

Telecom Churn Prediction Analysis

1. Title Slide

Project: Telecom Churn Prediction

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2. Problem Statement

- Customer churn is a major issue for telecom companies.
 - Retaining existing customers is more cost-effective than acquiring new ones.
 - The goal is to predict churn based on customer behavior and usage patterns.
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3. Business Impact

- Churn leads to revenue loss and increased marketing costs.
 - Predicting churn helps companies take proactive measures (discounts, better plans, personalized offers).
 - Insights from churn prediction can improve customer satisfaction and loyalty.
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4. Data Overview

- Data sourced from telecom usage records.
 - **Key features:** MonthlyCharges, TotalCharges, Tenure, Contract Type, Internet Service, Payment Method.
 - **Target variable:** Churn (Yes/No)
 - Filtering high-value customers (top 30% based on MonthlyCharges).
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5. Exploratory Data Analysis (EDA)

- Checked for missing values and handled them.
 - Identified data imbalance: Churners were significantly fewer than non-churners.
 - Key insights from EDA:
 - Higher churn in customers with month-to-month contracts.
 - Customers with fiber-optic internet had higher churn.
 - Higher MonthlyCharges correlated with increased churn.
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6. Feature Engineering

- Created `tenure_group` to categorize customers based on subscription duration.
 - Applied One-Hot Encoding to categorical variables.
 - Scaled numerical features to improve model performance.
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7. Model Building

- **Algorithms used:** Logistic Regression, Random Forest.
 - **Train-Test Split:** 80%-20% stratified sampling.
 - **Evaluation Metrics:** Accuracy, Precision, Recall, F1-score, AUC-ROC.
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8. Model Performance

Model	Accuracy	Precision	Recall	F1-Score	AUC-ROC
Logistic Regression	82%	76%	65%	70%	0.85
Random Forest	88%	81%	72%	76%	0.91

- **Random Forest performed better** and was chosen for deployment.
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9. Key Insights & Recommendations

- Customers with **month-to-month contracts and high MonthlyCharges** are more likely to churn.
- Offering **discounts or long-term contracts** to such customers can reduce churn.

- **Proactive engagement strategies** (e.g., personalized offers, customer service check-ins) can improve retention.
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10. Conclusion & Next Steps

Conclusion:

- Churn prediction is crucial for revenue retention in telecom businesses.
- Analyzing customer behavior helps in designing targeted retention strategies.

Next Steps:

- Test other models like XGBoost for further improvement.
 - Deploy the model in production to automate churn prediction.
 - Implement A/B testing to measure the impact of interventions.
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Thank You!