

True	Pred
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
1	0

The error that we typically measure is the 01 loss risk. This can be misleading for imbalanced datasets. Consider the above example. By simply outputting all predictions as the majority class we get a low error of 0.1. But this is misleading because we have a simple trivial classifier.

$$\text{Imbalanced Error} = 1/10 = 0.1$$

We can correct for this by measuring the balanced error. This is simply the average 01 loss (error) across each class. In the above example the error in predicting class 0 is 0%. But the error in predicting class 1 is 100%. Thus the balanced error is

$$\text{Balanced error} = (100+0)/2 = 50\% \text{ (or } 0.5\text{)}.$$