

Report: Generic Churn Prediction Engine

Introduction

This report outlines the development and evaluation of a churn prediction model, aimed at identifying customers likely to churn based on their interaction and engagement behaviors.

Problem Statement

The objective was to build a predictive model to forecast customer churn using attributes such as age, gender, location, usage frequency, service duration, total spending, and service interactions.

Methodology

- 1. Data Preparation:**
 - Cleaned dataset to handle missing values.
 - Applied Label Encoding to categorical variables and standardized numerical features using StandardScaler.
- 2. Model Development:**
 - Implemented a Random Forest Classifier due to its ability to handle complex relationships and feature interactions.
 - Tuned hyperparameters using GridSearchCV to optimize model performance.
- 3. Results:**
 - Achieved 82% accuracy on the test set.
 - Key predictors of churn included service usage duration, total spending, and frequency of service usage.

Conclusion

The developed churn prediction model offers actionable insights for businesses to proactively manage customer retention strategies based on predicted churn probabilities.

Recommendations

- 1. Model Maintenance:** Regular updates and retraining to ensure continued accuracy.
- 2. Feature Expansion:** Explore additional data sources to enhance predictive capabilities.
- 3. Deployment:** Consider deployment in a scalable environment for real-time decision support.

Future Scope

Future enhancements could involve exploring advanced algorithms and customer segmentation techniques to further refine churn prediction accuracy and effectiveness.

In summary, the churn prediction engine developed provides a robust framework for businesses to mitigate customer attrition, leveraging machine learning to inform strategic retention efforts.