

Title

Developing a Churn Propensity Model Using Advanced Machine Learning Techniques

Abstract

This research aims to develop a robust churn propensity model using advanced machine learning techniques. The study will focus on identifying key factors that influence customer churn and creating predictive models to help businesses proactively manage customer retention. The research will leverage large datasets and state-of-the-art algorithms to achieve high predictive accuracy and actionable insights.

Introduction

- **Background:** Customer churn is a critical issue for businesses, leading to significant revenue loss. Understanding and predicting churn can help companies implement effective retention strategies.
- **Problem Statement:** Despite numerous studies, accurately predicting customer churn remains challenging due to the complexity and variability of customer behavior.
- **Objectives:** The primary objectives are to develop a predictive model for churn propensity, identify the most significant predictors of churn, and propose strategies for reducing churn rates.

Literature Review

- **Existing Research:** Review of previous studies on churn prediction, highlighting the methodologies and algorithms used.
- **Gaps in Knowledge:** Identification of gaps in current research, such as the need for more accurate models and better understanding of churn predictors.

Methodology

- **Data Collection:** Collection of large datasets from various industries, including customer demographics, transaction history, and interaction data.
- **Data Preprocessing:** Cleaning and preprocessing data to handle missing values, outliers, and normalization.
- **Model Development:** Use of machine learning algorithms such as logistic regression, decision trees, random forests, and neural networks to develop the churn propensity model.
- **Evaluation Metrics:** Evaluation of model performance using metrics like accuracy, precision, recall, F1 score, and ROC-AUC.

Expected Results

- **Predictive Accuracy:** High accuracy in predicting customer churn, with detailed analysis of model performance.
- **Key Factors:** Identification of the most significant factors contributing to customer churn.
- **Retention Strategies:** Development of actionable strategies for reducing churn based on model insights.

Conclusion

- **Summary:** Recap of the research objectives, methodology, and expected outcomes.
- **Implications:** Discussion of the potential impact on businesses and customer retention strategies.
- **Future Work:** Suggestions for further research, including the exploration of new algorithms and datasets.