Project Overview	
Objective	The primary objective of this project is to implement a machine learning solution to accurately estimate Customer Acquisition Cost (CAC) for optimizing marketing expenditures and enhancing financial planning.
Scope	Collecting and preprocessing historical data related to customer acquisition campaigns. Developing machine learning models to predict CAC based on various marketing channels and campaign variables. Evaluating and selecting the best-performing model for deployment.
Problem Statement	
Description	Current methods of estimating CAC may lack accuracy and efficiency, leading to suboptimal resource allocation and financial planning decisions. Addressing these issues with machine learning techniques aims to improve the precision of CAC estimation and enhance operational efficiency.
Impact	Improve accuracy in predicting acquisition costs across different marketing channels.Optimize budget allocation by identifying the most cost-effective acquisition strategies. Enhance overall financial planning by providing reliable insights into expected acquisition costs.
Proposed Solution	

Approach	Collect and preprocess loan application data and historical customer acquisition data from Kaggle and UCI datasets. Ensure data quality and integrity. Implement mechanisms (e.g., periodic model retraining) to enable continuous learning and adaptation to changes in financial data and customer behaviour.
Key Features	Data-driven approach leveraging historical campaign data to train machine learning models. Real-time or near-real-time predictions to support dynamic budgeting and resource allocation strategies.

Project Initialization and Planning Phase

Date	20 June 2024
Team ID	739986
Project Title	Customer Acquisition Cost Estimation Using ML
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) report

Our proposal aims to leverage machine learning to accurately estimate customer acquisition costs. By analysing historical data and identifying patterns, our solution will provide actionable insights to optimize marketing strategies, reduce expenses, and enhance customer acquisition efficiency, ultimately driving business growth.

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	T4 GPU for efficient model training and accelerated processing.
Memory	8 GB RAM to handle large datasets and enable smooth computations.	8 GB
Storage	1 TB SSD for fast data access, storage of models, and logs.	1 TB SSD
Software		
Frameworks	Flask, a lightweight Python web framework for building and deploying the application.	Flask
Libraries	scikit-learn for ML algorithms, pandas for data manipulation, numPy for numerical operations, matplotlib and seaborn for data visualization.	scikit-learn, pandas, numPy, matplotlib, seaborn
Development Environment	Jupiter Notebook for interactive analysis and model development, PyCharm for robust coding and debugging.	Jupiter Notebook, PyCharm
Data		
Data	Data Source	Kaggle dataset (614 records, csv) and UCI dataset (690 records, csv) for model training and validation.