Advertisement Sale prediction from an existing customer

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1 Finding the Problem - Application

To Predict

Predicting wheather this New Customer, will buy this Product or Not

2 Collecting Dataset

Input: AGE & SALARY Output: PURCHASE STATUS

Based on Age, Salary of Existing Customer Status (Purchased & Not Purchased)

3 Load & Summarize Dataset

Load Dataset from the directory & Summarize the details such as no. of rows and Columns & Content

Pandas - Load CSV Format Dataset

dataset = pandas.read_csv('dataset.csv')

No. of Rows & Columns

dataset.shape

Display 1st 5 rows of dataset

dataset.head(5)

4 Segregating Dataset into X & Y

iloc - It helps us select a value that belongs to a particular row or column

SYNTAX: dataset.iloc[:, start_col:end_col]

X = dataset.iloc[:, :-1].values

Y = dataset.iloc[:, -1].values

5 Splitting Dataset to Train & Test

Useful for validation

train_test_split(X, Y, test_size = 0.25, random_state = 0)

6 Feature Scaling

PROBLEM

Since both the features have different scales, there is a chance that higher weightage is given to features with higher magnitude. This will impact the performance of the machine learning algorithm and obviously, we do not want our algorithm to be biassed towards one feature.

SOLUTION

we scale our data to make all the features contribute equally to the result

Name	Weight	Price
Orange	15	1
Apple	18	3
Banana	12	2
Grape	10	5

Types

-1.184341	1.520013
-1.184341	-1.100699
0.416120	-1.100699
1.216350	0.209657
0.736212	0.471728

$$X' = \frac{X - \mu}{\sigma}$$

Standardization

Here the values are centered around the mean with a unit standard deviation. This means that the mean of the attribute becomes zero and the resultant distribution has a unit standard deviation.

$$X' = \frac{X - X_{min}}{X_{max} - X_{min}}$$

Normalization

Normalization is a scaling technique in which values are shifted and rescaled so that they end up ranging between 0 and 1. It is also known as Min-Max scaling

7 Algorithm

Logistic Regression

Uses 1 or More Independent Variable (X) to determine dependent variable (Y)

8 Training

Training our Model for Pre-processed Dataset

model.fit(X_train, y_train)

9 Validation

Obtaining the accuracy of the Model

Confusion Matrix

10 Prediction

Observing how our model is classifying our new data

result = model.predict(sc.transform(newCust))