CreatingDatasetwithSlidingWindows

PNT2022TMID31476

```
importnumpyas
npimportpandasas pdimport
seabornassns
importmatplotlib.pyplotasplt
ds=pd.read_csv(r"/content/Crude-Oil-Prices-Daily.csv",parse_dates
=["Date"],index_col="Date")ds
.head() ds[:10]
```

```
           ClosingValue 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()C
```

```
losing Value      7
 dtype: int64
```

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

```
ClosingValue      0
 dtype: int64
```

```
 data=ds.reset_index()['ClosingValue']data
```

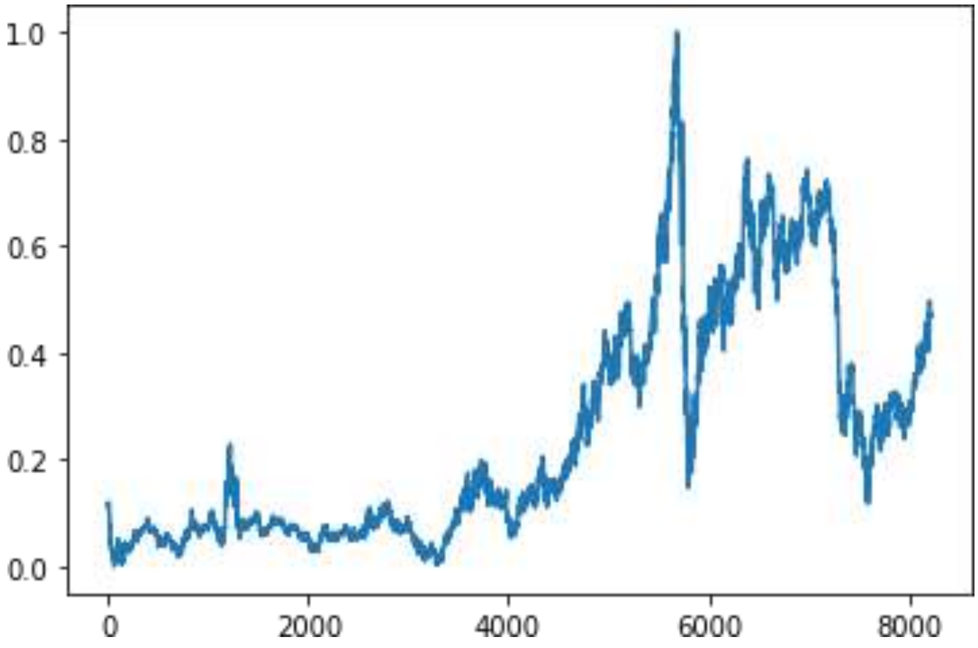
```
 0       25.56
 1       26.00
 2       26.53
 3       25.85
 4       25.87
         ...
 8211    73.89
 8212    74.19
```

```
8213    73.05
8214    73.78
8215 73.93
Name: Closing Value, Length:8216,dtype: float64
```

```
fromsklearn.preprocessingimportMinMaxScalerscaler=MinMa
xScaler(feature_range=(0,1))data=scaler.fit_transform(n
p.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 at0x7f70ffa32d50>]
```



```
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(dat
a),:1]
training_size,test_size
```

```
(5340,2876) train_data.shape
```

```
(5340,1)
defcreate_dataset(dataset,time_step=1):da
 taX,dataY=[],[]
```

```
   foriinrange(len(dataset)-
     time_step1):a=dataset[i:(i+time_step),0]dataX.appen
     d(a)dataY.append(dataset[i+time_step,0])
   returnnp.array(dataX),np.array(dataY)
```

```
time_step=10x_train,y_train=create_dataset(train_data,t
ime_step)x_test,y_test=create_dataset(test_data,time_st
ep)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]]])
```