ROC Curves

- **False Positive**. Predict an event when there was no event.
- **False Negative**. Predict no event when in fact there was an event.

How to tune the classifier to get the characteristics we want?

News Filtering System

“Is this article about commercial real estate or not?”

(SVM on top of NLTK)

F-score ~ 87%

30 sec @ $100/hr = $0.83 - cost of a false positive

Cost of false negative? ~ 0?

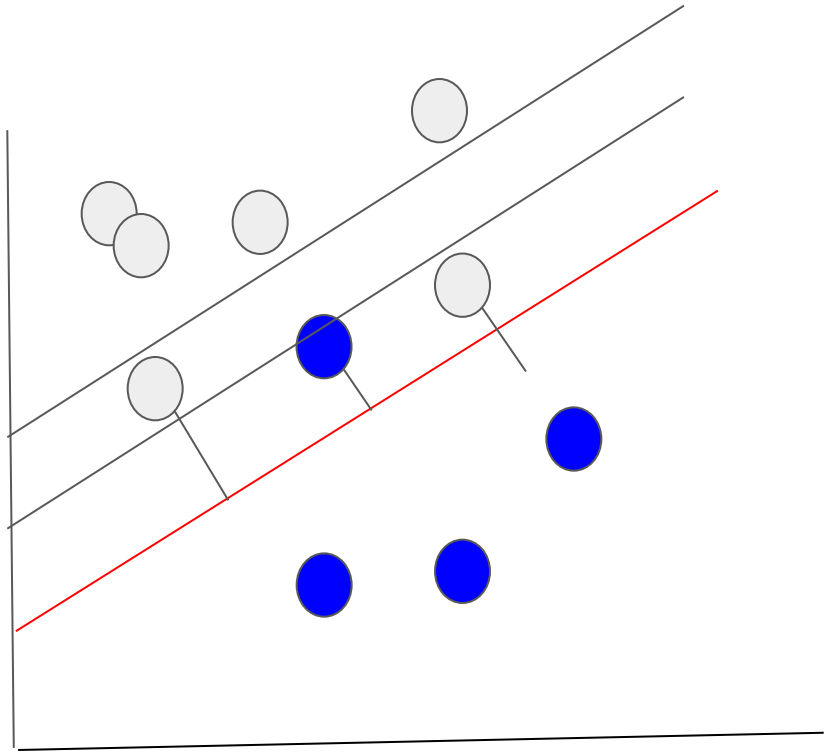
We tuned to minimize false positives

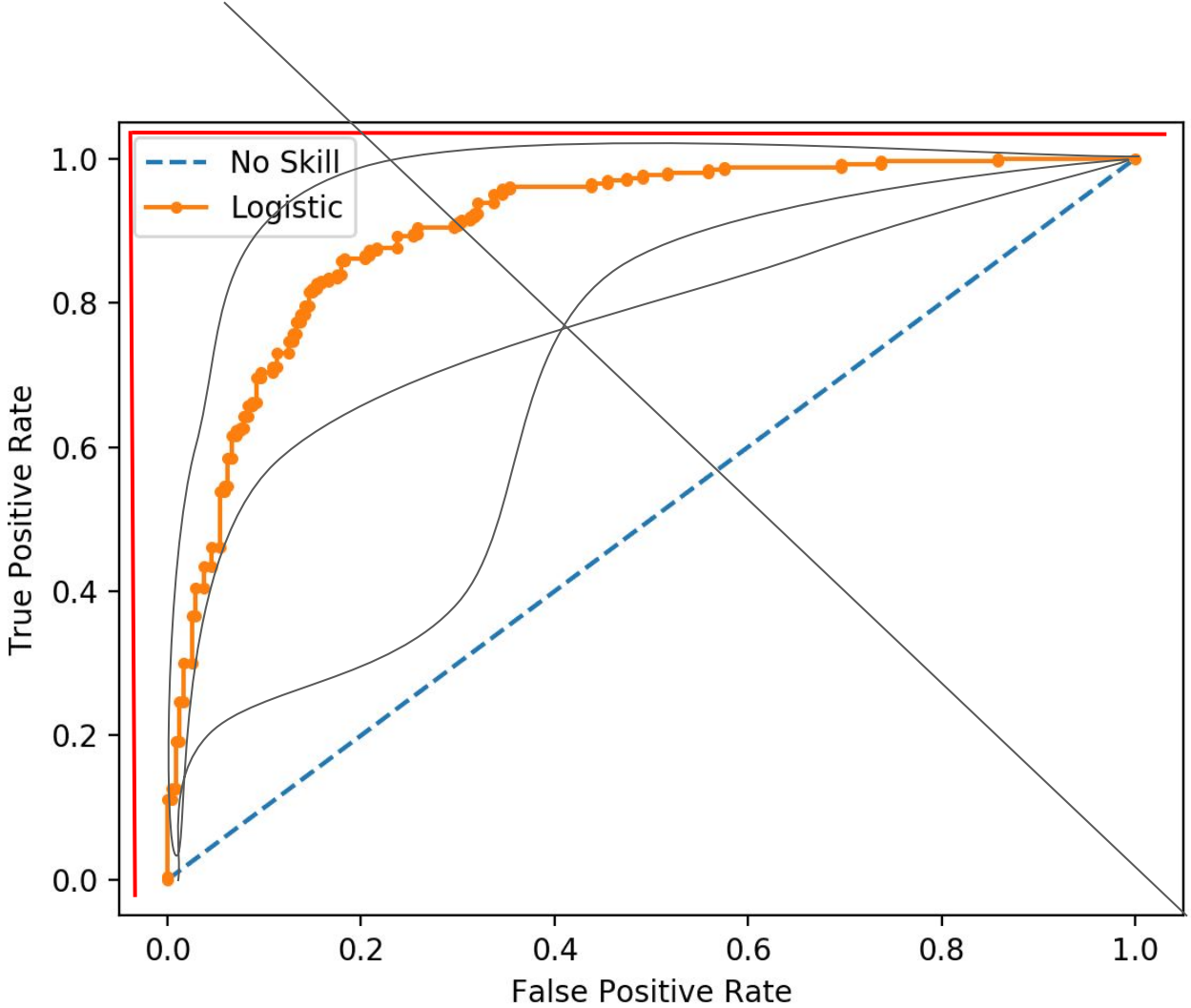
Cancer detection system

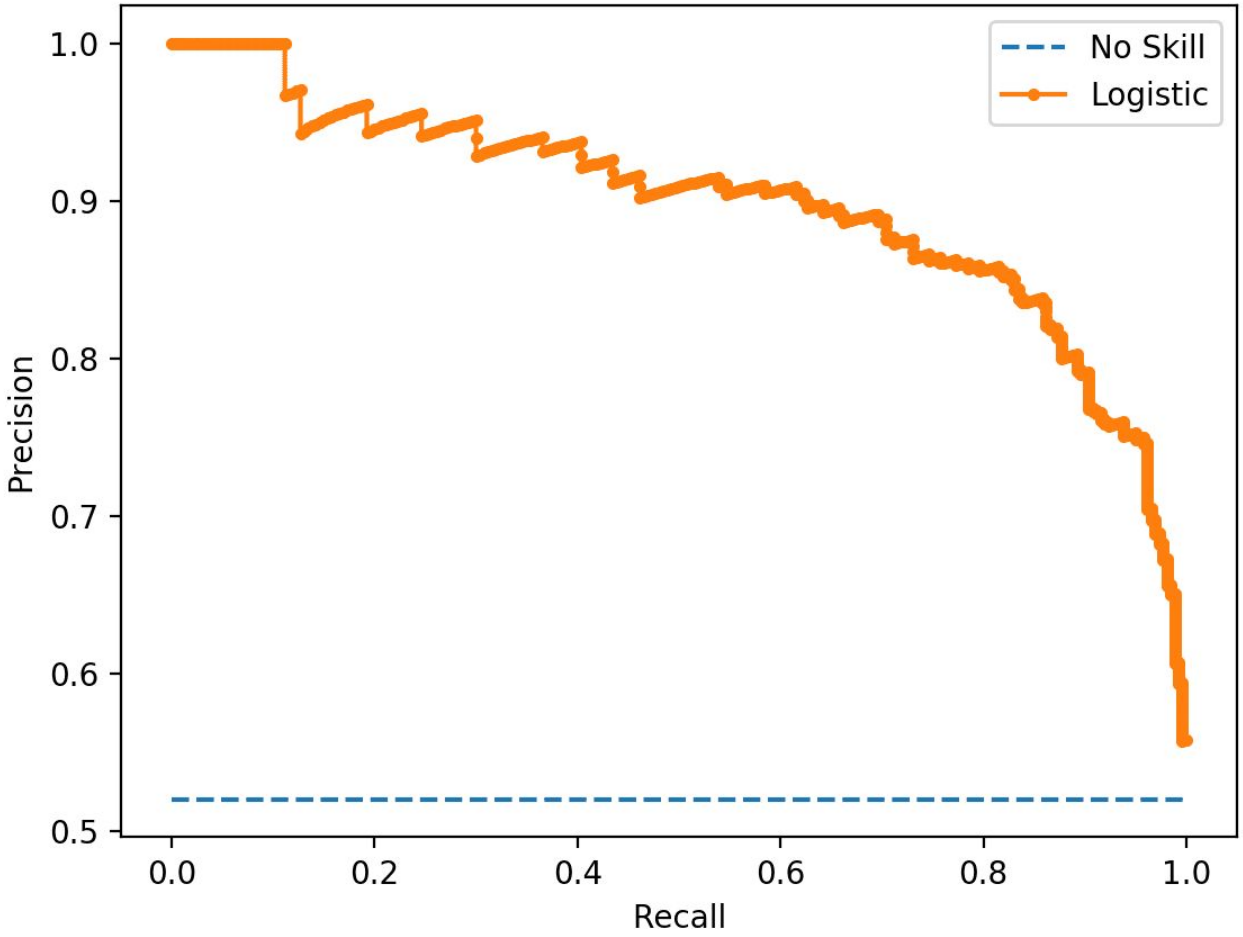
Cost of false positive: <cost of extra tests>

Cost of false negative: a person could die

We tune to reduce false negatives




No Skill
Logistic
True Positive Rate
False Positive Rate
0.0
0.2
0.4
0.6
0.8
1.0


No Skill
Logistic
Precision
Recall
1.0
0.9
0.8
0.7
0.6
0.5
0.0
0.2
0.4
0.6
0.8
1.0

- ROC curves should be used when there are roughly equal numbers of observations for each class.
- Precision-Recall curves should be used when there is a moderate to large class imbalance.