Data Science & AI - Case Assignment

Churn prediction & Tailored Email Messaging using GenAI

## Case Introduction

The assignment of this case is to build a predictive application to analyse customer behaviour and develop focused customer retention programs. Currently, a new client of DEPT faces challenges in retaining customers, leading to increased churn rates and lost revenue. By leveraging AI, we aim to identify customers at risk of leaving and take proactive measures to retain them.

The objective is to improve customer retention by predicting churn using AI models. This will enable targeted retention strategies and enhance customer satisfaction. The first step is to set up a small proof of concept, demonstrating how our AI application can predict customer churn based on various attributes and subsequently showcase how Large Language Models could be used to generate email content for retention send-outs, while adhering to brand guidelines.

## 🧰 Your Recommended Toolbox

* A code repository that you can share with us (github, bitbucket)
* Python/SQL
* Large Language Models (i.e. PaLM, Gemini, GPT-3.5, GPT-4, Llama)
* Machine Learning Algorithms

## 🗃️Available Data

* An anonymized churn dataset from our new telecommunication client
  + Customers who left within the last month (Churn)
  + Services each customer has signed up for (phone, multiple lines, internet, online security, online backup, device protection, tech support, and streaming TV and movies)
  + Customer account information (tenure, contract type, payment method, paperless billing, monthly charges, and total charges)
  + Demographic information (gender, age range, partners, and dependents)
* Brand guidelines to use in potential retention emails to customers

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## 📄Case Assignment & Requirements

The assignment consists of two parts.

**Part I - Customer Churn Prediction**

* Train a machine learning model which can classify which customers are most likely to churn, using the attached dataset.

*Questions to answer:*

1. *How well can we classify churn? Which algorithms are best to use?*
2. *Which factors are influencing churn prediction and in what direction?*

**Part II - Generate an email using Large Language Models, in the style of our client**

* Utilise a Large Language Model to generate an email for customers that are at risk of churn
* It is ok to make use of e.g. ChatGPT or Gemini interfaces for this case, if you do it with API’s this is also fine.

*Questions to answer:*

1. *How do you ensure the generated content adheres to the brand guidelines of the client?*
2. *How could this concept scale across different customer journeys, phases or segments?*

## 🚚 Deliverables

1. **Your code repository** 
   1. Including your code to explore data, train and evaluate your models
   2. Including your code and prompts to generate customer retention emails
2. **A presentation/demo of your case assignment to our client’s CMO & CTO**