Creating Dataset with Sliding Windows

PNT2022TMID26965

```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
ds=pd.read_csv(r"/content/Crude-Oil-Prices-Daily.csv",parse_dates
=["Date"], index_col ="Date")
ds.head()
ds[:10]
```

```
            Closing Value
Date
1986-01-02          25.56
1986-01-03          26.00
1986-01-06          26.53
1986-01-07          25.85
1986-01-08          25.87
1986-01-09          26.03
1986-01-10          25.65
1986-01-13          25.08
1986-01-14          24.97
1986-01-15          25.18
```

```
ds.isnull().sum()
```

```
Closing Value    7
dtype: int64
```

```
ds.dropna(axis=0,inplace=True)
ds.isnull().sum()
```

```
Closing Value    0
dtype: int64
```

```
data=ds.reset_index()['Closing Value']
data
```

```
0       25.56
1       26.00
2       26.53
3       25.85
4       25.87
        ...
8211    73.89
8212    74.19
8213    73.05
8214    73.78
```

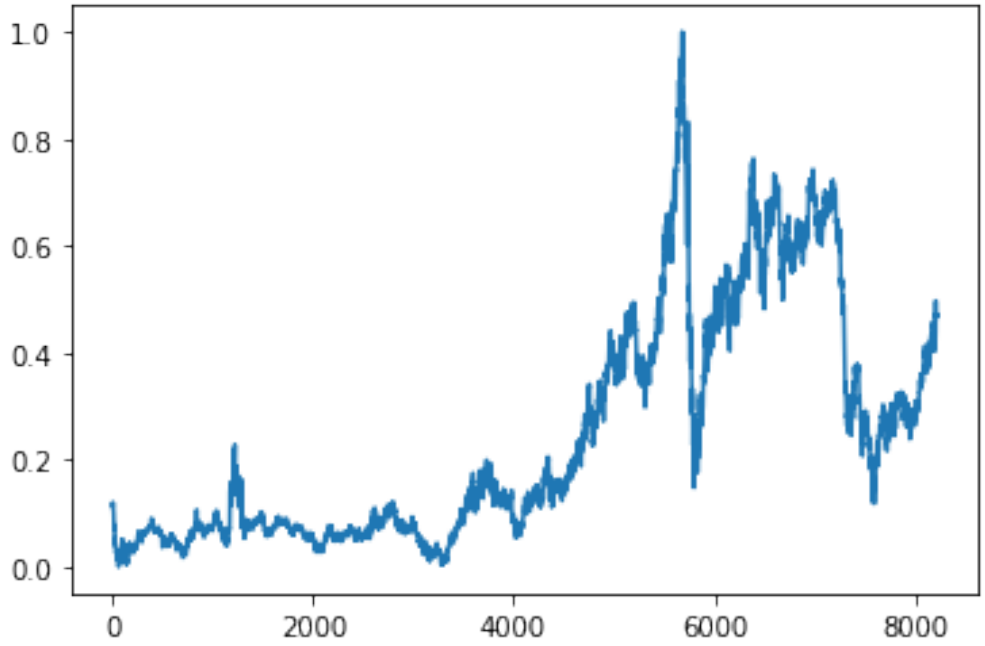
```
8215    73.93
Name: Closing Value, Length: 8216, dtype: float64
```

```
from sklearn.preprocessing import MinMaxScaler
scaler=MinMaxScaler(feature_range=(0,1))
data=scaler.fit_transform(np.array(data).reshape(-1,1))
data
```

```
array([[0.11335703],
       [0.11661484],
       [0.12053902],
       ...,
       [0.46497853],
       [0.47038353],
       [0.47149415]])
```

```
plt.plot(data)
```

```
[<matplotlib.lines.Line2D at 0x7f70ffa32d50>]
```




```
training_size=int(len(data)*0.65)
test_size=len(data)-training_size
train_data,test_data=data[0:training_size,:],data[training_size:len(da
ta),:1]
training_size,test_size
```

```
(5340, 2876)
```

```
train_data.shape
```

```
(5340, 1)
```

```
def create_dataset(dataset,time_step=1):
  dataX,dataY=[],[]
  for i in range(len(dataset)-time_step-1):
    a=dataset[i:(i+time_step),0]
    dataX.append(a)
    dataY.append(dataset[i+time_step,0])
  return np.array(dataX),np.array(dataY)

time_step=10
x_train,y_train=create_dataset(train_data,time_step)
x_test,y_test=create_dataset(test_data,time_step)
print(x_train.shape)
print(y_train.shape)
```

```
(5329, 10)
(5329,)
```

```
print(x_test.shape)
print(y_test.shape)
```

```
(2865, 10)
(2865,)
```

```
x_train
```

```
array([[0.11335703, 0.11661484, 0.12053902, ..., 0.10980305, 0.1089886
,
        0.11054346],
       [0.11661484, 0.12053902, 0.11550422, ..., 0.1089886 ,
0.11054346,
        0.10165852],
       [0.12053902, 0.11550422, 0.1156523 , ..., 0.11054346,
0.10165852,
        0.09906708],
       ...,
       [0.36731823, 0.35176958, 0.36080261, ..., 0.36391234,
0.37042796,
        0.37042796],
       [0.35176958, 0.36080261, 0.35354657, ..., 0.37042796,
0.37042796,
        0.37879461],
       [0.36080261, 0.35354657, 0.35295424, ..., 0.37042796,
0.37879461,
        0.37916482]])
```

```
x_test
```

```
array([[0.38005331, 0.36872501, 0.37324152, ..., 0.3537687 ,
0.35465719,
        0.3499926 ],
       [0.36872501, 0.37324152, 0.38205242, ..., 0.35465719, 0.3499926
,
```

```
        0.3465867 ],
       [0.37324152, 0.38205242, 0.38042352, ..., 0.3499926 , 0.3465867
,
        0.34355101],
       ...,
       [0.40604176, 0.41218718, 0.41041019, ..., 0.46794017,
0.47297497,
        0.47119799],
       [0.41218718, 0.41041019, 0.43513994, ..., 0.47297497,
0.47119799,
        0.47341922],
       [0.41041019, 0.43513994, 0.4417296 , ..., 0.47119799,
0.47341922,
        0.46497853]])

x_train1=x_train.reshape(x_train.shape[0],x_train.shape[1],1)
x_test=x_test.reshape(x_test.shape[0],x_test.shape[1],1)
x_train1

array([[[0.11335703],
        [0.11661484],
        [0.12053902],
        ...,
        [0.10980305],
        [0.1089886 ],
        [0.11054346]],

       [[0.11661484],
        [0.12053902],
        [0.11550422],
        ...,
        [0.1089886 ],
        [0.11054346],
        [0.10165852]],

       [[0.12053902],
        [0.11550422],
        [0.1156523 ],
        ...,
        [0.11054346],
        [0.10165852],
        [0.09906708]],

       ...,

       [[0.36731823],
        [0.35176958],
        [0.36080261],
        ...,
        [0.36391234],
```

```
 [0.37042796],
 [0.37042796]],

[[0.35176958],
 [0.36080261],
 [0.35354657],
 ...,
 [0.37042796],
 [0.37042796],
 [0.37879461]],

[[0.36080261],
 [0.35354657],
 [0.35295424],
 ...,
 [0.37042796],
 [0.37879461],
 [0.37916482]]])
```