Notebook

Support Vector Regression (SVR)

Importing the libraries

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

Importing the dataset

```
dataset = pd.read_csv('/content/Position_Salaries.csv')
X = dataset.iloc[:, 1:-1].values
y = dataset.iloc[:, -1].values
y=y.reshape(len(y),1)
print(X)
print(y)
```

```
[[ 1]
 [ 2]
 [ 3]
 [ 4]
 [ 5]
 [ 6]
 [ 7]
 [ 8]
 [ 9]
 [10]]
[[  45000]
 [  50000]
 [  60000]
 [  80000]
 [ 110000]
 [ 150000]
 [ 200000]
 [ 300000]
 [ 500000]
 [1000000]]
```

Feature Scaling

```
from sklearn.preprocessing import StandardScaler
sc_X=StandardScaler()
sc_y=StandardScaler()
X=sc_X.fit_transform(X)
y=sc_y.fit_transform(y)
print(X,"\n")
print(y)
```

```
[[-1.5666989 ]
 [-1.21854359]
 [-0.87038828]
 [-0.52223297]
 [-0.17407766]
 [ 0.17407766]
 [ 0.52223297]
 [ 0.87038828]
 [ 1.21854359]
 [ 1.5666989 ]]

[[-0.72004253]
 [-0.70243757]
 [-0.66722767]
 [-0.59680786]
 [-0.49117815]
 [-0.35033854]
 [-0.17428902]
 [ 0.17781001]
 [ 0.88200808]
 [ 2.64250325]]
```

Training the SVR model on the whole dataset

```
from sklearn.svm import SVR
regressor = SVR(kernel = 'rbf')
regressor.fit(X, y)
```

```
/usr/local/lib/python3.6/dist-packages/sklearn/utils/validation.py:760: DataConversionWa
  y = column_or_1d(y, warn=True)
SVR(C=1.0, cache_size=200, coef0=0.0, degree=3, epsilon=0.1, gamma='scale',
    kernel='rbf', max_iter=-1, shrinking=True, tol=0.001, verbose=False)
```

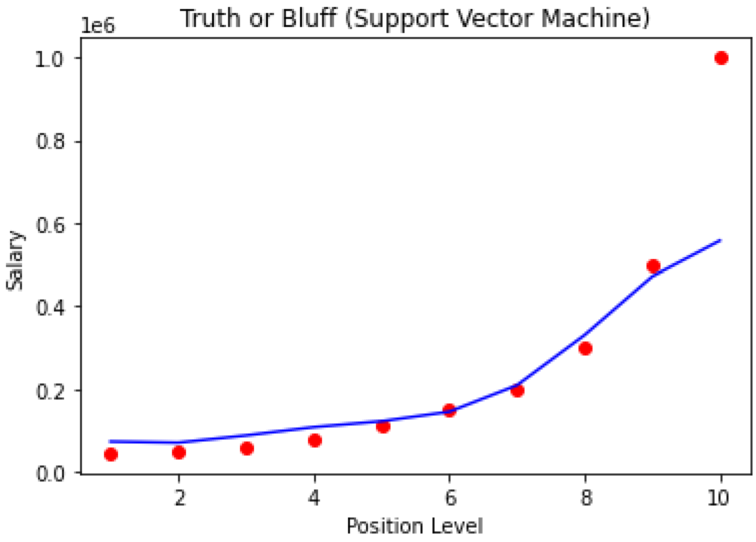
Predicting a new result

```
sc_y.inverse_transform(regressor.predict(sc_X.transform([[6.5]])))
```

```
array([170370.0204065])
```

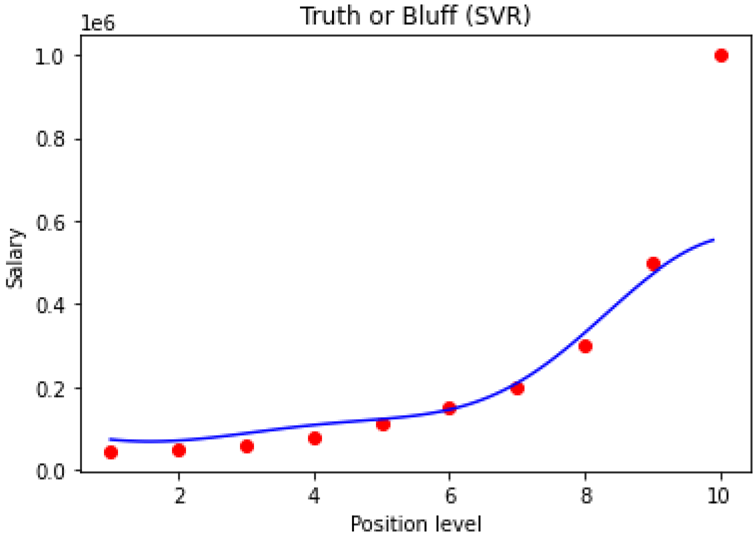
Visualising the SVR results

```
plt.scatter(sc_X.inverse_transform(X),sc_y.inverse_transform(y),color='red')
plt.plot(sc_X.inverse_transform(X),sc_y.inverse_transform(regressor.predict(X)),color="blue")
plt.title("Truth or Bluff (Support Vector Machine)")
plt.xlabel("Position Level")
plt.ylabel("Salary")
plt.show()
```



Visualising the SVR results (for higher resolution and smoother curve)

```
X_grid = np.arange(min(sc_X.inverse_transform(X)), max(sc_X.inverse_transform(X)), 0.1)
X_grid = X_grid.reshape((len(X_grid), 1))
plt.scatter(sc_X.inverse_transform(X), sc_y.inverse_transform(y), color = 'red')
plt.plot(X_grid, sc_y.inverse_transform(regressor.predict(sc_X.transform(X_grid))), color = '
plt.title('Truth or Bluff (SVR)')
plt.xlabel('Position level')
plt.ylabel('Salary')
plt.show()
```


Truth or Bluff (SVR)
1e6
1.0
0.8
0.6
0.4
0.2
0.0
Salary
2
4
6
8
10
Position level