



deeplearning.ai

Setting up  
your goal

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Satisficing and  
optimizing metrics

# Another cat classification example

optimizing ↓      ↓ satisficing

Classifier	Accuracy	Running time
A	90%	80ms
B	92%	95ms
C	95%	1,500ms

←

1) (a bit artificial)

$$\text{Cost} = \text{accuracy} - 0.5 \times \text{Running Time}$$

2) { maximize accuracy  
 subject to Running Time ≤ 100 ms.

↓  
 N metrics : 1 optimizing  
 N-1 satisficing

Wakewords / Trigger words

Alexa, OK Google,

Hey Siri, nihao baidu  
 你好 百度

↓

{ accuracy.  
 #false positive

↓

{ maximize accuracy.  
 s.t. ≤ 1 false positive  
every 24 hours.

## Satisficing and optimizing metric

There are different metrics to evaluate the performance of a classifier, they are called evaluation matrices. They can be categorized as satisficing and optimizing matrices. It is important to note that these evaluation matrices must be evaluated on a training set, a development set or on the test set.

Example: Cat vs Non-cat

Classifier	Accuracy	Running time
A	90%	80 ms
B	92%	95 ms
C	95%	1 500 ms

In this case, accuracy and running time are the evaluation matrices. Accuracy is the optimizing metric, because you want the classifier to correctly detect a cat image as accurately as possible. The running time which is set to be under 100 ms in this example, is the satisficing metric which mean that the metric has to meet expectation set.

The general rule is:

$$N_{metric} = \begin{cases} 1 & \text{Optimizing metric} \\ N_{metric} - 1 & \text{Satisficing metric} \end{cases}$$