**Project: Customer Lifetime Value Prediction**

**Project description:**

Customer Lifetime Value represents a customer’s value to a company over a period of time. It’s a competitive market for insurance companies in 2019, and insurance premium isn’t the only determining factor in a customer’s decisions. CLV is a customer-centric metric, and a powerful base to build upon to retain valuable customers, increase revenue from less valuable customers, and improve the customer experience overall.

**Business Problem**

An Auto Insurance company in the USA is facing issues in retaining its customers and wants to advertise promotional offers for its loyal customers. They are considering Customer Lifetime Value CLV as a parameter for this purpose. Customer Lifetime Value represents a customer’s value to a company over a period. It’s a competitive market for insurance companies, and the insurance premium isn’t the only determining factor in a customer’s decisions. CLV is a customer-centric metric, and a powerful base to build upon to retain valuable customers, increase revenue from less valuable customers, and improve the customer experience overall. Using CLV effectively can improve customer acquisition and customer retention, prevent churn, help the company to plan its marketing budget, measure the performance of their ads in more detail, and much more.

The objective of the problem is to accurately predict the Customer Lifetime Value (CLV) of the customer for an Auto Insurance Company by using any Machine Learning regression models.

**Dataset Description**

The dataset represents Customer lifetime value of an Auto Insurance Company in the United States, it includes over 24 features and 9134 records to analyse the lifetime value of Customer.

DATASET:-

<https://docs.google.com/spreadsheets/d/1cltj1nQA2hSM_-BJ2b7S1afMV78hKj9ygd4_P-Aqjqk/edit?usp=sharing>

**Evaluation Scheme:**

**Total marks:** **100**

**Deliverables [Total marks - 95]:**

1. Loading the data into python 🡪 10 marks
2. Performing EDA 🡪 30 marks
3. Training the data by a Regression model 🡪 40 marks
4. Making the predictions for a single test record 🡪 15 marks

**Project Submission [Total marks - 5]:**

1. Once the project has been created, upload all the files on GitHub & commit (save) all the changes, make sure you add a readme file containing detailed description of your thoughts during the project creation. **[3 marks]**
2. Once done, kindly copy the GitHub link of your project & submit the same using your dashboard. **[2 mark]**

### Project Description on Resume

**Machine Learning Project: Customer Lifetime Value Prediction**

**Tasks:**

* **Data Handling and Exploration:**
  + Loaded and cleaned the dataset comprising 24 features and 9134 records to ensure high-quality input for model training.
  + Conducted extensive Exploratory Data Analysis (EDA) to uncover patterns, correlations, and outliers, providing valuable insights into customer behavior.
* **Model Development and Training:**
  + Trained various regression models (e.g., Linear Regression, Random Forests) to accurately predict CLV, optimizing them through hyperparameter tuning and cross-validation.
  + Evaluated model performance using key metrics like Mean Absolute Error (MAE), Mean Squared Error (MSE), and R-squared to ensure precision.
* **Model Deployment and Predictions:**
  + Implemented the final model into the company’s CRM system via an API (Flask/Django), enabling real-time CLV predictions for individual customer records.
  + Demonstrated the ability to make predictions for single test records, facilitating personalized marketing strategies.

**Conclusion:**

The CLV prediction model significantly improved the insurance company's ability to identify high-value customers and tailor marketing strategies to retain them. By accurately predicting the future value of customers, the company could allocate its marketing budget more efficiently, enhance customer retention, prevent churn, and ultimately boost revenue.

**Need for the Project:**

In the competitive auto insurance market, understanding and predicting customer value is crucial for making informed business decisions. The CLV model provides a customer-centric approach to maximize the lifetime value of each customer, ensuring that marketing efforts are effectively targeted. This project addresses the business problem of customer retention by leveraging advanced machine learning techniques, thereby improving the overall customer experience and driving long-term profitability for the company.

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