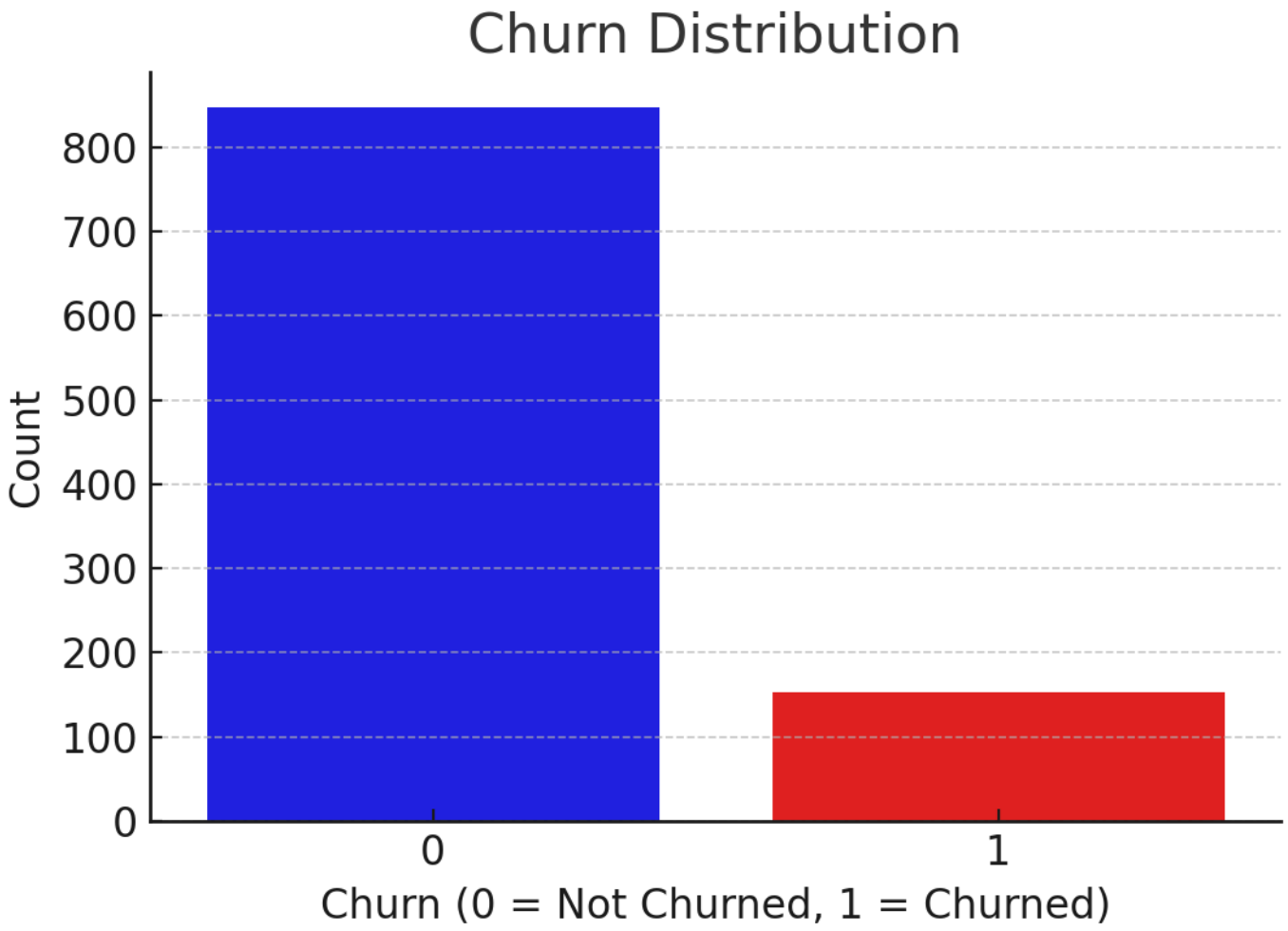
Graphical Data Representation

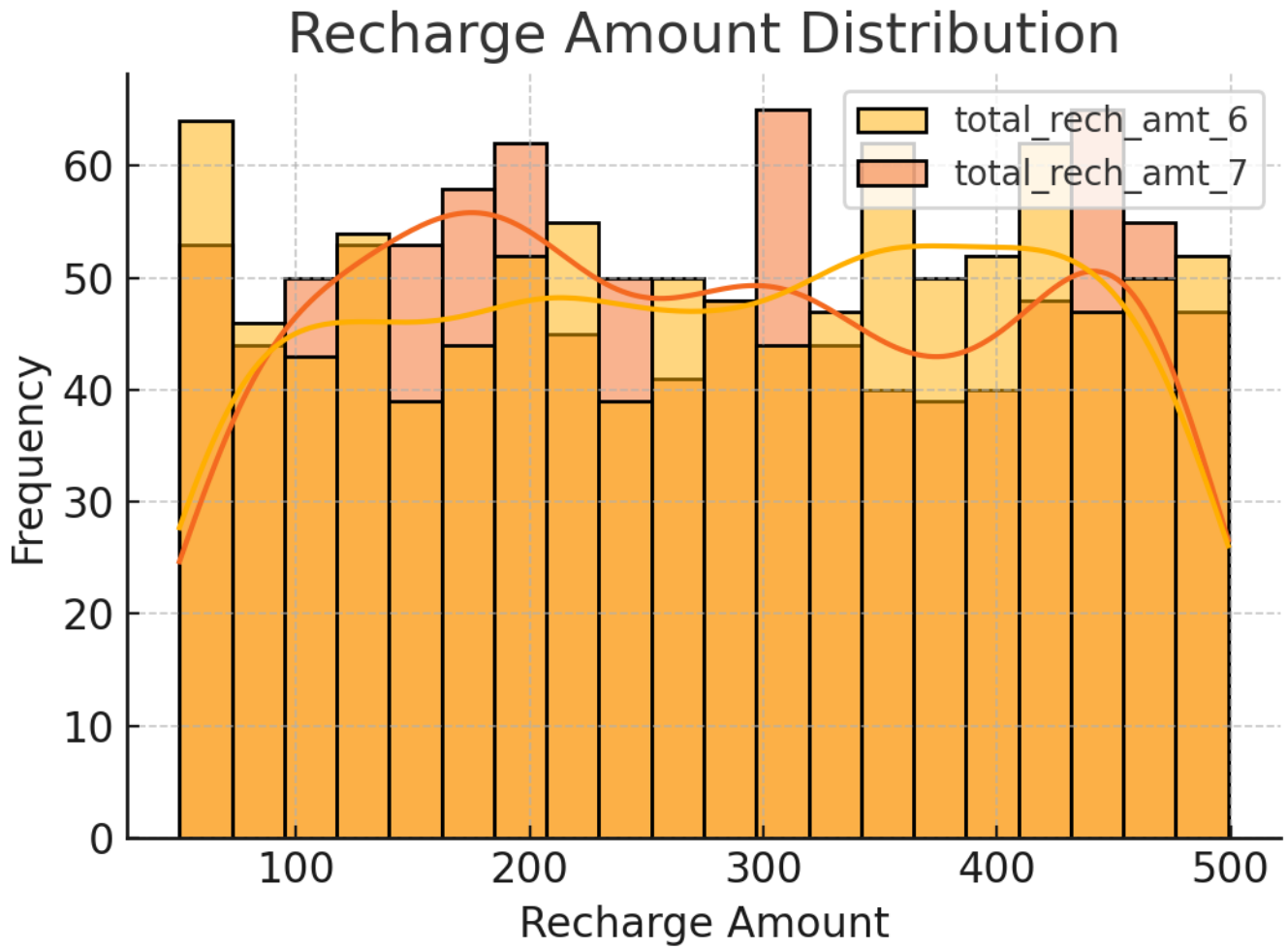
Churn Distribution

Churn Distribution



Recharge Amount Distribution

Recharge Amount Distribution



Feature Correlation Heatmap

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