

CONSUMER PURCHASE BEHAVIOR ANALYSIS

Team-13

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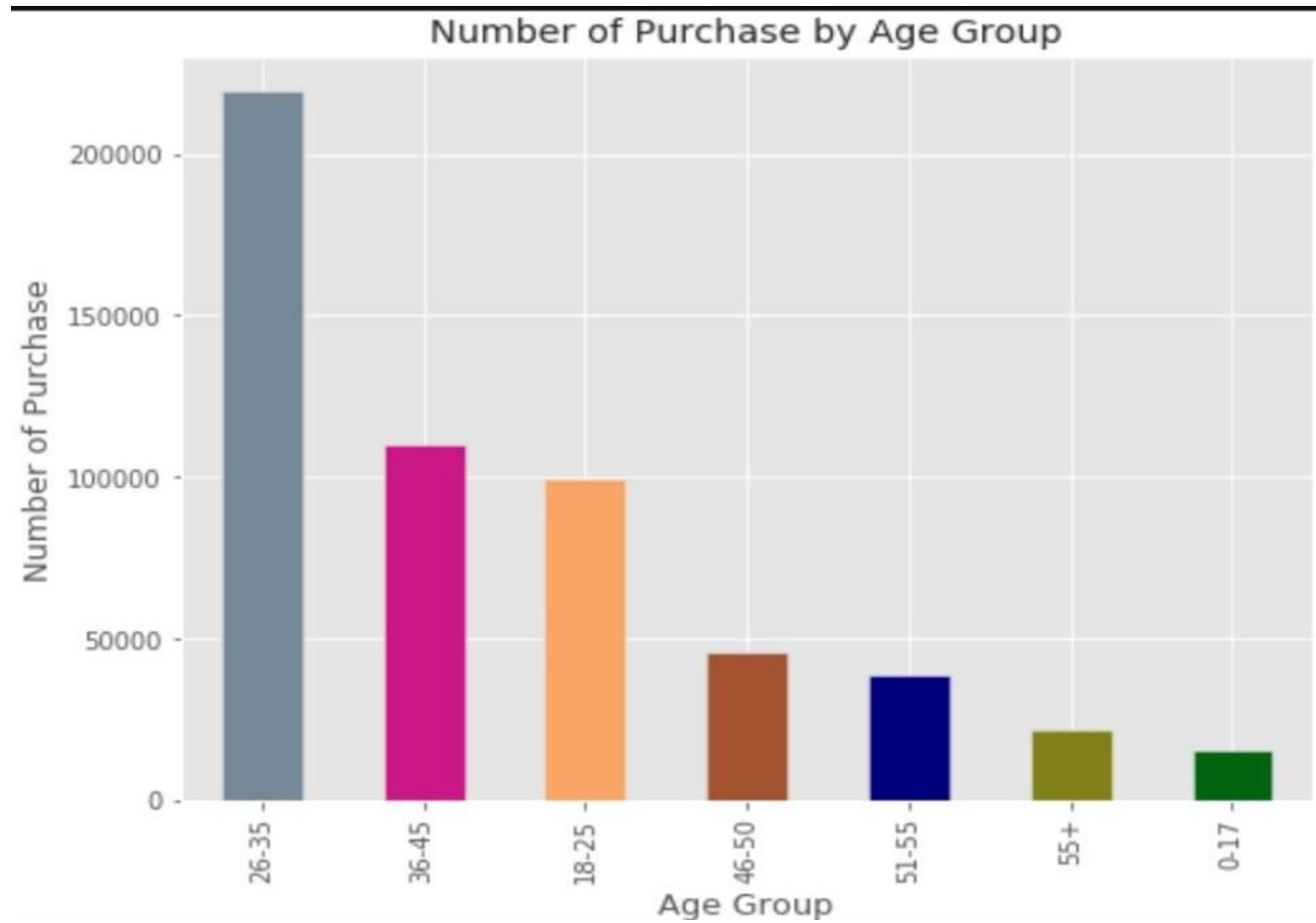
Lanchana Gudami

Introduction

- Data Analysis is an integral part of Data Science role.
- Effective analysis of Data help Business to plan their next step & understand the current demands of its customers, further more it is also used for customer targeting & business strategy planning.
- In recent times, customer behaviour models are typically based on data mining of customer data, and each model is designed to answer one question at one point in time. Predicting customer behaviour is an uncertain and difficult task. Thus, developing customer behaviour models requires the right technique and approach.

Overview

- ▶ Here we will explore the black Friday sales data & derive insights to customer behavior & product demands.
- ▶ A picture speaks thousands words & same applies to data analysis, no matter how hard you try to communicate verbally a graphical representation will always prove to be effective & give better understanding of underlying patterns in data.



This is an Analysis of consumer Behavior on Black Friday

Problem statement

Consumer purchase behavior analysis is study of how people make purchase decisions with regard to a product, service, or organization. Studying consumer behavior would allow you to answer several questions, such as

- How consumers feel about alternatives to their preferred brands.
- How consumers choose between the alternatives.
- How consumers behave while shopping.
- How consumer behavior is swayed by their surrounding environment.

Here we will try to explore different trends from any shopping dataset(black Friday).We will extract useful information that will answer questions such as: what gender shops more. Do the occupations of the people have any impact on sales? Which age group is the highest spender?

In the end ,we will create a simple machine learning algorithm that predicts the amount of money that a person is likely to spend on any occasion(ex: black Friday, amazon big billion days etc,) depending on features.

Aim

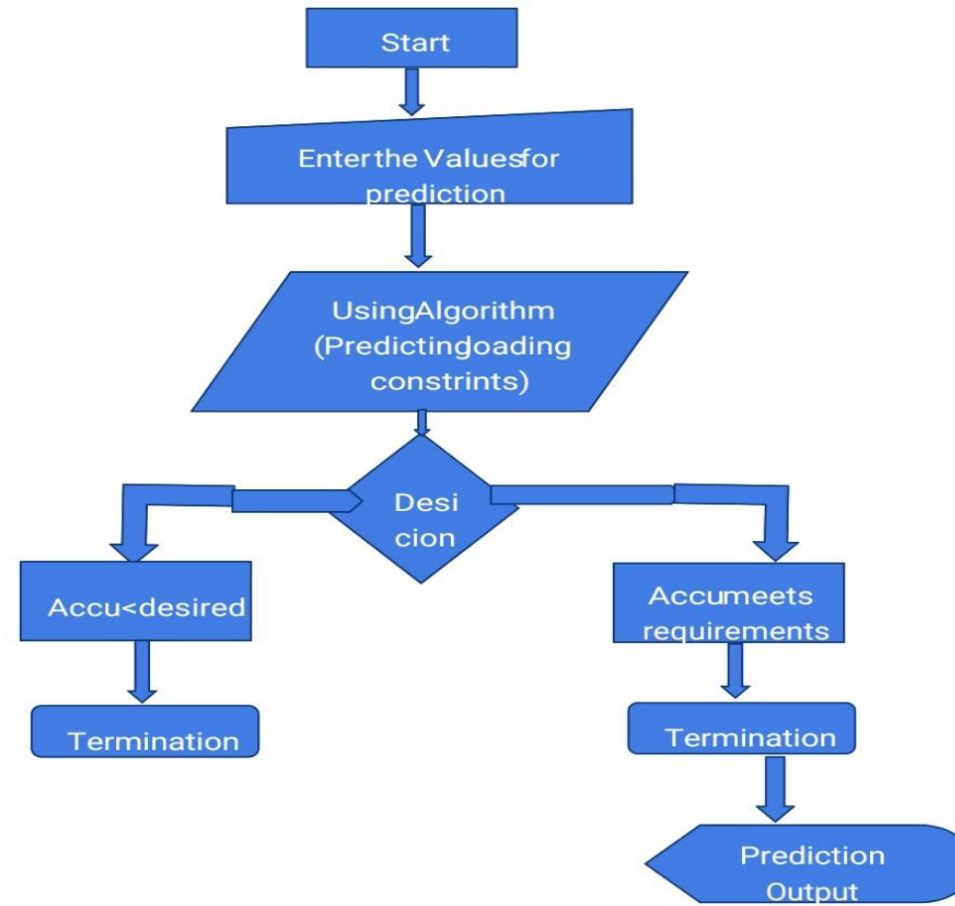
We will break up our exploratory data analysis, project in different number of tasks as follows. Our task is to find the following insights from the data.

- ▶ Get highest purchasing age group.
- ▶ Find purchase ratio among males & females.
- ▶ Find the most purchased category of product
- ▶ Get city wise purchase of product to understand demand in each city.
- ▶ Once a prediction model has been built, it is difficult to manipulate it for the purposes of the marketer, so as to determine exactly what marketing actions to take for each customer or group of customers.

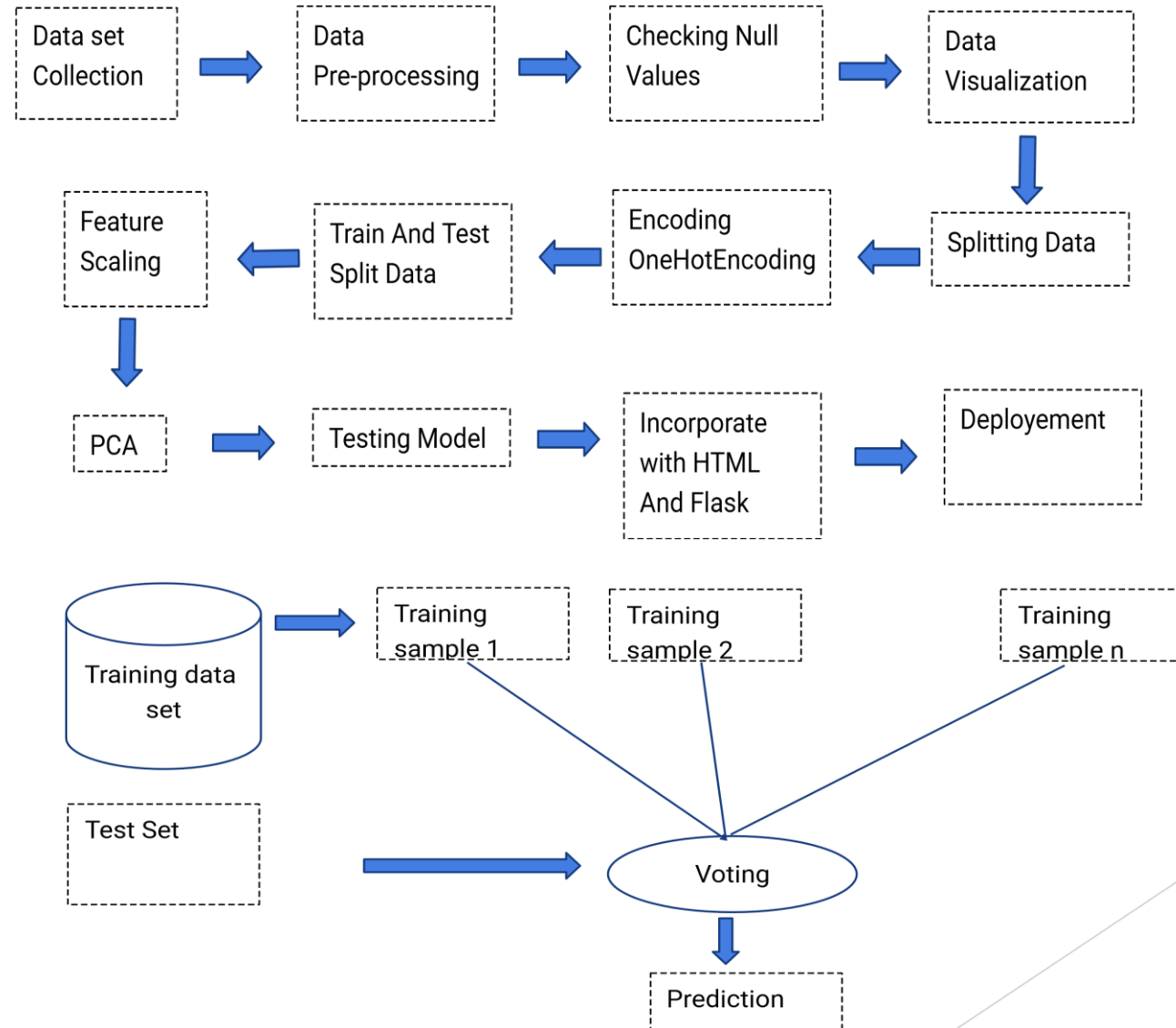
Software Designing

- Jupyter Notebook Environment
- Spyder Ide
- Machine Learning Algorithms
- Python(pandas,numpy,matplotlib,sklearn)
- HTML
- Flask

Flowchart



Block Diagram



```
#simple linear regression
```

In [49]:

```
from sklearn.linear_model import LinearRegression
lr=LinearRegression()
lr.fit(x_train,y_train)
```

Out[49]:

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

In [50]:

```
y_pred=lr.predict(x_test)
y_pred
```

Out[50]:

```
array([ 6505.4703798,  8692.7203798,  9236.4703798, ..., 10740.4703798,
        9452.9703798,  8356.7203798])
```

In [51]:

```
from sklearn.metrics import r2_score
r2_score(y_test,y_pred)
```

Out[51]:

```
0.13848304796419975
```

In [57]:

```
#random forest regressor
```

localhost:8889/notebooks/Desktop/Internship/Customer purchase behavior analysis.ipynb#

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Customer purchase behavior analysis - Jupyter Notebook

In [59]:

```
from sklearn.ensemble import RandomForestRegressor
rf=RandomForestRegressor(n_estimators=100,criterion='mse',random_state=0)
rf.fit(x_train,y_train)
```

Out[59]:

```
RandomForestRegressor(bootstrap=True, ccp_alpha=0.0, criterion='mse',
                       max_depth=None, max_features='auto', max_leaf_nodes=None,
                       max_samples=None, min_impurity_decrease=0.0,
                       min_impurity_split=None, min_samples_leaf=1,
                       min_samples_split=2, min_weight_fraction_leaf=0.0,
                       n_estimators=100, n_jobs=None, oob_score=False,
                       random_state=0, verbose=0, warm_start=False)
```

In [63]:

```
y_pred=rf.predict(x_test)
y_pred
from sklearn.metrics import r2_score
r2_score(y_test,y_pred)
```

Out[63]:

```
0.7014909555772021
```

Result and Accuracy

In this project, Random Forest Regression is used to predict customer purchasing accuracy. We get a validation accuracy of 70.14% which is pretty good.

Conclusion

The study of consumer behaviour basically is to mold consumer behaviour and decisions by marketing and to avoid failure of their product, promote new products and for sales promotion. The science at times is misused and to protect consumers there are a number of enactments both in India and other countries. Consumer behavior analysis has emerged as an important tool to understand customers. By looking into consumer psychology and the forces behind customer buying behavior, companies can craft new products, marketing campaigns and increase profitability. Companies should talk to consumers, and identify their needs and expectations.

The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic design. The shapes are layered, with some appearing more prominent than others, and they extend towards the corners of the frame.

THANK YOU