prashant vikas walunj BML 2 - 83

> ## Assignment no 5

Support-Vector-Machine

Dataset - Social_network_adds.csv

A simple implementation of a (linear) Support Vector Machine model in python. The classifier is an ob
from sklearn.svm library.

the linear kernel type was choosen since this was a linear SVM classifier model.

```
# Support Vector Machine
# Importing the libraries

import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

```
# Importing the datasets

datasets = pd.read_csv('Social_Network_Ads.csv')
X = datasets.iloc[:, [2,3]].values
Y = datasets.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_X = StandardScaler()
X_Train = sc_X.fit_transform(X_Train)
X_Test = sc_X.transform(X_Test)
```

```
# Fitting the classifier into the Training set

from sklearn.svm import SVC
classifier = SVC(kernel = 'linear', random_state = 0)
classifier.fit(X_Train, Y_Train)
```

```
SVC(C=1.0, break_ties=False, cache_size=200, class_weight=None, coef0=0.0,
    decision_function_shape='ovr', degree=3, gamma='scale', kernel='linear',
    max_iter=-1, probability=False, random_state=0, shrinking=True, tol=0.001,
    verbose=False)
```

```
# 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)
```

```
# 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, s
                     np.arange(start = X_Set[:, 1].min() - 1, stop = X_Set[:, 1].max() + 1, s
plt.contourf(X1, X2, classifier.predict(np.array([X1.ravel(), X2.ravel()]).T).reshape(X1.shap
             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('Support Vector Machine (Training set)')
plt.xlabel('Age')
plt.ylabel('Estimated Salary')
plt.legend()
plt.show()
```

```
'c' argument looks like a single numeric RGB or RGBA sequence, which should be avoided a
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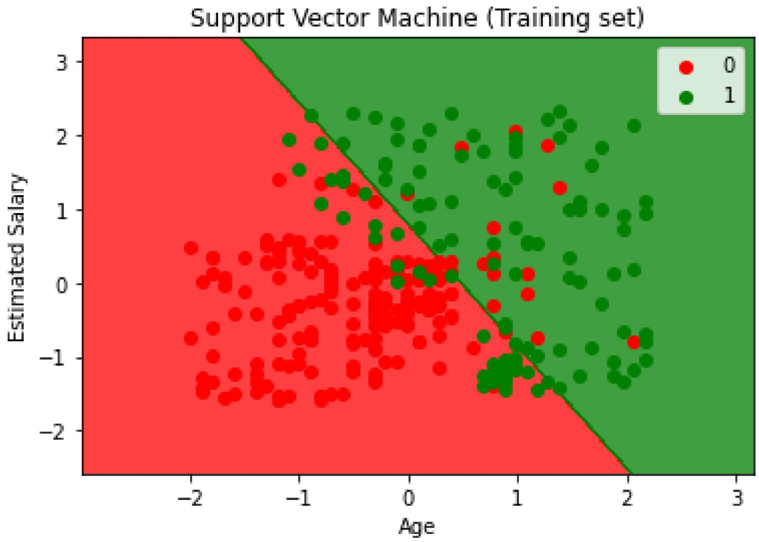
```



```
# 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, s
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                c = ListedColormap(('red', 'green'))(i), label = j)
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plt.xlabel('Age')
plt.ylabel('Estimated Salary')
plt.legend()
plt.show()
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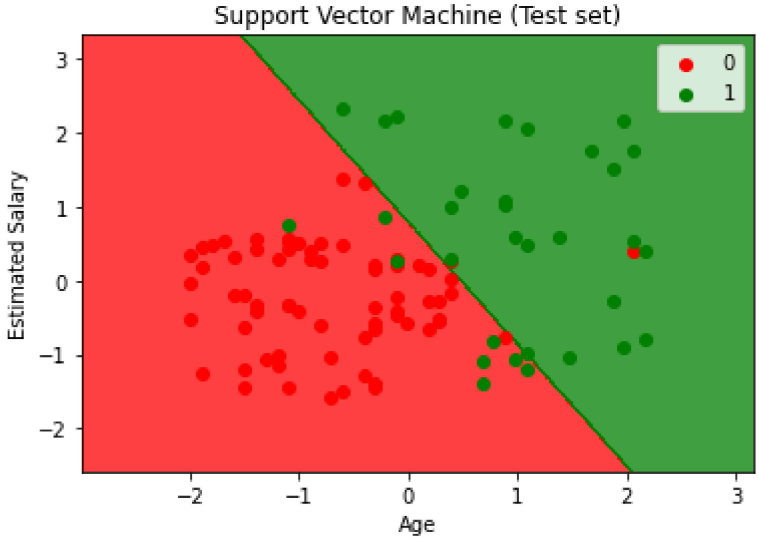
Support Vector Machine (Test set)
Estimated Salary
Age
● 0
● 1