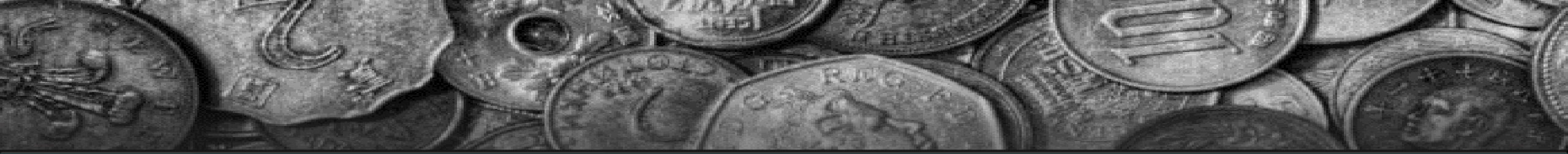


# Fake Currency Detection For Classification Project



BY ASMA ALSULAMI



# The Problem

Fake Currency Detection is a real problem for both individuals and businesses. Counterfeiters are constantly finding new methods and techniques to produce counterfeit banknotes, which are essentially indistinguishable from real money. At least for the human eye.

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**Fake Currency Detection is a task of binary classification in machine learning.**





# Is That Real?

**Identification and Assessment  
of the Counterfeiting Threat to  
Banknotes .**

**Model  
Target**



# Data Source

The data set that was used for fake  
currency detection  
from [http://archive.ics.uci.edu/ml/datasets/  
/banknote+authentication](http://archive.ics.uci.edu/ml/datasets/banknote+authentication). UCI Machine  
Learning Repository

The features we are looking for:

- Variance
- Skewness
- curtosis
- entropy

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# Classification project performance

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Data Exploration  
Data Processing  
train\_test\_split  
StandardScaler  
Logistic Regressing  
Algorithm

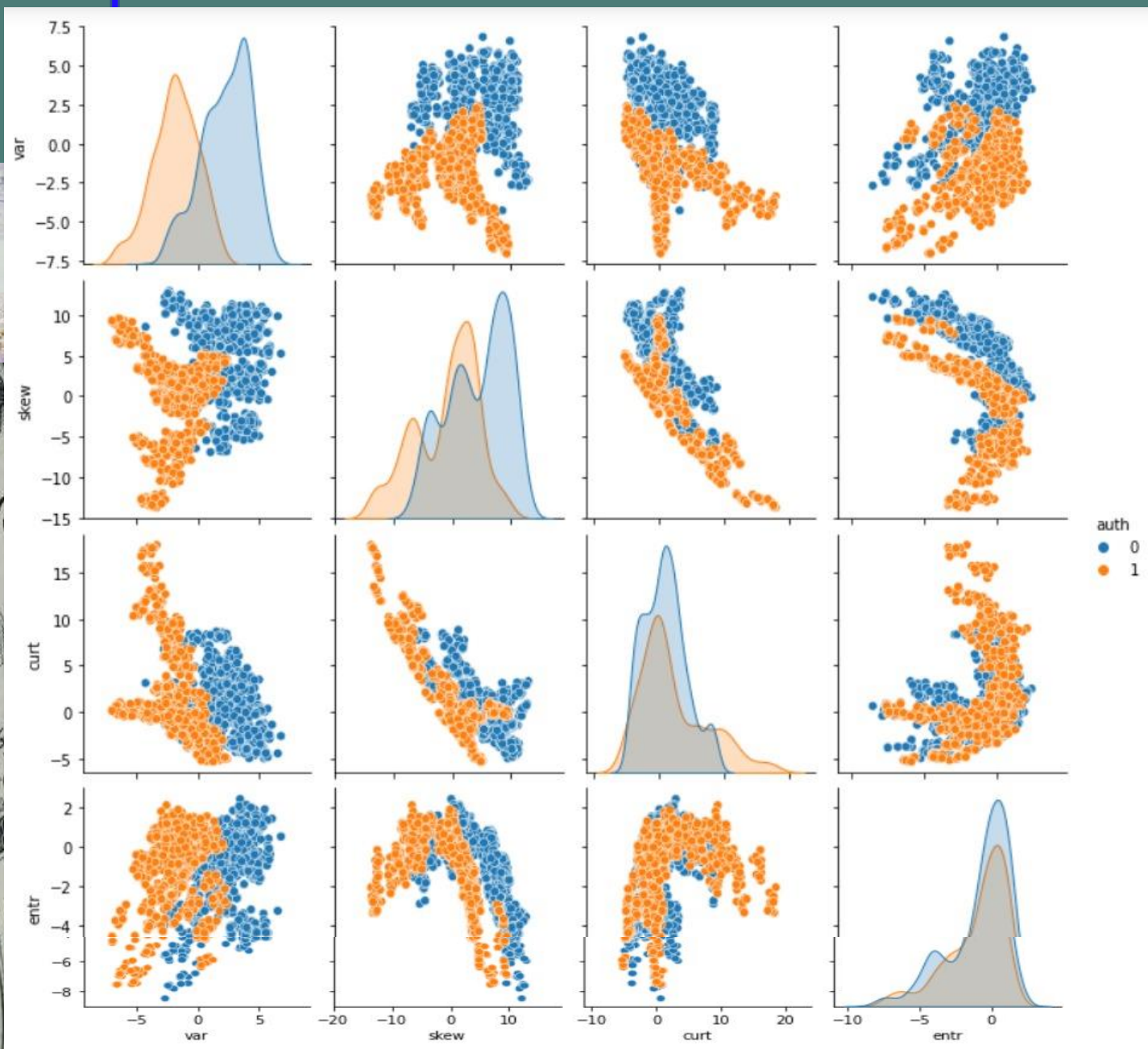


# Results

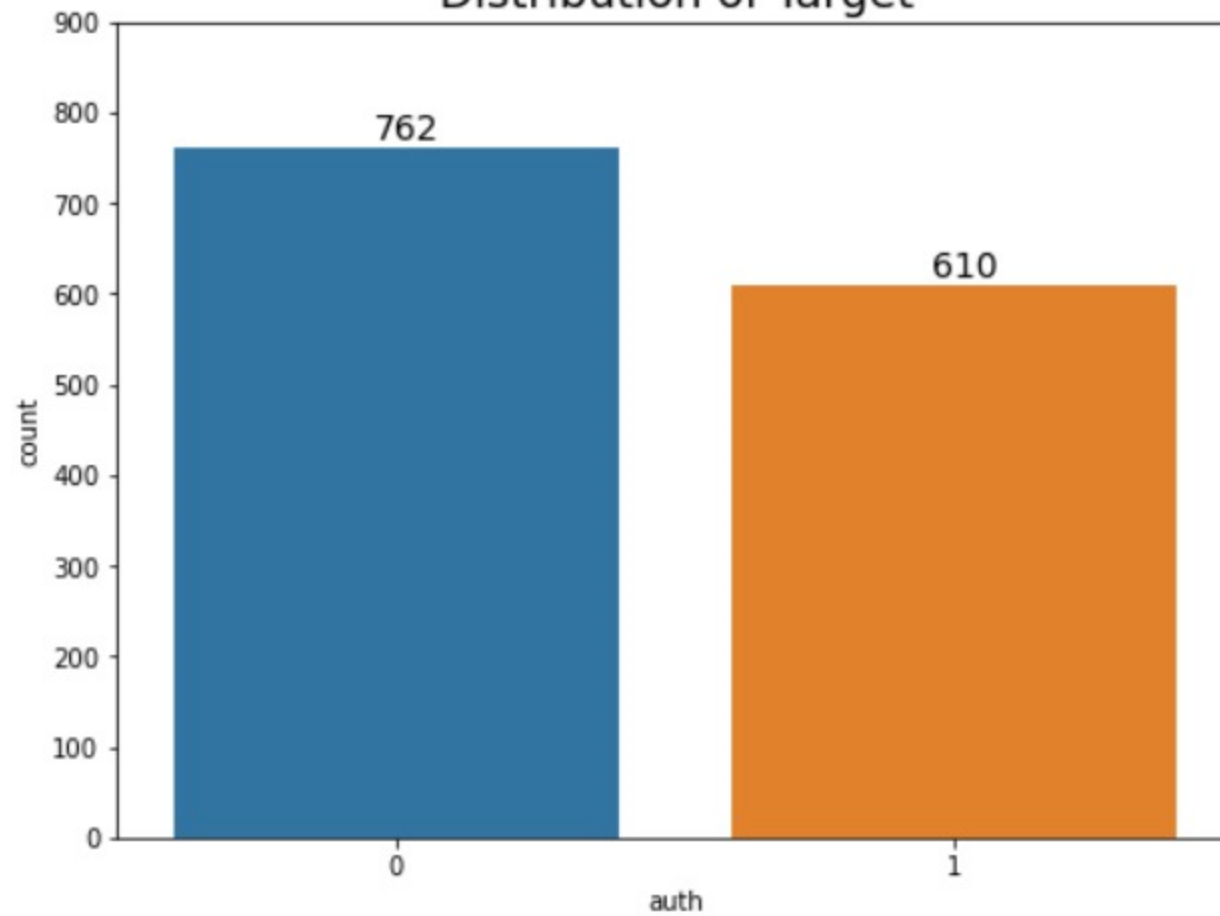
The Results are represented in:  
Graphics and different confusion matrix



## The relationship between all the entities



Distribution of Target



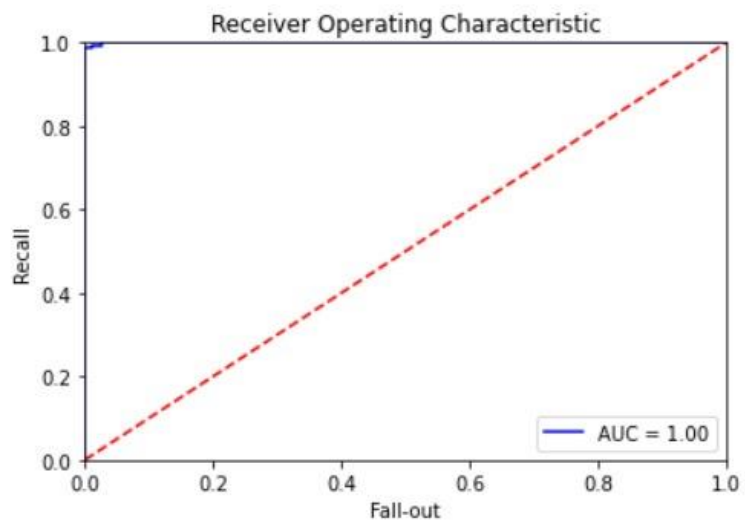


f1\_score: 0.99

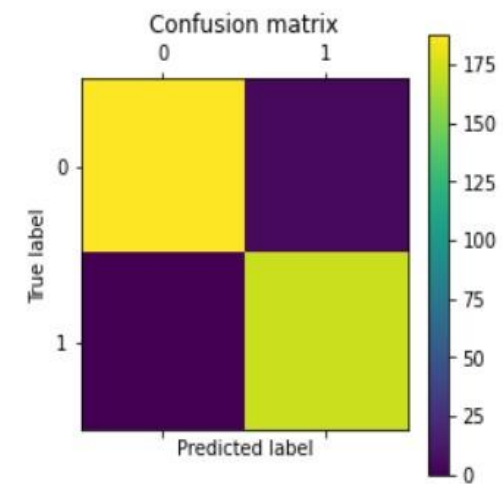
	Pred.Negative	Pred.Positive
Act.Negative	187	6
Act.Positive	0	173

Accuracy = 98.36%

roc\_auc\_score: 0.98



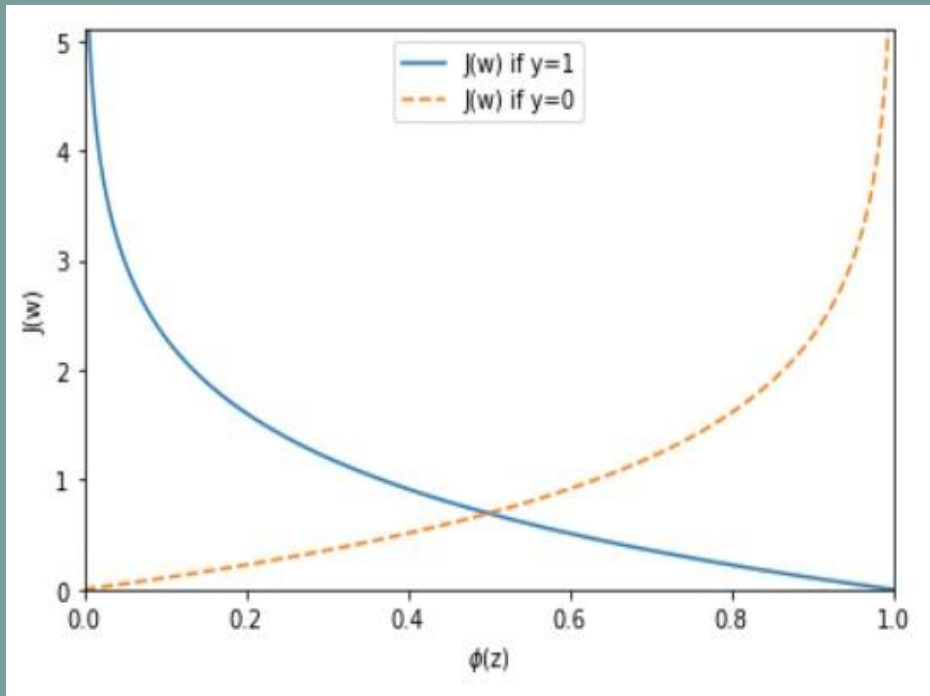
```
[[188  5]  
 [  0 173]]
```



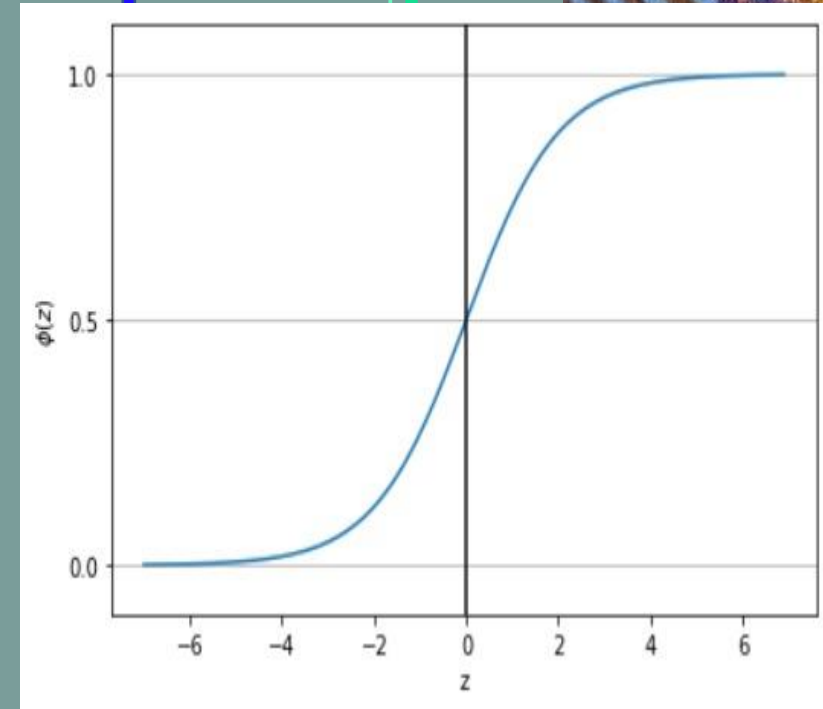


# 5

The weights of the logistic cost function



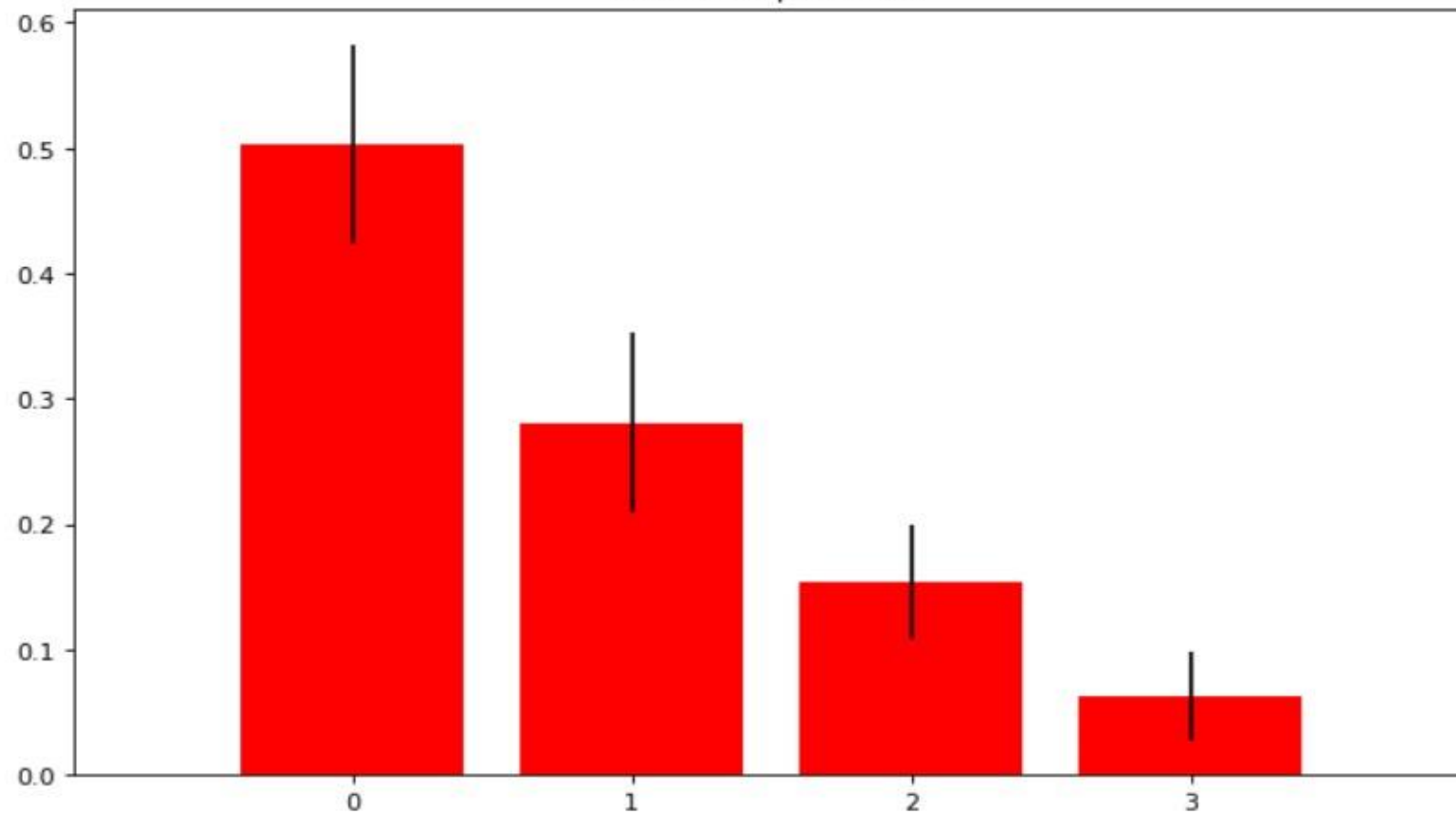
The sigmoid function



Feature ranking:

1. feature 0 - var (0.502450)
2. feature 1 - skew (0.280639)
3. feature 2 - curt (0.153946)
4. feature 3 - entr (0.062965)

Feature importances





# TOOLS

Pandas  
Numpy  
Matplotlib  
Seaborn  
sklearn(model\_selection,  
Preprocessing,  
linear\_model,  
confusion\_matrix,  
Ensemble).



# Conclusion

Our model predicts that this banknote is real.

```
Prediction: Class0  
Probability [0/1]: [0.61 0.38]
```

Thank You