

# Customer Churn Prediction

## Problem Statement:

Retaining clients is essential for the sustainability and expansion of a business in the highly competitive telecommunications sector. The rate at which customers transfer to competitors, or customer churn, is a major problem. It is crucial to comprehend and anticipate consumer behavior, particularly about their likelihood to depart the business.

The objectives of this research paper are to:

- Develop a predictive model that accurately identifies customers who are likely to churn based on their historical data and attributes.
- Determine which customer attributes have the most significant impact on churn prediction to guide marketing and retention strategies.

## Source of the Dataset:

- <https://www.kaggle.com/datasets/blastchar/telco-customer-churn>

## Brief Description about the Dataset:

This dataset includes customer data that is essential for comprehending and forecasting customer churn in the telecommunications sector. With columns describing each client's service subscriptions (such as phone, internet, and tech support), account specifications (such as contract type, billing method), and demographic information (such as gender, age, and partnerships), each row represents a single customer. The "Churn" column, which shows if a customer has left within the past month, is the main focus.

### Description of attributes:

	Attribute Name	Data Type	Description
1.	<b>customerID</b>	object	ID assigned to the customer
2.	<b>gender</b>	object	Gender of the customer
3.	<b>SeniorCitizen</b>	Int64	Whether or not the customer is a senior citizen
4.	<b>Partner</b>	object	Whether or not the customer has a partner
5.	<b>Dependents</b>	object	Whether or not the customer has any dependents
6.	<b>tenure</b>	Int64	How long the customer has been with the company
7.	<b>PhoneService</b>	object	Whether or not the customer has signed up for phone service
8.	<b>MultipleLines</b>	object	If the customer has signed up for phone service, whether or not they have signed up for multiple telecom lines
9.	<b>InternetService</b>	object	Whether the customer has signed up for an internet service. If yes, what kind of service is it
10.	<b>OnlineSecurity</b>	object	If the customer has internet service, whether or not they have signed up for an online security service
11.	<b>OnlineBackup</b>	object	If the customer has internet service, whether or not they have signed up for an online backup service
12.	<b>DeviceProtection</b>	object	If the customer has internet service, whether or not they have signed up for device protection service
13.	<b>TechSupport</b>	object	If the customer has internet service, whether or not they have signed up for tech support service

<b>14.</b>	<b>StreamingTV</b>	object	If the customer has internet service, whether or not they have signed up for streaming TV service
<b>15.</b>	<b>StreamingMovies</b>	object	If the customer has internet service, whether or not they have signed up for streaming movies service
<b>16.</b>	<b>Contract</b>	object	What kind of a contract the customer has
<b>17.</b>	<b>PaperlessBilling</b>	object	Whether or not the customer has opted for paperless billing
<b>18.</b>	<b>PaymentMethod</b>	object	Which payment method the customer has opted for
<b>19.</b>	<b>MonthlyCharges</b>	Float64	The customer's monthly charges
<b>20.</b>	<b>TotalCharges</b>	object	The customer's total charges
<b>21.</b>	<b>Churn</b>	object	Whether or not the customer left within the last month