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Course: DSC-540

Assignment: Support Vector Machine Regressor

In [1]:
```
#Importing the requried packages
import pandas as pd
import numpy as np
from sklearn.svm import SVR
from sklearn.model_selection import GridSearchCV
from sklearn.metrics import mean_squared_error
```

Generate 50 data points from this function in the range [– 3, 3].

In [ ]:
```
f = lambda x:np.sin(np.pi*x)/(np.pi*x)

x = np.linspace(-3,3,50)
```

Add Gaussian noise to the data

In [ ]:
```
y = f(x) + np.random.normal(0,0.9,len(x))

df = pd.DataFrame({'x':x, 'y':y})
```

In [ ]:
```
df.head()
```

Out[ ]:

	x	y
0	-3.000000	-0.987897
1	-2.877551	1.201214
2	-2.755102	-1.690335
3	-2.632653	0.005651
4	-2.510204	-0.487576

Train an SVM regressor with the data generated

In [ ]:
```
from sklearn.model_selection import train_test_split

X_train,X_test,y_train,y_test=train_test_split(df['x'],df['y'] , test_size=0.2)
```

In [ ]:
```
parameter_for_SVR = [{'kernel': ['rbf'], 'gamma': [1e-5, 1e-2, 0.01, 0.1, 0.2, 0.6, 0.9, 1.2],'C': [1, 10, 100,

svr = GridSearchCV(SVR(), parameter_for_SVR, cv = 6)
y_pred_test = svr.fit(np.array(X_train).reshape(-1,1), y_train).predict(np.array(X_test).reshape(-1,1))

mse = mean_squared_error(y_test,y_pred_test)
mse
```

Out[ ]:
```
1.5819356013390855
```