CUSTOMER ACQUISITION COST ESTIMATION USING ML

Milestone 1: Project Initialization and Planning Phase

Initiate the project by defining objectives and scope, focusing on estimating customer acquisition cost using machine learning. Gather and analyse relevant data such as marketing expenses, customer data, and sales information. Choose appropriate ML models, such as regression or classification algorithms. Develop a project plan, outlining tasks, timelines, and responsibilities. Ensure collaboration among team members and stakeholders, and establish evaluation metrics for model performance and accuracy.

Activity 1: Define Problem Statement

The problem statement focuses on accurately estimating the customer acquisition cost (CAC) using machine learning techniques. Traditional methods of calculating CAC often lack precision due to the complex interplay of various factors influencing marketing and sales expenses. By leveraging machine learning, we aim to analyze large datasets encompassing marketing spend, customer behavior, and sales data to predict CAC with higher accuracy. This will enable businesses to optimize their marketing strategies, allocate budgets more effectively, and improve overall customer acquisition efforts. The goal is to develop a robust ML model that provides reliable CAC predictions, aiding in better financial planning and decision-making.

Problem Statement Report: Click here

Activity 2: Project Proposal (Proposed Solution)

Propose developing a machine learning model to predict customer acquisition cost by analyzing marketing spend, customer behavior, and sales data. This solution aims to enhance accuracy, optimize marketing strategies, and improve financial planning for more effective customer acquisition.

Project Proposal Report: Click here

Activity 3: Initial Project Planning

Begin by defining project goals and scope. Gather and preprocess relevant data on marketing expenses, customer behavior, and sales. Select suitable ML models and tools. Create a detailed project timeline with tasks, milestones, and responsibilities. Ensure team collaboration and set up evaluation metrics for model accuracy and performance.

Project Planning Report: Click here

Milestone 2: Data Collection and Preprocessing Phase

Collect data on marketing expenses, customer behavior, and sales from various sources. Clean and preprocess the data, addressing missing values, outliers, and inconsistencies. Normalize and encode variables as needed, ensuring the dataset is ready for machine learning model training.

Activity 1: Data Collection Plan, Raw Data Sources Identified, Data Quality Report

Develop a data collection plan, identifying raw data sources like CRM systems, marketing platforms, and sales records. Compile a data quality report, assessing completeness, accuracy, and consistency. Address data gaps and discrepancies to ensure high-quality input for the machine learning model.

Data Collection Report: Click here

Activity 2: Data Quality Report

The data quality report assesses completeness, accuracy, consistency, and relevance of CRM, marketing, and sales data. It identifies missing values, outliers, and data discrepancies. Measures are taken to preprocess and enhance data quality for reliable customer acquisition cost estimation using machine learning.

Data Quality Report: Click here

Activity 3: Data Exploration and Preprocessing

Conduct exploratory data analysis to understand distributions, correlations, and patterns in CRM, marketing, and sales data. Preprocess data by handling missing values, outliers, and feature scaling. Prepare cleaned datasets for machine learning model training to estimate customer acquisition costs accurately.

Data Exploration and Preprocessing Report: Click here

Milestone 3: Model Development Phase

In the model development phase, select appropriate machine learning algorithms such as regression or classification models. Train and validate the models using pre-processed data onmarketing spend, customer behavior, and sales. Optimize model parameters and evaluate performance metrics to ensure accurate estimation of customer acquisition costs.

Activity 1: Feature Selection Report

The feature selection report identifies key variables from CRM, marketing, and sales data thatmost influence customer acquisition costs. Techniques like correlation analysis, feature importance scores, and domain knowledge are used to select the optimal set of features formachine learning model development.

Feature Selection Report: Click here

Activity 2: Model Selection Report

The model selection report evaluates various machine learning algorithms such as regression,decision trees, and neural networks for estimating customer acquisition costs. It compares their performance metrics like accuracy, precision, and computational efficiency, recommending the most suitable model based on experimental results and businessrequirements.

Model Selection Report: Click here

Activity 3: Initial Model Training Code, Model Validation and Evaluation Report

Evaluate model using metrics like mean absolute error (MAE), mean squared error (MSE),and R-squared. Assess performance on test set to ensure generalization. Consider cross-validation for robustness. Optimize hyperparameters based on results to improve accuracy incustomer acquisition cost estimation.

Model Development Phase Template: Click here

Milestone 4: Model Optimization and Tuning Phase

In the model optimization phase, tune hyperparameters using techniques like grid search orrandom search to enhance model performance. Consider feature selection, regularization methods, and ensemble techniques to improve accuracy and robustness in estimating customer acquisition costs using machine learning.

Activity 1: Hyperparameter Tuning Documentation

The hyperparameter tuning documentation outlines strategies such as grid search or random search to optimize model parameters for accurate customer acquisition cost estimation. It documents the process, selected parameters, and rationale for enhancing model performance and reliability.

Activity 2: Performance Metrics Comparison Report

The performance metrics comparison report evaluates models using metrics like MAE, MSE, and R-squared. It compares accuracy, precision, and computational efficiency across different algorithms to recommend the most effective model for estimating customer acquisition costs reliably.

Activity 3: Final Model Selection Justification

The final model selection is justified based on comprehensive evaluation of performance metrics (e.g., MAE, MSE, R-squared) and computational efficiency. The chosen model optimally estimates customer acquisition costs, aligning with business objectives and data characteristics.

Model Optimization and Tuning Phase Report: Click here

Milestone 5: Project Files Submission and Documentation

For project file submission in GitHub, Kindly click the link and refer to the flow. Click here

For the documentation, Kindly refer to the link. Click here

Milestone 6: Project Demonstration

In the upcoming module called Project Demonstration, individuals will be required to record a video by sharing their screens and explain their project and demonstrate its execution during the presentation.