Unit 11: Model Selection and Evaluation
Unit 11 Artefact

e-Portfolio Activity: Model Performance Measurement

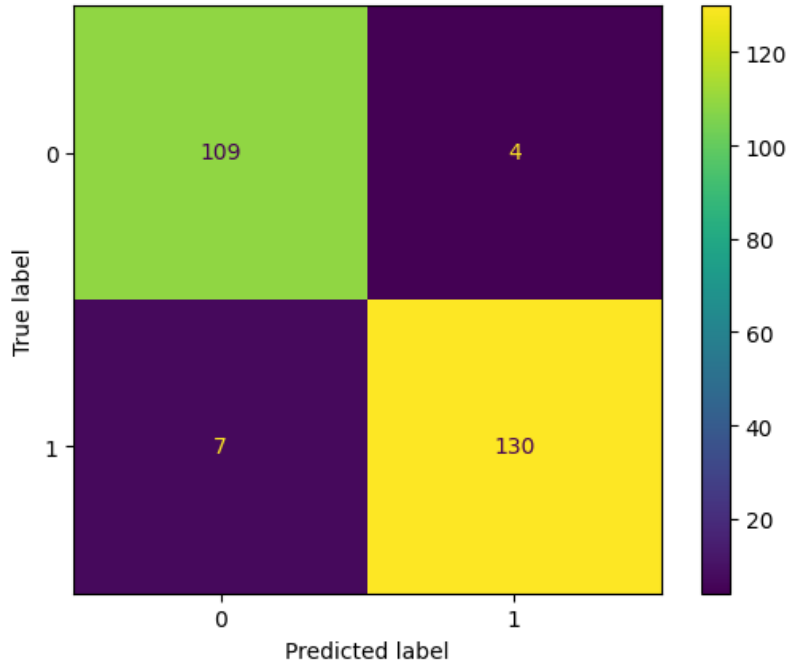
Task: Run the model_Performance_Measurement.ipnyb file and change different parameters and observe its impact on AUC and R2 error.

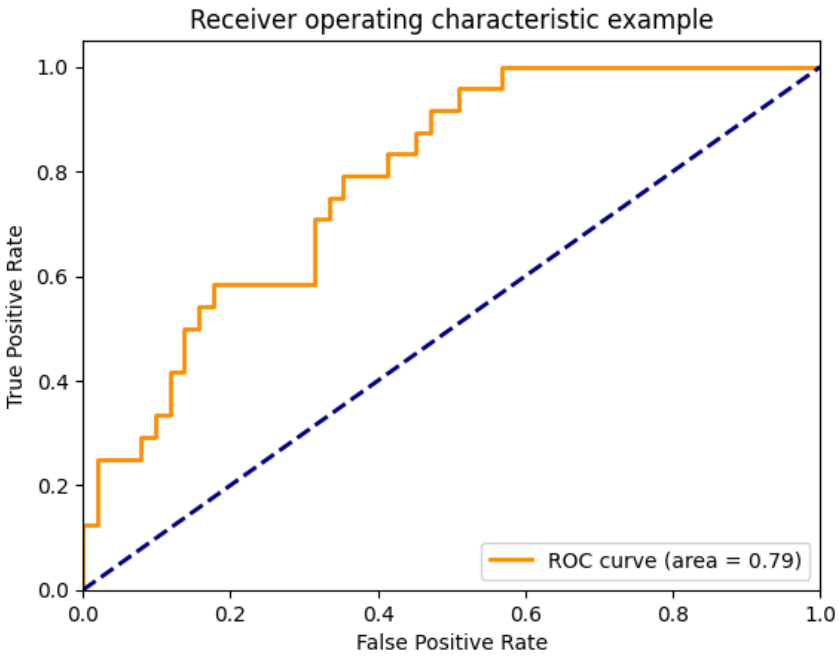
Learning Outcomes: Articulate the legal, social, ethical and professional issues faced by machine learning professionals.

After understanding the baseline model by reviewing the initial setup in the exercises, I identified some key parameters that I could manipulate to observe the impact on AUC and R2 error. These could include things like the learning rate, number of epochs, batch size, and architecture of the ANN such as number of layers and activation functions etc.

In the provided code in the exercise I modified the dataset size and features:

X, y = make_classification(n_samples=1000, n_features=20, random_state=0)





r squared

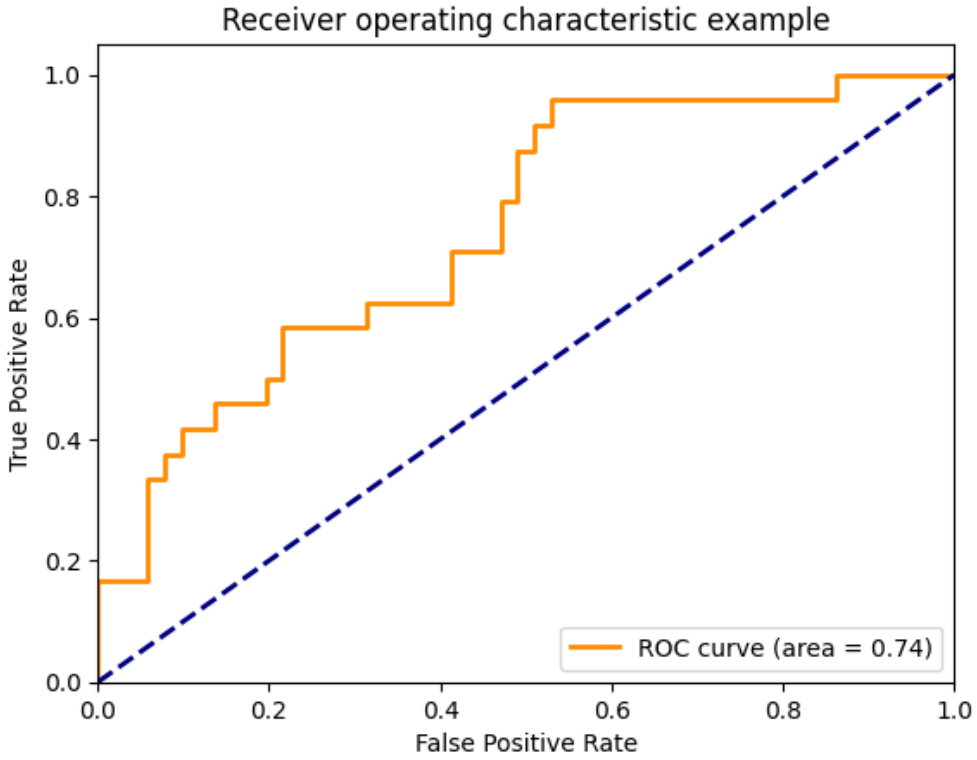
```
from sklearn.metrics import r2_score

r2_score(y_true, y_pred)
```

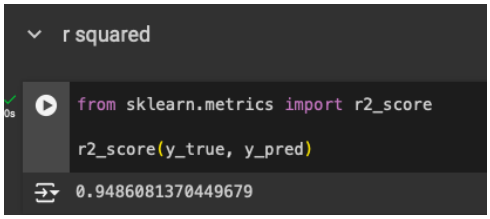
```
0.375
```

Then I modified the SVM parameters:

```
classifier = OneVsRestClassifier(
    svm.SVC(kernel="rbf", C=1.0, probability=True, random_state=random_state)
)
y_score = classifier.fit(X_train, y_train).decision_function(X_test)
```

and the affect on the AUC and R2 are demonstrated below:





Reflection on Learning Outcomes:

Through this exercise, I gained practical experience in tuning machine learning models and understanding some of the trade-offs involved as well as how manipulating different parameters can affect the evaluation metrics AUC and R2. This aligns with the learning outcome as it requires critical thinking about model robustness and the responsibility of the ML professional to understand model tuning and evaluation to ensure the impact is legally and ethically sound (Kubat, 2017).

References:

Kubat, M., 2017. An introduction to machine learning. Springer.