JEr1yAnalst /
Phase-3-project-Machinelearning

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Customer Churn Prediction at SyriaTel

Overview

Telecommunications firms encounter huge difficulties with preventing customer churn, which can result in large revenue losses. Customer churn happens when consumers abandon their services, and understanding the factors that influence this behavior is critical for sustaining profitability and growth. This project will analyze customer data to find predictable trends in customer churn. The purpose of constructing predictive models and segmenting clients based on their behavior is to deliver actionable insights that optimize service quality, increase customer satisfaction, and improve operational efficiency. These data will assist telecom companies in making strategic decisions to improve performance and increase consumer loyalty.

Business and Data Understanding

Stakeholder audience

The primary audience for this project is SyriaTel's telecom business itself. The stakeholders include executives, marketing teams, and customer relationship management teams who are interested in reducing churn and optimizing customer retention strategies. The insights gained from the analysis will help the stakeholders understand the patterns and factors influencing churn and enable them to make data-driven decisions to mitigate customer churn.

Dataset Choice

The dataset used for this project contains historical customer data from SyriaTel, including various features such as customer demographics, usage patterns, account information, and customer churn status. The dataset provides valuable insights into customer behavior and characteristics that can be leveraged to predict churn. By analyzing this dataset, we aim to identify predictable patterns and develop a robust churn prediction model. The dataset of our project has 3,333 number of rows and 21 number of columns.

Modeling

The following models were employed:

1. Logistic Regression (Base model)
2. Decision Tree Classifier model
3. K-Nearest Neighbors (KNN) Model
4. Random Forest Classifier model

These models were chosen due to their suitability for binary classification tasks and their ability to handle different types of data. Each model was trained using a subset of the dataset and evaluated based on their performance metrics.

Evaluation

The models were evaluated using various metrics to assess their performance and effectiveness in predicting customer churn. These metrics include accuracy, precision, recall, and F1-score. Additionally, confusion matrices were used to visualize the model's performance in terms of true positives, true negatives, false positives, and false negatives.

Conclusion

This project aims to equip SyriaTel with a robust churn prediction and customer retention strategy. By leveraging predictive analytics and personalized engagement, we can identify high-risk customers and implement targeted interventions. This approach will not only help in understanding the key factors driving customer attrition but also in enhancing overall customer satisfaction and loyalty. Through continuous refinement of the predictive model and retention strategies, SyriaTel will be able to proactively address customer needs, ultimately reducing churn and fostering long-term growth.

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