School Nova Computer Science 201
Homework 2-13-2022

Task 1
Let's generate an artificial dataset to apply machine learning. We are going to use the following function:

```
from sklearn.datasets import make_gaussian_quantiles
X, Y = make_gaussian_quantiles(n_samples=1000, n_features=3, n_classes=3)
```

Y is what we are trying to predict: it can be either 0, 1, or 2. We can predict Y using the corresponding values in X: for each Y[i] we have three values of X[i].

Print the first value of Y and the corresponding three values of X.

Task 2
Explore the data:

```
fig = plt.figure(num=1, figsize=(4, 4), dpi=200)
ax = fig.add_subplot(projection='3d')
ax.scatter(X[:, 0], X[:, 1], X[:, 2], marker="o", c=Y, s=25, edgecolor="k")
plt.show()
```

Notice that you can rotate the 3D plot by left-clicking on the plot and holding the mouse button pressed.

Task 3
Use SVC model to fit the data. What is the model accuracy?

Task 4
Display predicted values for X values ranged from -3 to 3 (integer values only). Notice that you have 3 X variables, therefore, you will need to display a relatively large number of possibilities: [-3, -3, -3], [-3, -3, -2], … all the way to [3, 3, 3]. You can use nested for loops similar to the classwork code.

Task 5
Follow directions in ***classwork_2_13_22_part2.py*** posted on Google Classroom.