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| 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 | |

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| 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

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|---------------|---|
| Date | 20 June 2024 |
| Team ID | 740038 |
| 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 | Jupyter Notebook for interactive analysis and model development, PyCharm for robust coding and debugging. | Jupyter Notebook, PyCharm |
| Data | | |
| Data | Data Source | Kaggle dataset (614 records, csv) and UCI dataset (690 records, csv) for model training and validation. |

