Project Title

PREDICTING SALARY LEVELS WITH POLYNOMIAL LINEAR REGRESSION

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Problem Statement

This project aims to employ Polynomial Linear Regression to predict salary levels based on job positions and experience. The dataset includes various job titles, experience levels, and corresponding salaries. The primary objective is to build an accurate model that estimates salaries based on these two key factors. By doing so, we can provide valuable insights to both job seekers and employers. Job seekers can better understand the salary expectations associated with different positions and experience levels, enabling them to negotiate competitive compensation packages. Employers can use this model to make data-driven decisions when determining salary structures, contributing to fairer and more transparent hiring practices. Ultimately, this project seeks to bridge the information gap in the job market, promoting equity and informed decision-making.

Tools:

1. Jupyter Notebook.
2. Python Programming Language.
3. Sklearn, pandas, Linear Regression(Python Library)
4. Google Colab.

polynomial-regression

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1 Polynomial Regression

1.1 Importing the libraries

[ ]:
```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

1.2 Importing the dataset

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

1.3 Training the Linear Regression model on the whole dataset

[ ]:
```
from sklearn.linear_model import LinearRegression
lin_reg = LinearRegression()
lin_reg.fit(X, y)
```

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

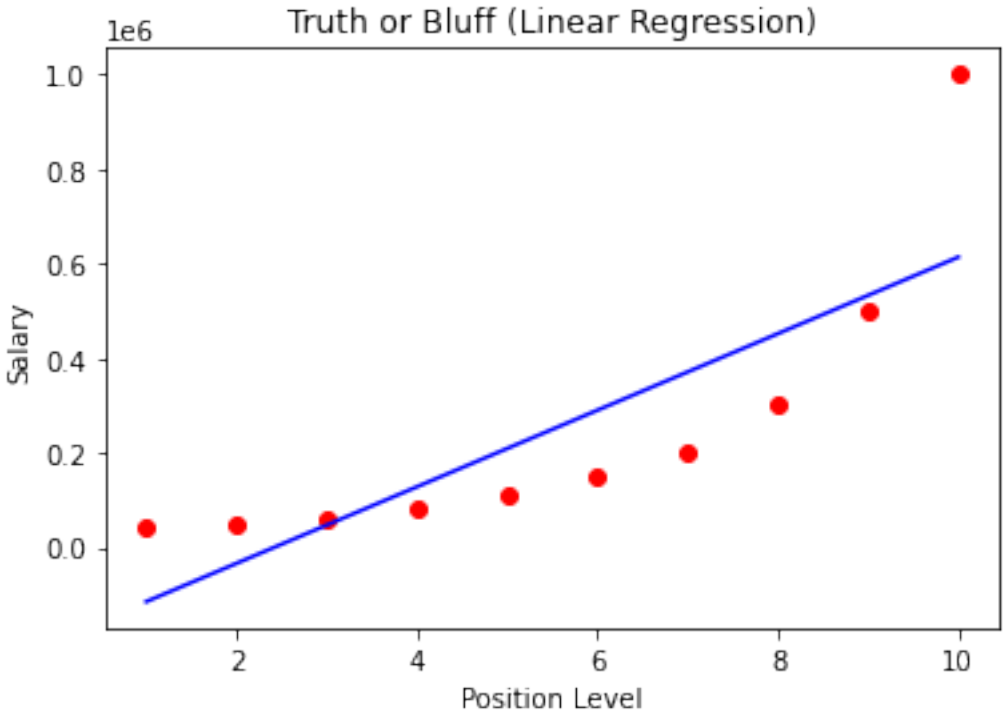
1.4 Training the Polynomial Regression model on the whole dataset

[ ]:
```
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)
```

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

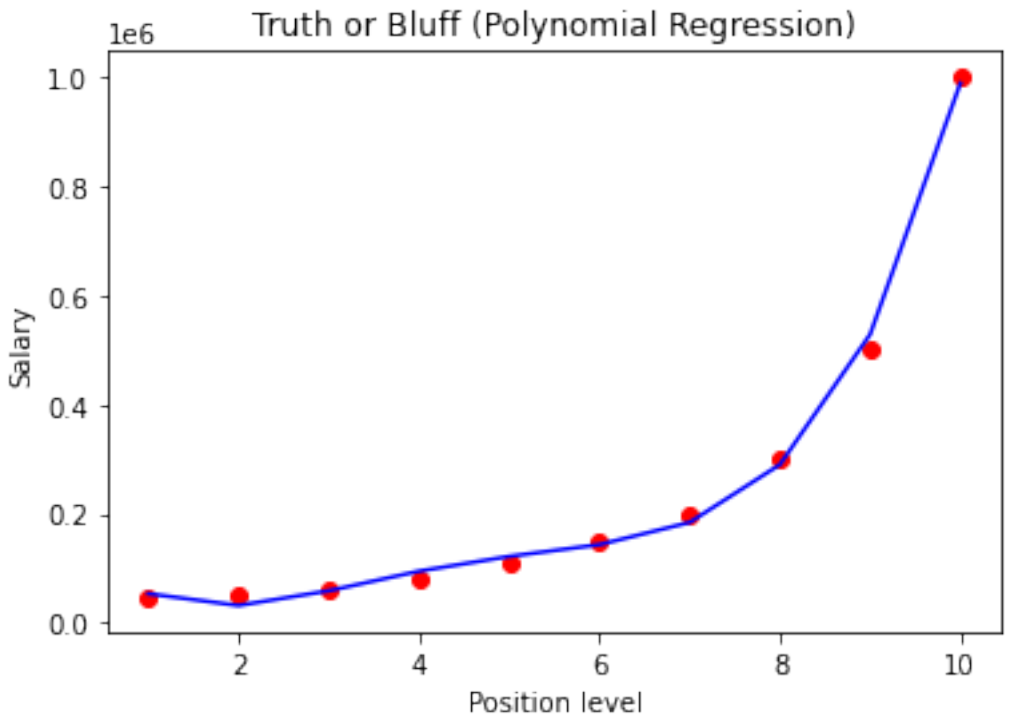
1.5 Visualising the Linear Regression results

[ ]:
```
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()
```



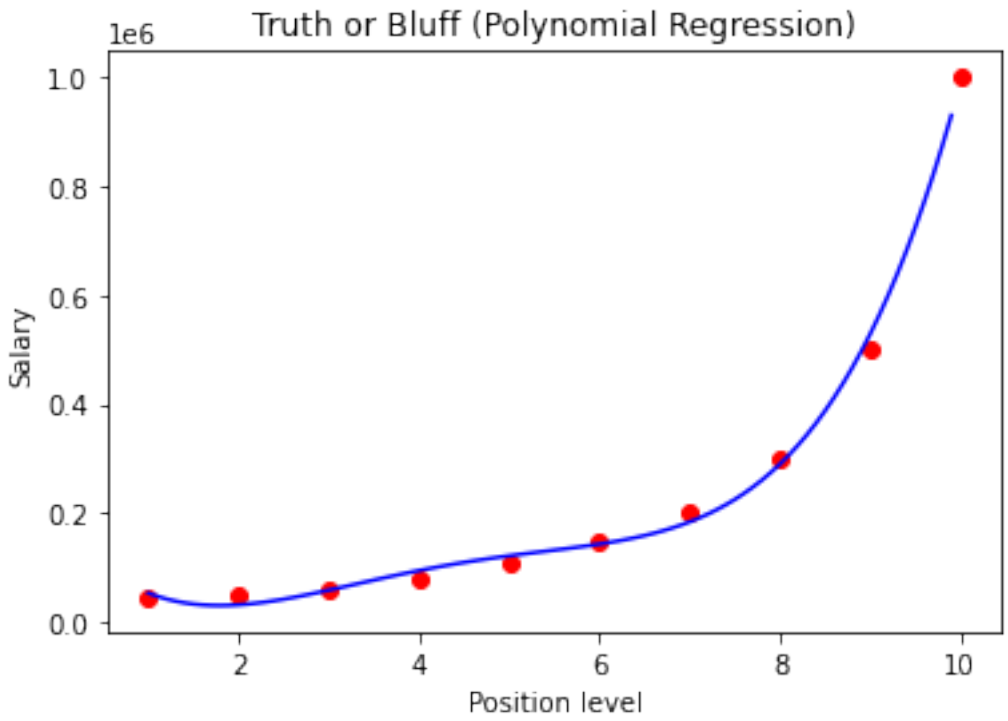
1.6 Visualising the Polynomial Regression results

[ ]:
```
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()
```



1.7 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()
```



1.8 Predicting a new result with Linear Regression

```
[ ]: lin_reg.predict([[6.5]])
```

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

1.9 Predicting a new result with Polynomial Regression

```
[ ]: lin_reg_2.predict(poly_reg.fit_transform([[6.5]]))
```

```
[ ]: array([158862.45265155])
```

#RESULT

PREDICTION OF SALARIES ACCORDING TO THE YEARS OF EXPERIENCE AND JOB POSITION, AS A MACHINE LEARNING SPECIALIST MY TASK IS THAT PREDICT THE SUCCEESS RATE