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# Telecom Churn Project

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# Project Overview

- Business problem: High churn rate in telecom industry (15-25% annually)
- Goal: Predict churn for high-value customers
- Approach: Analyze customer data, build predictive models, identify churn indicators

# Data Understanding

## → Dataset

Customer-level information for 2 consecutive months

## → Key features

Usage patterns, recharge amounts, call details

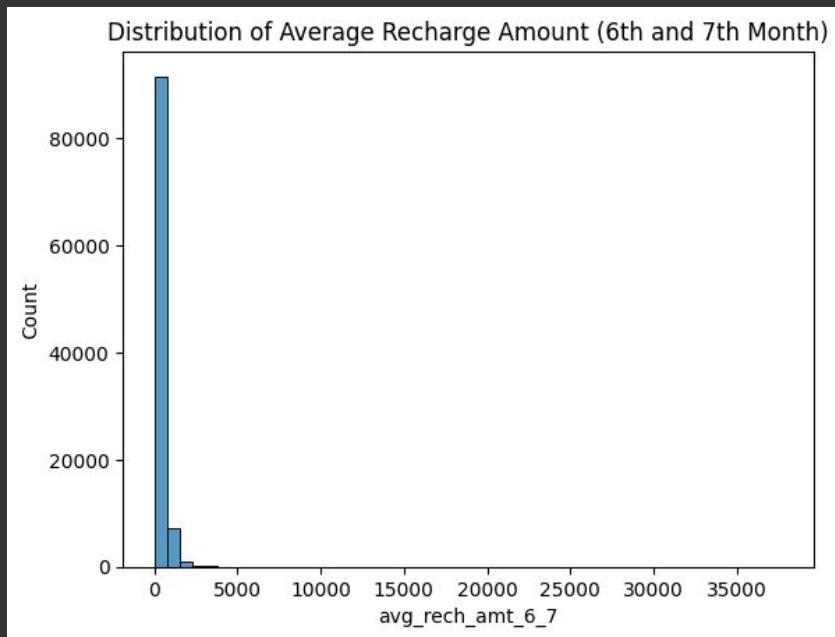
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# Data Preparation

- Filtered high-value customers (70th percentile of average recharge amount)
- Tagged churners based on 4th month usage
- Removed attributes corresponding to the churn phase

# Exploratory Data Analysis - Churn Distribution

Key insight: Significant class imbalance (small percentage of churners)



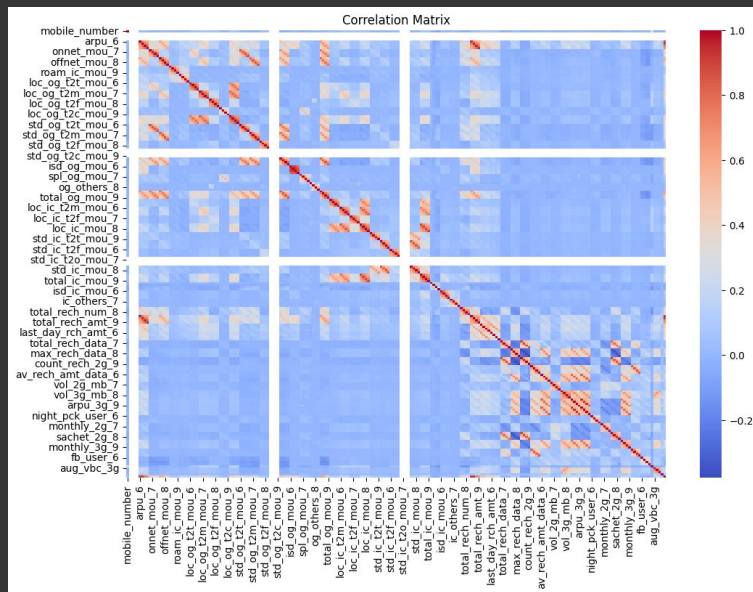
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# Usage Patterns Analysis

Key insight: Churners tend to have lower usage in months leading up to churn

# Correlation Analysis

Key insight: Some features show strong correlation with churn



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# Feature Engineering

- Handled missing values using median imputation
- Scaled numeric features using StandardScaler
- Created new features (e.g., usage trend, recharge frequency)



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# Model Building Approach

- Logistic Regression (interpretable baseline model)
- Random Forest (handles non-linear relationships)
- Addressed class imbalance using SMOTE

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# Model Performance

- Metrics used: Classification report, ROC AUC score
- Key result: Random Forest outperformed Logistic Regression

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# Feature Importance - Random Forest

- Top predictors: total\_og\_mou\_8, total\_ic\_mou\_8, arpu\_8

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# Feature Importance - Logistic Regression

- Key predictors: loc\_ic\_t2t\_mou\_8, std\_ic\_t2t\_mou\_8, total\_ic\_mou\_8

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## Key Findings

- KUsage decline in month 8 is a strong churn indicator
- Roaming and local call patterns are important predictors
- Recharge amount and frequency impact churn probability

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# Recommendations

- Implement early warning system based on usage decline
- Personalize retention offers for high-value customers
- Improve roaming services and local call plans
- Develop loyalty programs to encourage consistent recharge behavior

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## Future Work

- Incorporate more data sources (e.g., customer service interactions)
- Develop a real-time churn prediction system

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**Thank You**