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1. Link Github

[https://github.com/Ghinaaliya/UTS/blob/main/Ghina%20Aliya\\_12119598\\_3KA17.ipynb](https://github.com/Ghinaaliya/UTS/blob/main/Ghina%20Aliya_12119598_3KA17.ipynb)

2. Ubah dataset dengan rentang waktu dari 1 September 2021 – 30 September 2021.

	Date	Open	High	Low	Close	Adj Close	Volume
0	2021-09-01	2913.000000	2936.409912	2912.290039	2916.840088	2916.840088	791200
1	2021-09-02	2918.989990	2926.500000	2882.129883	2884.379883	2884.379883	1092200
2	2021-09-03	2882.919922	2907.540039	2870.100098	2895.500000	2895.500000	955200
3	2021-09-07	2894.989990	2916.479980	2890.820068	2910.379883	2910.379883	758500
4	2021-09-08	2907.870117	2911.020020	2884.000000	2897.669922	2897.669922	774300
5	2021-09-09	2897.669922	2913.389893	2888.679932	2898.270020	2898.270020	739900
6	2021-09-10	2908.870117	2920.379883	2834.830078	2838.419922	2838.419922	1644800
7	2021-09-13	2864.020020	2883.820068	2845.649902	2869.300049	2869.300049	1008800
8	2021-09-14	2883.219971	2894.550049	2858.110107	2868.120117	2868.120117	945800
9	2021-09-15	2875.179932	2911.629883	2845.120117	2904.120117	2904.120117	1032400
10	2021-09-16	2902.419922	2904.000000	2868.326904	2887.469971	2887.469971	1014600
11	2021-09-17	2875.969971	2884.989990	2821.229980	2829.270020	2829.270020	3002000
12	2021-09-20	2780.003906	2787.250000	2741.060059	2780.340088	2780.340088	1745900
13	2021-09-21	2802.340088	2816.231934	2778.110107	2792.929932	2792.929932	906500
14	2021-09-22	2801.010010	2831.669922	2789.435059	2818.770020	2818.770020	1103400
15	2021-09-23	2832.189941	2845.049072	2821.929932	2836.530029	2836.530029	863600
16	2021-09-24	2818.919922	2858.070068	2817.010010	2852.659912	2852.659912	747500
17	2021-09-27	2831.709961	2850.000000	2810.000000	2830.020020	2830.020020	942200
18	2021-09-28	2781.770020	2792.129883	2714.000000	2723.679932	2723.679932	2109500
19	2021-09-29	2742.194092	2747.969971	2685.000000	2690.419922	2690.419922	1316900

3. Tentukan hasil prediksi untuk tanggal 29 September 2021!

```
▶ day = [[29]]
print('The RBF SVR predicted:', rbf_svr.predict(day))
print('The Linear SVR predicted:', lin_svr.predict(day))
print('The Polynomial SVR predicted:', poly_svr.predict(day))

The RBF SVR predicted: [2689.53539967]
The Linear SVR predicted: [2811.80476585]
The Polynomial SVR predicted: [2757.68966763]
```

4. Sebutkan model mana yang paling baik untuk menentukan prediksi pada tanggal 29 September 2021! Linear, Polynomial, atau RBF?

Model terbaik untuk menentukan prediksi pada tanggal 29 adalah RBF yang merupakan model Regresi Vektor Pendukung yang menggunakan kernel yang disebut fungsi basis radial.

5.

## IMPORT LIBRARY

```
In [1]: #Import the libraries
from sklearn.svm import SVR #Support Vector Regression (SVR)
import numpy as np #library komputasi numerik
import pandas as pd #library untuk data science
import matplotlib.pyplot as plt #library untuk visualisasi data
plt.style.use('seaborn-darkgrid') #Style dari plot
```

## LOAD DATA

```
In [2]: #Load the data
#from google.colab import files # Use to load data on Google Colab
#uploaded = files.upload() # Use to load data on Google Colab
df = pd.read_csv('GOOG.csv') #Load data .csv sesuai dengan nama file
df
```

# PREPARE DATA TRAINING

```
In [4]: df = df.head(len(df)-1) #untuk menghapus baris ke 19
df
```

## Membuat Variabel Independet dan Dependent Data Set

```
In [5]: #Create the lists / X and y data set
days = list()
adj_close_prices = list()

In [6]: df_days = df.loc[:, 'Date'] #Mengambil data kolom Date
df_adj_close = df.loc[:, 'Adj Close'] #Mengambil data kolom Adj Close

In [7]: #Create the independent data set
for day in df_days:
    days.append( [int(day.split('-')[2])] ) #Menambahkan data ke list yang sudah dipotong dengan pemisah '-' dan array ke [2] (tanggal)
#Create the dependent data set
for adj_close_price in df_adj_close:
    adj_close_prices.append( float(adj_close_price) ) #Menambahkan data ke list

In [8]: print(days) #Untuk print tanggal yang sudah didapat dari kode sebelum ini
[[3], [4], [5], [6], [7], [10], [11], [12], [13], [14], [17], [18], [19], [20], [21], [24], [25], [26], [27]]
```

## Membuat dan Melatih Model SVR

```
In [9]: #Create and train an SVR model using a linear kernel
lin_svr = SVR(kernel='linear', C=1000.0)
lin_svr.fit(days, adj_close_prices) #Create and train an SVR model using a polynomial kernel
poly_svr = SVR(kernel='poly', C=1000.0, degree=2)
poly_svr.fit(days, adj_close_prices) #Create and train an SVR model using a RBF kernel
rbf_svr = SVR(kernel='rbf', C=2500.0, gamma=0.20)
rbf_svr.fit(days, adj_close_prices)

Out[9]: SVR(C=2500.0, gamma=0.2)
```

## Membuat Grafik Model

```
In [10]: #Plot the models on a graph to see which has the best fit
plt.figure(figsize=(16,8))
plt.scatter(days, adj_close_prices, color = 'black', label='Original Data')
plt.plot(days, rbf_svr.predict(days), color = 'green', label='RBF Model')
plt.plot(days, poly_svr.predict(days), color = 'orange', label='Polynomial Model')
plt.plot(days, lin_svr.predict(days), color = 'purple', label='Linear Model')
plt.xlabel('Days')
plt.ylabel('Adj Close Price')
plt.title('Support Vector Regression')
plt.legend()
plt.show()
```

## Membuat Prediksi

```
In [11]: day = [[28]] #Untuk menentukan hari yang ingin di prediksi
print('The RBF SVR predicted:', rbf_svr.predict(day))
print('The Linear SVR predicted:', lin_svr.predict(day))
print('The Polynomial SVR predicted:', poly_svr.predict(day))
```

```
The RBF SVR predicted: [2322.68371325]
The Linear SVR predicted: [2356.910132]
The Polynomial SVR predicted: [2407.73389272]
```