Module – 6 Implementing the Support vector machine.

Implementing necessary packages.
import pandas **as** pd
import numpy **as** np

In [ ]:

import warnings
warnings.filterwarnings('ignore')

In [ ]:

data = pd.read_csv('brain_stroke.csv')

In [ ]:

data.head()

In [ ]:

df = data.dropna()

In [ ]:

from sklearn.preprocessing **import** LabelEncoder
le = LabelEncoder()

var = ['gender','smoking_status']

for i **in** var:
    df[i] = le.fit_transform(df[i]).astype(int)

In [ ]:

df.columns

In [ ]:

df.head()

In [ ]:

df['stroke'].unique()

In [ ]:

del df['ever_married']
del df['work_type']
del df['Residence_type']

In [ ]:

df.head()

In [ ]:

#preprocessing, split test and dataset, split response variable
X = df.drop(labels='stroke', axis=1)
#Response variable

```
Y = df.loc[:,'stroke']
```

In [ ]:

```
import imblearn
from imblearn.over_sampling import RandomOverSampler
from collections import Counter

ros =RandomOverSampler(random_state=1)
x_ros,y_ros=ros.fit_resample(X,Y)
print("OUR DATASET COUNT        : ", Counter(Y))
print("OVER SAMPLING DATA COUNT  : ", Counter(y_ros))
```

In [ ]:

```
from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x_ros, y_ros, test_size=0.30,
random_state=1, stratify=y_ros)
print("Number of training dataset : ", len(x_train))
print("Number of test dataset     : ", len(x_test))
print("Total number of dataset    : ", len(x_train)+len(x_test))
```

Implementing Support vector machine

In [ ]:

```
from sklearn.metrics import confusion_matrix, classification_report,
accuracy_score,plot_confusion_matrix
from sklearn.svm import SVC
```

In [ ]:

```
svc = SVC()
svc.fit(x_train,y_train)
predictSvc =svc.predict(x_test)
```

Finding the accuracy score

In [ ]:

```
accuracy = accuracy_score(y_test, predictSvc)
print("Accuracy of Support vector machine classifier:", accuracy*100)
```

Finding the classification Report

In [ ]:

```
cr = classification_report(y_test, predictSvc)
print("Classification report \n\n:", cr)
```

Finding the Confusion matrix

In [ ]:

```
cm = confusion_matrix(y_test, predictSvc)
print("Confusion matrix:\n", cm)
```

In [ ]:

```
import matplotlib.pyplot as plt
fig, ax = plt.subplots(figsize=(6,6))
plot_confusion_matrix(svc, x_test, y_test, ax=ax)
plt.title('Confusion matrix of Support vector machine')
plt.show()
```