



ANJUMAN-I-ISLAM'S KALSEKAR TECHNICAL CAMPUS

School of Engineering & Technology

Affiliated to : University of Mumbai, Recognised by : DTE (Maharashtra) & Approved by : AICTE (New Delhi)

Course Code: CSL603	Course Name: DWM LAB
Class: TE-CO	Batch: 3
Roll no: 18C063	Name: SHAIKH TAUSEEF MUSHTAQUE ALI

Experiment :06

Aim: Implementation of Decision Tree algorithm

Code:

```
# Decision Tree Classification
```

```
# Importing the libraries
```

```
import numpy as np
```

```
import matplotlib.pyplot as plt
```

```
import pandas as pd
```

```
# Importing the dataset
```

```
dataset = pd.read_csv('Social_Network_Ads.csv')
```

```
X = dataset.iloc[:, [2, 3]].values
```

```
y = dataset.iloc[:, 4].values
```

```
# Splitting the dataset into the Training set and Test set
```

```
from sklearn.model_selection import train_test_split
```

```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.25, random_state = 0)
```

```
# Feature Scaling
```

```
from sklearn.preprocessing import StandardScaler
```

```
sc = StandardScaler()
```

```
X_train = sc.fit_transform(X_train)
```

```
X_test = sc.transform(X_test)
```



```
# Training the Decision Tree Classification model on the Training set
```

```
from sklearn.tree import DecisionTreeClassifier
```

```
classifier = DecisionTreeClassifier(criterion = 'entropy', random_state = 0)
```

```
classifier.fit(X_train, y_train)
```

```
# Predicting the Test set results
```

```
y_pred = classifier.predict(X_test)
```

```
# Making the Confusion Matrix
```

```
from sklearn.metrics import confusion_matrix
```

```
cm = confusion_matrix(y_test, y_pred)
```

```
print(cm)
```

```
# Visualising the Training set results
```

```
from matplotlib.colors import ListedColormap
```

```
X_set, y_set = X_train, y_train
```

```
X1, X2 = np.meshgrid(np.arange(start = X_set[:, 0].min() - 1, stop = X_set[:, 0].max() + 1, step = 0.01),
```

```
                      np.arange(start = X_set[:, 1].min() - 1, stop = X_set[:, 1].max() + 1, step = 0.01))
```

```
plt.contourf(X1, X2, classifier.predict(np.array([X1.ravel(), X2.ravel()]).T).reshape(X1.shape),
```

```
             alpha = 0.75, cmap = ListedColormap(['red', 'green']))
```

```
plt.xlim(X1.min(), X1.max())
```

```
plt.ylim(X2.min(), X2.max())
```

```
for i, j in enumerate(np.unique(y_set)):
```

```
    plt.scatter(X_set[y_set == j, 0], X_set[y_set == j, 1],
```

```
               c = ListedColormap(['red', 'green'])(i), label = j)
```

```
plt.title('Decision Tree Classification (Training set)')
```

```
plt.xlabel('Age')
```

```
plt.ylabel('Estimated Salary')
```

```
plt.legend()
```

```
plt.show()
```



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Visualising the Test set results

```
from matplotlib.colors import ListedColormap
```

```
X_set, y_set = X_test, y_test
```

```
X1, X2 = np.meshgrid(np.arange(start = X_set[:, 0].min() - 1, stop = X_set[:, 0].max() + 1, step = 0.01),  
                     np.arange(start = X_set[:, 1].min() - 1, stop = X_set[:, 1].max() + 1, step = 0.01))
```

```
plt.contourf(X1, X2, classifier.predict(np.array([X1.ravel(), X2.ravel()]).T).reshape(X1.shape),  
             alpha = 0.75, cmap = ListedColormap(('red', 'green')))
```

```
plt.xlim(X1.min(), X1.max())
```

```
plt.ylim(X2.min(), X2.max())
```

```
for i, j in enumerate(np.unique(y_set)):
```

```
    plt.scatter(X_set[y_set == j, 0], X_set[y_set == j, 1],  
               c = ListedColormap(('red', 'green'))(i), label = j)
```

```
plt.title('Decision Tree Classification (Test set)')
```

```
plt.xlabel('Age')
```

```
plt.ylabel('Estimated Salary')
```

```
plt.legend()
```

```
plt.show()
```

CSV File:

https://drive.google.com/file/d/1gIK6yLb3puhiLG13_83Dqw_7c3v_ntdn/view

Output:

