Polynomial Regression

October 15, 2024

1 Polynomial Regression

[1]:
```
# Importing the libraries
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
import os
```

[18]:
```
# Importing the dataset
os.chdir("C:\\Users\ddaya\OneDrive\Documents\Python_programming")
dataset = pd.read_csv('Position_Salaries.csv')
X = dataset.iloc[:, 1:-1].values
y = dataset.iloc[:, -1].values
```

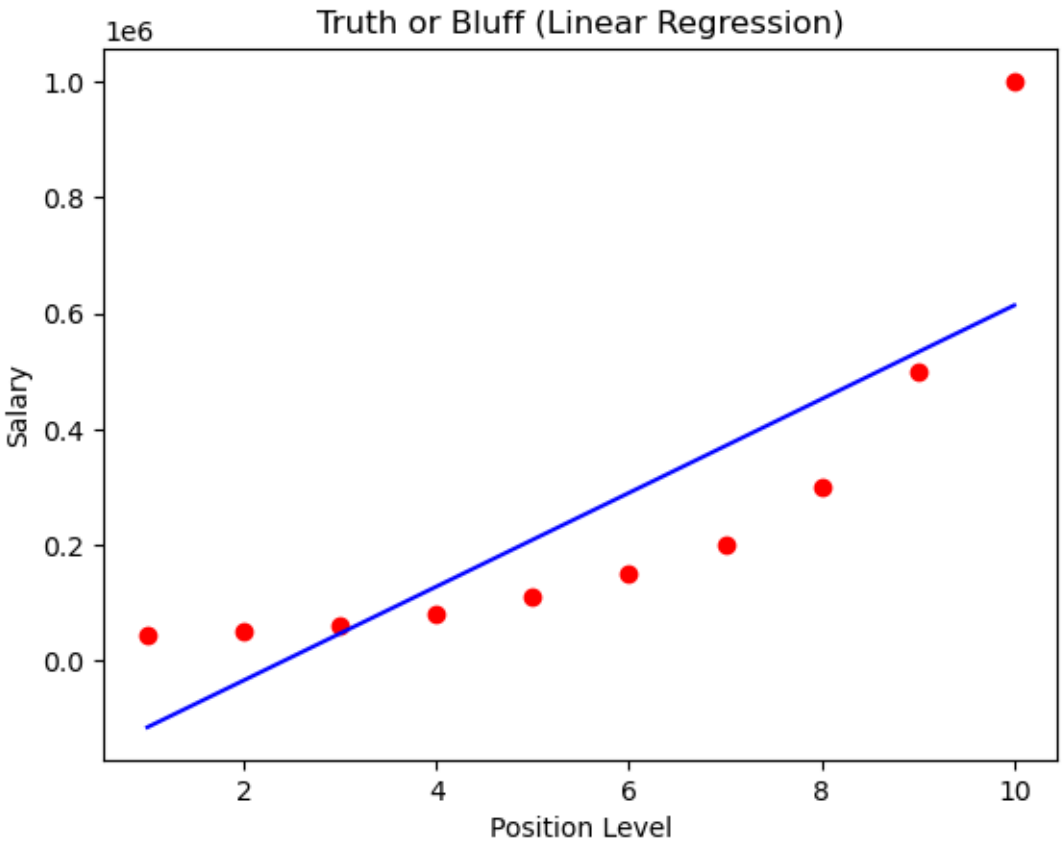
[19]:
```
# Training the Linear Regression model on the whole dataset
from sklearn.linear_model import LinearRegression
lin_reg = LinearRegression()
lin_reg.fit( X,y)
```

[19]:
```
LinearRegression()
```

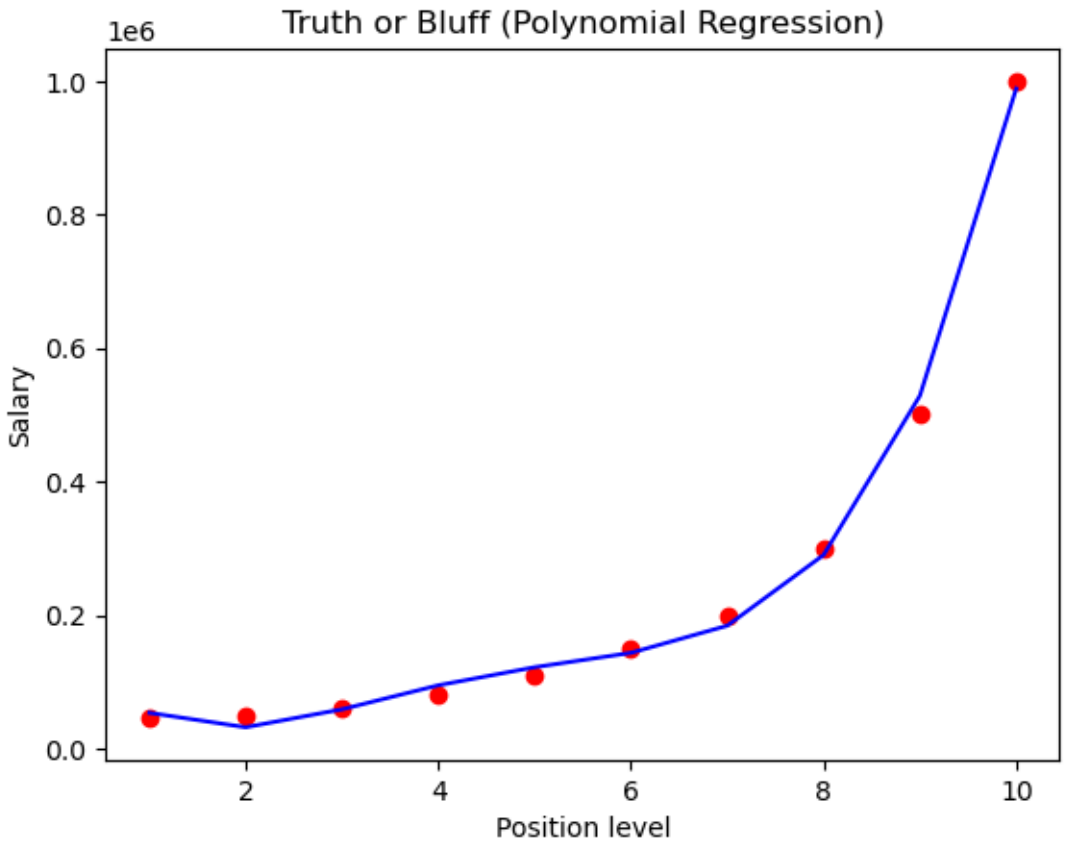
[20]:
```
# Training the Polynomial Regression model on the whole dataset
from sklearn.preprocessing import PolynomialFeatures
poly_reg = PolynomialFeatures(degree = 4)
X_poly = poly_reg.fit_transform(X)
lin_reg_2 = LinearRegression()
lin_reg_2.fit(X_poly, y)
```

[20]:
```
LinearRegression()
```

[21]:
```
# Visualising the Linear Regression results
plt.scatter(X, y, color = 'red')
plt.plot(X, lin_reg.predict(X), color = 'blue')
plt.title('Truth or Bluff (Linear Regression)')
plt.xlabel('Position Level')
plt.ylabel('Salary')
plt.show()
```

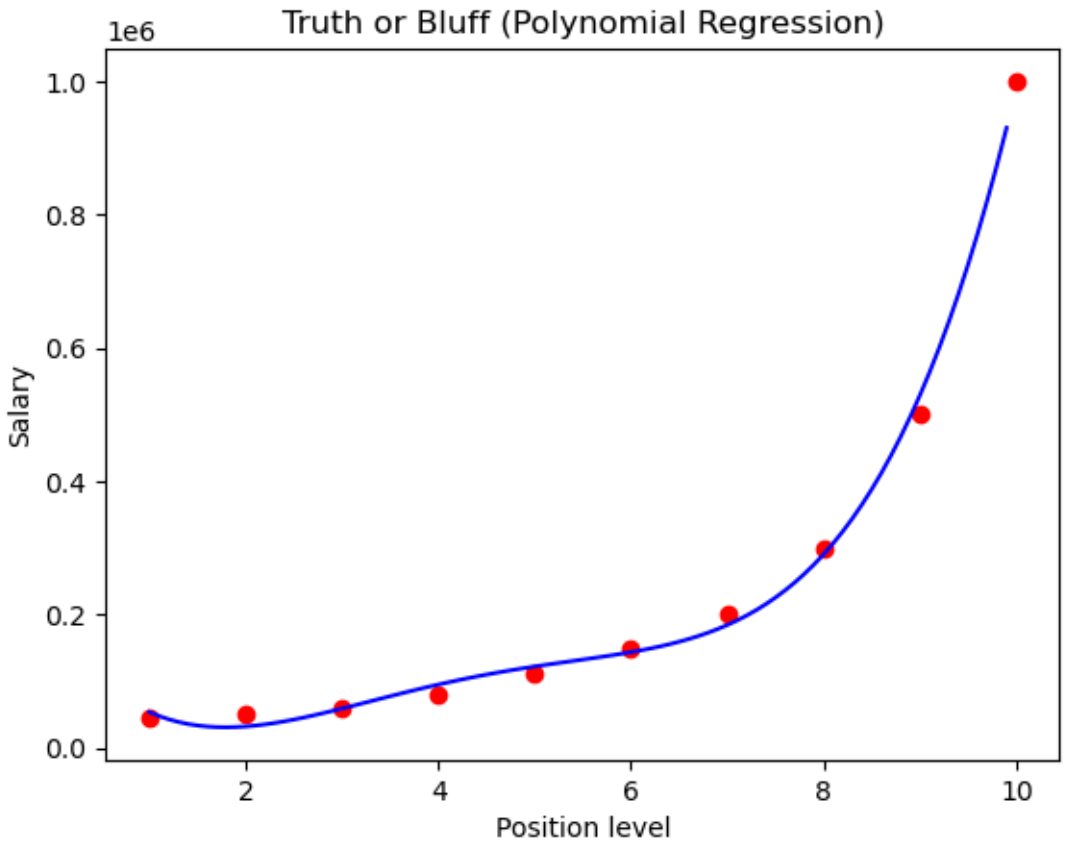


[22]:
```
# Visualising the Polynomial Regression results
plt.scatter(X, y, color = 'red')
plt.plot(X, lin_reg_2.predict(poly_reg.fit_transform(X)), color = 'blue')
plt.title('Truth or Bluff (Polynomial Regression)')
plt.xlabel('Position level')
plt.ylabel('Salary')
plt.show()
```



[23]:
```
# Visualising the Polynomial Regression results (for higher resolution and
 ↪smoother curve)
X_grid = np.arange(min(X), max(X), 0.1)
X_grid = X_grid.reshape((len(X_grid), 1))
plt.scatter(X, y, color = 'red')
plt.plot(X_grid, lin_reg_2.predict(poly_reg.fit_transform(X_grid)), color =
 ↪'blue')
plt.title('Truth or Bluff (Polynomial Regression)')
plt.xlabel('Position level')
plt.ylabel('Salary')
plt.show()
```

```
C:\Users\ddaya\AppData\Local\Temp\ipykernel_9000\3425532571.py:2:
DeprecationWarning: Conversion of an array with ndim > 0 to a scalar is
deprecated, and will error in future. Ensure you extract a single element from
your array before performing this operation. (Deprecated NumPy 1.25.)
  X_grid = np.arange(min(X), max(X), 0.1)
```



[24]:
```
# Predicting a new result with Linear Regression
lin_reg.predict([[6.5]])
```

[24]:
```
array([330378.78787879])
```

[25]:
```
# Predicting a new result with Polynomial Regression
lin_reg_2.predict(poly_reg.fit_transform([[6.5]]))
```

[25]:
```
array([158862.45265153])
```

[ ]:
```

```