Polynomial Regression

November 15, 2022

1 Polynomial Regression

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

     # Importing the dataset
     datas = pd.read_csv('data.csv')
     datas
```

```
[1]:    sno  Temperature  Pressure
     0    1            0    0.0002
     1    2           20    0.0012
     2    3           40    0.0060
     3    4           60    0.0300
     4    5           80    0.0900
     5    6          100    0.2700
```

```python
[2]: X = datas.iloc[:, 1:2].values
     y = datas.iloc[:, 2].values
```

```python
[3]: # Fitting Linear Regression to the dataset
     from sklearn.linear_model import LinearRegression
     lin = LinearRegression()

     lin.fit(X, y)
```

```
[3]: LinearRegression()
```

```python
[4]: # Fitting Polynomial Regression to the dataset
     from sklearn.preprocessing import PolynomialFeatures

     poly = PolynomialFeatures(degree = 4)
     X_poly = poly.fit_transform(X)

     poly.fit(X_poly, y)
```
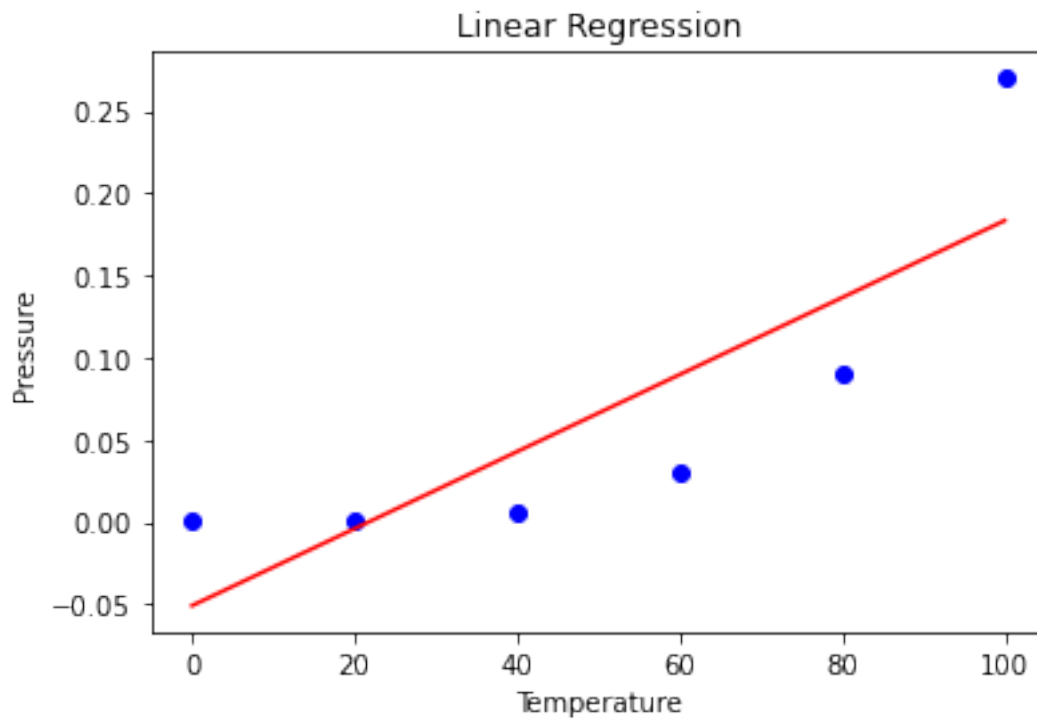
```
lin2 = LinearRegression()
lin2.fit(X_poly, y)
```

[4]: LinearRegression()

[5]:
```
# Visualising the Linear Regression results
plt.scatter(X, y, color = 'blue')

plt.plot(X, lin.predict(X), color = 'red')
plt.title('Linear Regression')
plt.xlabel('Temperature')
plt.ylabel('Pressure')

plt.show()
```



[6]:
```
# Visualising the Polynomial Regression results
plt.scatter(X, y, color = 'blue')

plt.plot(X, lin2.predict(poly.fit_transform(X)), color = 'red')
plt.title('Polynomial Regression')
plt.xlabel('Temperature')
plt.ylabel('Pressure')
```

```
plt.show()
```

Polynomial Regression
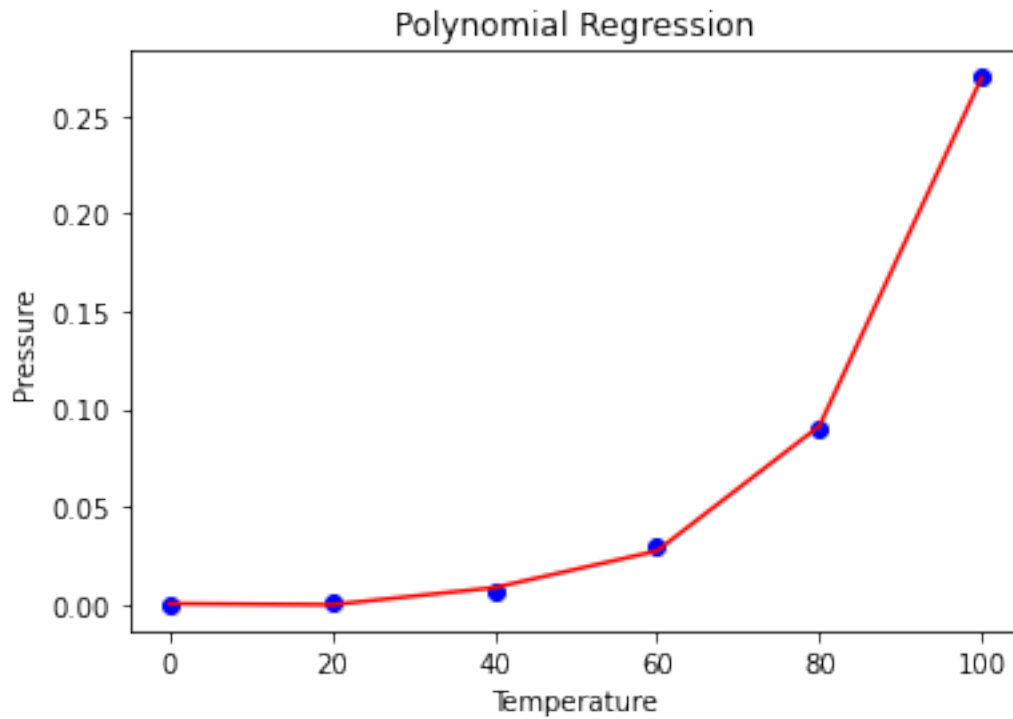

```
[7]: # Predicting a new result with Linear Regression after converting predict
     ↪variable to 2D array
     pred = 110.0
     predarray = np.array([[pred]])
     lin.predict(predarray)
```

```
[7]: array([0.20675333])
```

```
[8]: # Predicting a new result with Polynomial Regression after converting predict
     ↪variable to 2D array
     pred2 = 110.0
     pred2array = np.array([[pred2]])
     lin2.predict(poly.fit_transform(pred2array))
```

```
[8]: array([0.43295877])
```