

# Bank Churn Prediction

## Objective:

Given a Bank customer, build a neural network-based classifier that can determine whether they will leave or not in the next 6 months.

## Context:

Businesses like banks that provide service have to worry about the problem of 'Churn' i.e. customers leaving and joining another service provider. It is important to understand which aspects of the service influence a customer's decision in this regard. Management can concentrate efforts on the improvement of service, keeping in mind these priorities.

## Data Description:

The case study is from an open-source dataset from Kaggle. The dataset contains 10,000 sample points with 14 distinct features such as CustomerId, CreditScore, Geography, Gender, Age, Tenure, Balance, etc.

Link to the Kaggle project site: <https://www.kaggle.com/barelydedicated/bank-customer-churn-modeling>

## Data Dictionary:

- RowNumber: Row number.
- CustomerId: Unique identification key for different customers.
- Surname: Surname of the customer
- Credit Score: Credit score is a measure of an individual's ability to pay back the borrowed amount. It is the numerical representation of their creditworthiness. A credit score is a 3-digit number that falls in the range of 300-900, 900 being the highest.
- Geography: The country to which the customer belongs.
- Gender: The gender of the customer.
- Age: Age of the customer.
- Tenure: The period of time a customer has been associated with the bank.
- Balance: The account balance (the amount of money deposited in the bank account) of the customer.
- NumOfProducts: How many accounts, bank account affiliated products the person has.
- HasCrCard: Does the customer have a credit card through the bank?
- IsActiveMember: Subjective, but for the concept
- EstimatedSalary: Estimated salary of the customer.
- Exited: Did they leave the bank after all?

## Points Distribution:

The points distribution for this case is as follows:

1. Read the dataset
2. Drop the columns which are unique for all users like IDs (5 points)
3. Perform bivariate analysis and give your insights from the same (5 points)

4. Distinguish the feature and target set and divide the data set into training and test sets (5 points)
5. Normalize the train and test data (10points)
6. Initialize & build the model. Identify the points of improvement and implement the same. (20)
7. Predict the results using 0.5 as a threshold (10points)
8. Print the Accuracy score and confusion matrix (5 points)