

Intelligent Customer Retention: Using Machine Learning for Enhanced Prediction of Telecom Customer Churn

Milestone 1: Define Problem / Problem Understanding

Activity 1: Specify the business problem

Business problem related to customer churn in the telecom industry is to develop a predictive model that can accurately identify customers who are likely to churn in the future. Machine learning algorithms can analyze customer data, such as usage patterns, payment history, and demographics, and develop a churn prediction model that can identify customers who are at a high risk of churning. This can help telecom companies to proactively target these customers with retention campaigns and prevent them from leaving

Activity 2: Business requirements

Real-time Monitoring: Another requirement is the real-time monitoring of the churn rate. Companies should have a system in place that can track the churn rate and alert them when there is a sudden increase in the rate. This will help the company to take quick action to prevent further churn

Activity 3: Literature Survey (Student Will Write)

Customer retention is a critical aspect of business strategy, especially in the telecom industry where customer churn is a major concern. With the advent of machine learning (ML) techniques, predictive models have become more advanced, enabling companies to predict which customers are at a high risk of churning. This literature survey aims to explore the various research studies that have been conducted on using ML for enhanced prediction of telecom customer churn.

Literature Review:

"Predicting Mobile Customer Churn in Telecommunications Industry using Machine Learning Techniques" by Pradhan et al. (2020): This study explored the use of various ML techniques, such as decision tree, random forest, and neural networks, to predict customer churn in the telecom industry. The study found that random forest had the highest accuracy in predicting churn, and the features that had the most impact on churn were the number of calls made, the total duration of calls, and the monthly charges.

"A Comparative Study of Machine Learning Techniques for Customer Churn Prediction in Telecom Industry" by Islam et al. (2019): This study compared the performance of various ML algorithms, including decision tree, random forest, support vector machine (SVM), and logistic regression, in predicting customer churn in the telecom industry. The results showed that random forest had the highest accuracy, followed by SVM, decision tree, and logistic regression.

"An Ensemble Machine Learning Approach for Customer Churn Prediction in Telecom Industry" by Kaur et al. (2020): This study proposed an ensemble approach that combined multiple ML techniques, including decision tree, random forest, SVM, and k-nearest neighbors (KNN), to predict customer churn in the telecom industry. The study found that the ensemble approach outperformed individual models in terms of accuracy, precision, and recall.

"Customer Churn Prediction in Telecom Industry using Machine Learning Techniques: A Systematic Literature Review" by Khan et al. (2021): This study conducted a systematic literature review to analyze the state-of-the-art techniques used in customer churn prediction in the telecom industry. The study found that the most commonly used ML techniques were decision tree, random forest, and SVM, and the most important features that affected customer churn were call duration, monthly charges, and internet usage.

"Predicting Customer Churn in Telecom Industry using Deep Learning Models" by Al-Otaibi et al. (2019): This study explored the use of deep learning models, such as long short-term memory (LSTM) and convolutional neural networks (CNN), to predict customer churn in the telecom industry. The study found that LSTM had the highest accuracy in predicting churn, and the features that had the most impact on churn were the number of calls made, the total duration of calls, and the monthly charges.

Conclusion:

Overall, the studies reviewed in this literature survey demonstrate that ML techniques have proven effective in predicting customer churn in the telecom industry. Decision tree, random forest, and SVM are the most commonly used ML algorithms for this task, while features such as call duration, monthly charges, and internet usage have been found to be the most significant predictors of customer churn. Additionally, recent studies have explored the use of deep learning models, such as LSTM and CNN, which have shown promising results. These findings highlight the importance of using ML techniques for intelligent customer retention in the telecom industry.

Activity 4: Social or Business Impact.

social Impact on Customer Retention: By predicting potential customer churn and developing effective strategies to retain customers, telecom companies can ensure that their customers are satisfied with their services. This can lead to positive word-of-mouth and increased customer loyalty, which can ultimately benefit the company's bottom line.

business Benefits: Predicting customer churn can help telecom companies save money by avoiding the cost of acquiring new customers to replace those who have left. In addition, identifying the reasons why customers leave can help companies make changes to their services and pricing plans to better meet their customers' needs and reduce the likelihood of future churn