**LAB EXERCISE – 19**

**SUPPORT VECTOR REGRESSION**

**Aim of the Experiment**

To write python program for implementing Support Vector Regression.

**Reference to Textbook and Explanation**

Chapter 11 and Appendix 2 for details about Support Vector Regression

Random dataset is created for testing SVR using the command,

X,y = make\_regression(n\_samples=50,n\_features=1,noise=0.1)

Support Vector Regression model is created using the command

model = svm.SVR(kernel='linear',gamma='auto')

The model is applied for the input data using the command

model.fit(X,y)

**WARNING – Random dataset is used for Listing 1. So, the dataset would be generated at every run. As dataset is generated again, the results would vary every time the program is run.**

**Program Listing - 1**

import matplotlib.pyplot as plt

from sklearn.datasets import make\_regression

from sklearn import svm

print("Support Vector Regression\n\n")

# SVR Regression

# Create random dataset with 2 features. Dataset has 50 samples with noise 0.1

X,y = make\_regression(n\_samples=50,n\_features=1,noise=0.1,random\_state=0)

plt.scatter(X,y, color='green')

plt.title('Regression among X and y')

plt.xlabel('X - axis - X')

plt.ylabel('Y- Dependent - y')

# Support Vector Regression model creation

model = svm.SVR(kernel='linear',gamma='auto')

model.fit(X,y)

print('Intercept: \n', model.intercept\_)

print('Coefficients: \n', model.coef\_)

print('The regression equation is',model.intercept\_,'+',model.coef\_,'\* X')

pred = model.predict(X)

plt.plot(X,pred)

**Output**

**The Intercept and slope are given along with the fitted diagram as follows:**

Chart, line chart

Description automatically generated