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Machine Learning Approaches to Predict Customer Churn in Telecommunications Industry

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Abstract - *This project aims to develop machine learning models for predicting customer churn in the telecommunications industry. The project will analyze various customer behavior and demographic data, such as tenure, payment method,monthly charges, total charges, etc to identify patterns and build predictive models. The project will use advanced techniques, such as logistic regression, decision trees, support vector machine and random forests, to predict customer churn accurately. The study will help the telecommunications industry to understand the reasons behind customer churn and implement effective strategies to reduce customer churn rates. The results of this project can be useful for improving customer retention and enhancing the overall customer experience in the industry.*

Key Words: **Machine Learning, Logistic Regression, Random Forest, Decision Tree, Support Vector Machine**

1. INTRDUCTION

The telecommunications industry is highly competitive, with companies vying to provide the best services to attract and retain customers. One of the most significant challenges faced by this industry is customer churn-the rate at which customers switch to another service provider. Customer churn can be a costly issue for telecom companies, as it can lead to lost revenue, decreased profitability, and damage to their reputation.To address this challenge, companies are increasingly turning to machine learning approaches to predict customer churn and take appropriate measures to retain customers. This project aims to develop machine learning models using decision tree, random forest, logistic regression, and SVM algorithms to predict customer churn in the telecommunications industry.The project will use a comprehensive data set containing customer attributes such as gender, senior citizen status, tenure, phone service, multiple lines, internet service, and various other service usage patterns. By analyzing this data using machine learning models, we aim to identify the most critical factors that contribute to customer churn and develop predictive models to reduce churn rates and improve customer retention. The project's findings could be beneficial to the telecommunications industry, enabling them to take a more proactive approach towards customer churn. By anticipating customer churn, companies can implement preventive measures, such as offering incentives, personalized services, or discounts, to retain customers. The results of this project can also help to enhance the overall customer experience by addressing the issues that lead to churn.

2. Tools

A. SOFTWARE

- JUPYTER NOTEBOOK
- PYTHON
- LIBRARIES-NUMPY,PANDAS,MATPLOLIB

3. METHODOLOGY

Designing of system is the process in which it is used to define the interface, modules and data for a system to specified the demand to satisfy. System design is seen as the application of the system theory. The main thing of the design a system is to develop the system architecture by giving the data and information that is necessary for the implementation of a system.