Module 6: Machine Learning Using Python – I

Assignment

1. Consider a random 10 x 2 matrix representing Cartesian coordinates, convert them to Polar coordinates.

2. Create random vector of size 50 and replace the maximum value by 0 and minimum value by 100.

3. Create below matrix using scipy.

```
[[ 2.  0.  1.  0.  0.  0.  0.  0.  0.  0.]
 [ 0.  2.  0.  1.  0.  0.  0.  0.  0.  0.]
 [ 1.  0.  2.  0.  1.  0.  0.  0.  0.  0.]
 [ 0.  1.  0.  2.  0.  1.  0.  0.  0.  0.]
 [ 0.  0.  1.  0.  2.  0.  1.  0.  0.  0.]
 [ 0.  0.  0.  1.  0.  2.  0.  1.  0.  0.]
 [ 0.  0.  0.  0.  1.  0.  2.  0.  1.  0.]
 [ 0.  0.  0.  0.  0.  1.  0.  2.  0.  1.]
 [ 0.  0.  0.  0.  0.  0.  1.  0.  2.  0.]
 [ 0.  0.  0.  0.  0.  0.  0.  1.  0.  2.]]
```


4. Reproduce given plot by correcting the below code.

```
from pylab import *

n = 256

X = np.linspace(-np.pi,np.pi,n,endpoint=True)

Y = np.sin(2*X)

plot (X, Y+1, color='blue', alpha=1.00)

plot (X, Y-1, color='blue', alpha=1.00)

show()
```