Project Target

To inspect clients and find what correlates with more purchases and build filter which outputs customers with more potential.

Project Methods

For customer inspection I used correlation matrix to see what attributes correlate with purchase amount.

For targeting I used two models – linear regression and neural network. At the end the Neural network was selected because of smaller error in validation results. Network was used together with standard deviation. Standard deviation was used to filter out clients who have most potential according to found attributes (positive deviation indicating more potential) and neural network was used to filter out clients who are purchasing lower than the average. Then intersecting customers (those who fell in both groups) were filtered for targeting.

Files

customer_analysis.ipynb – contains analysis and modeling

marketing_campaign.csv – contains customer data

optimization.py – contains hyperparameter tuning algorithm using multiprocessing for more performance.

optimized_parameters.joblib – contains parameters found in optimization process.

scaled_data.sav – contains preprocesses data, ready for training.

scaled_target.sav – contains preprocessed targets for training.

Attributes in marketing_campaign.csv file

People

•ID: Customer's unique identifier
•Year_Birth: Customer's birth year
•Education: Customer's education level
•Marital_Status: Customer's marital status
•Income: Customer's yearly household income
•Kidhome: Number of children in customer's household
•Teenhome: Number of teenagers in customer's household
•Dt_Customer: Date of customer's enrollment with the company
•Recency: Number of days since customer's last purchase
•Complain: 1 if the customer complained in the last 2 years, 0 otherwise

Products

•MntWines: Amount spent on wine in last 2 years
•MntFruits: Amount spent on fruits in last 2 years
•MntMeatProducts: Amount spent on meat in last 2 years

•MntFishProducts: Amount spent on fish in last 2 years
•MntSweetProducts: Amount spent on sweets in last 2 years
•MntGoldProds: Amount spent on gold in last 2 years

Promotion

•NumDealsPurchases: Number of purchases made with a discount
•AcceptedCmp1: 1 if customer accepted the offer in the 1st campaign, 0 otherwise
•AcceptedCmp2: 1 if customer accepted the offer in the 2nd campaign, 0 otherwise
•AcceptedCmp3: 1 if customer accepted the offer in the 3rd campaign, 0 otherwise
•AcceptedCmp4: 1 if customer accepted the offer in the 4th campaign, 0 otherwise
•AcceptedCmp5: 1 if customer accepted the offer in the 5th campaign, 0 otherwise
•Response: 1 if customer accepted the offer in the last campaign, 0 otherwise

Place

•NumWebPurchases: Number of purchases made through the company’s website
•NumCatalogPurchases: Number of purchases made using a catalogue
•NumStorePurchases: Number of purchases made directly in stores
•NumWebVisitsMonth: Number of visits to company’s website in the last month