

## **Telco Churn Prediction: A Journey through ML, Streamlit, FastAPI, and Docker**

This project aims to provide a solution for predicting customer churn in a telecommunications company by integrating a range of technologies. First, we will develop a machine learning model using Catboost by studying churn data. We will then use Streamlit to present the outputs of this model through a user-friendly interface. Following this, we will build an API using FastAPI to provide real-time predictions, and finally automate the deployment and scaling of the entire solution using Docker.

### **Project Steps:**

- 1- Data Preprocessing and Model Deployment (CatBoost)
- 2- Interface (Streamlit)
- 3- API (FastAPI)
- 4- Automation (Docker)

### **1. Data Preprocessing and Model Development (Catboost)**

- We will perform data preprocessing steps to prepare the dataset with customer information such as account and demographics for model training
- For a data set where we have a lot of categorical variables, it would be a good choice to use the CatBoost model, which has shown success in categorical variables

### **2. Interface (Streamlit)**

- Develop an interactive web interface to visualize and share model outputs
- Also a small predict facility in this interface

### **3. API (FastAPI)**

- Creating an API using FastAPI to enable real-time predictions of the model
- Providing APIs for integration with other systems and automated decision-making processes

### **4. Automation (Docker)**

- Packaging the entire solution into a container using Docker
- Leveraging Docker to automate deployment processes and enable easy deployment of the solution to different environments