Model Lift in Machine Learning

Key facts about Lift

LIFT typically shows how much better the classification model performs.

The Lift curve is an important chart to visualize the analysis of binary classification model, which shows the ratio of a model to a random guess.

en.wikipedia.org - https://en.wikipedia.org/wiki/Lift_(data_mining)

See more: Open the Notes below for more information.

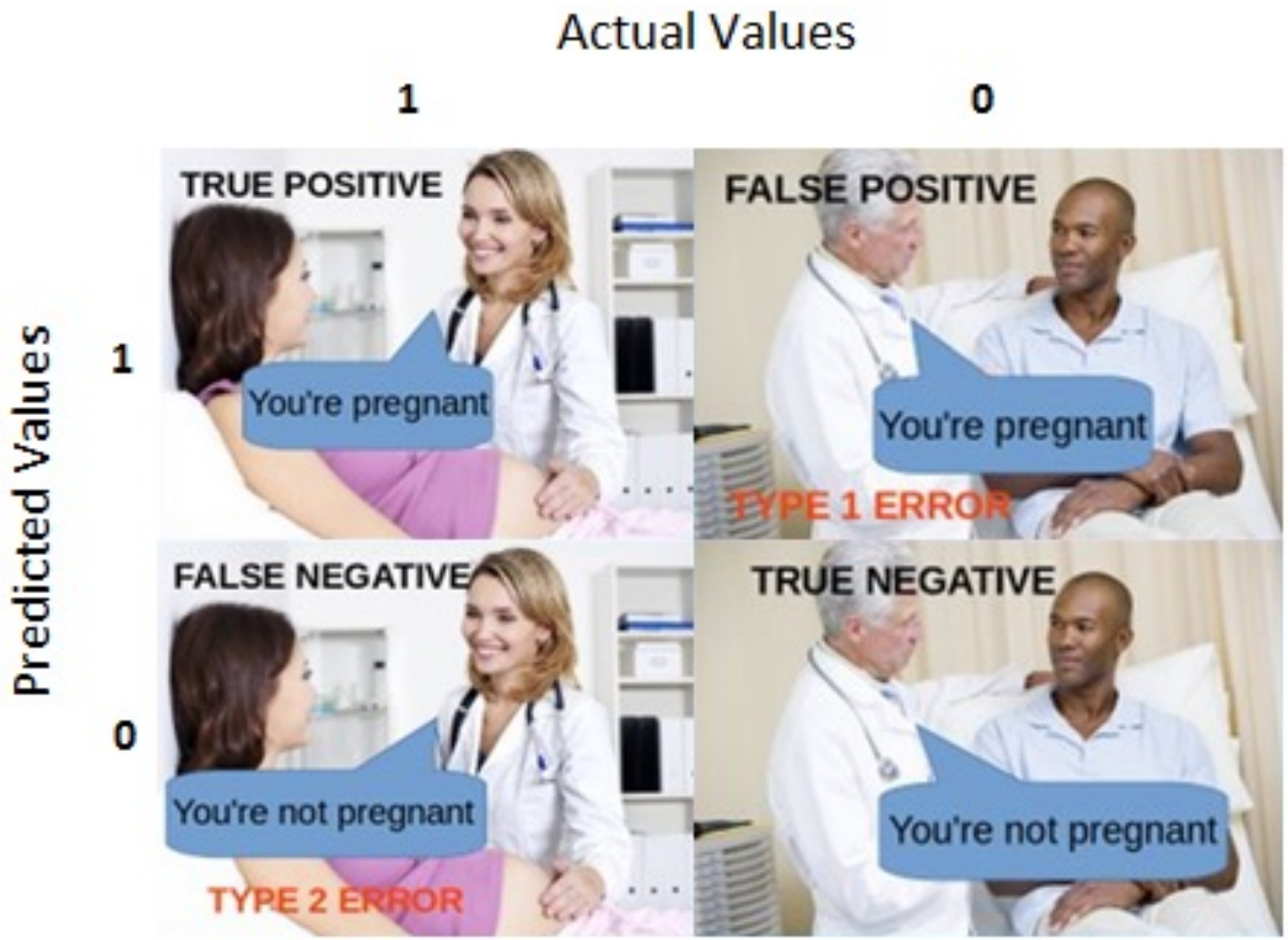
Notes Comments

Related topics to Lift in ML

- Python
- machine learning
- TP, FP, FN, TN
- Confusion matrix
- ROC
- AUC

TP
FP
FN
TN

Confusion matrix



True Positive Rate (TPR)

$$TPR = \frac{TP}{TP + FN}$$

False Positive Rate (FPR)

$$FPR = \frac{FP}{FP + TN}$$

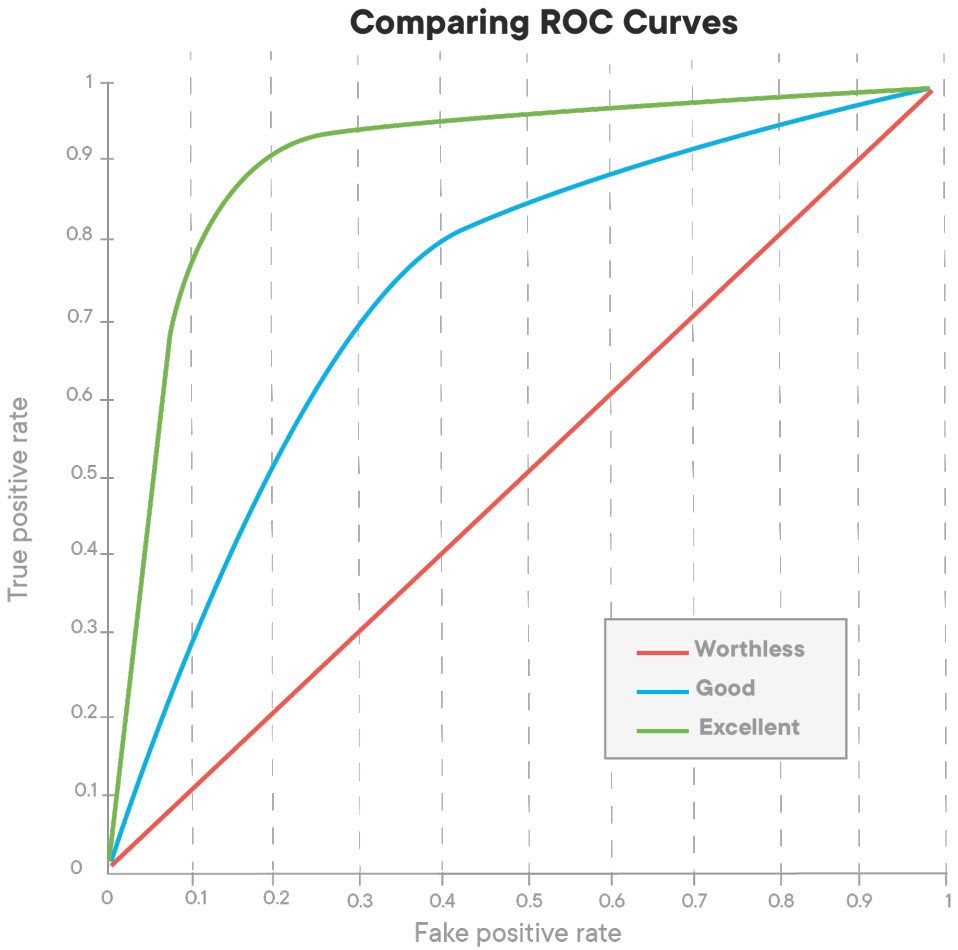
Precision (PRE)

$$\text{Precision} = \frac{TP}{TP + FP}$$

Accuracy (ACC)

$$\text{Accuracy} = \frac{TP + FN}{TP + FP + TN + FN}$$

$$\text{Lift} = \frac{PRE}{ACC}$$

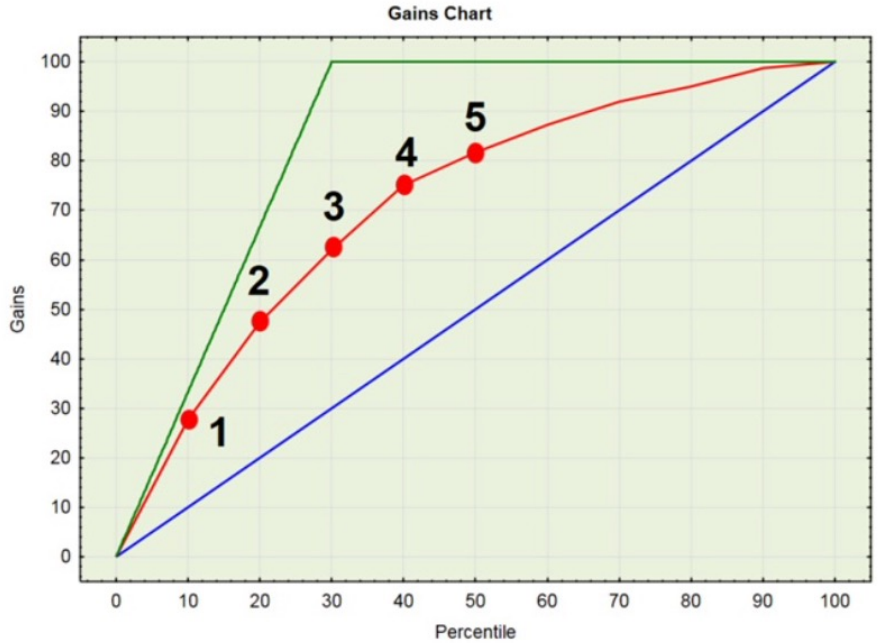


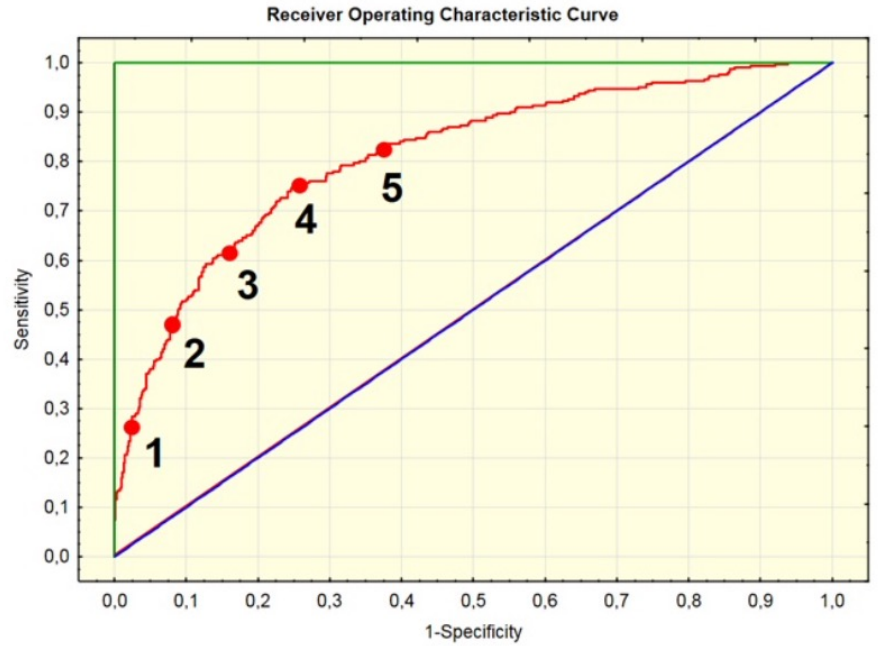
ROC curve (*Receiver Operating Characteristics curve*)

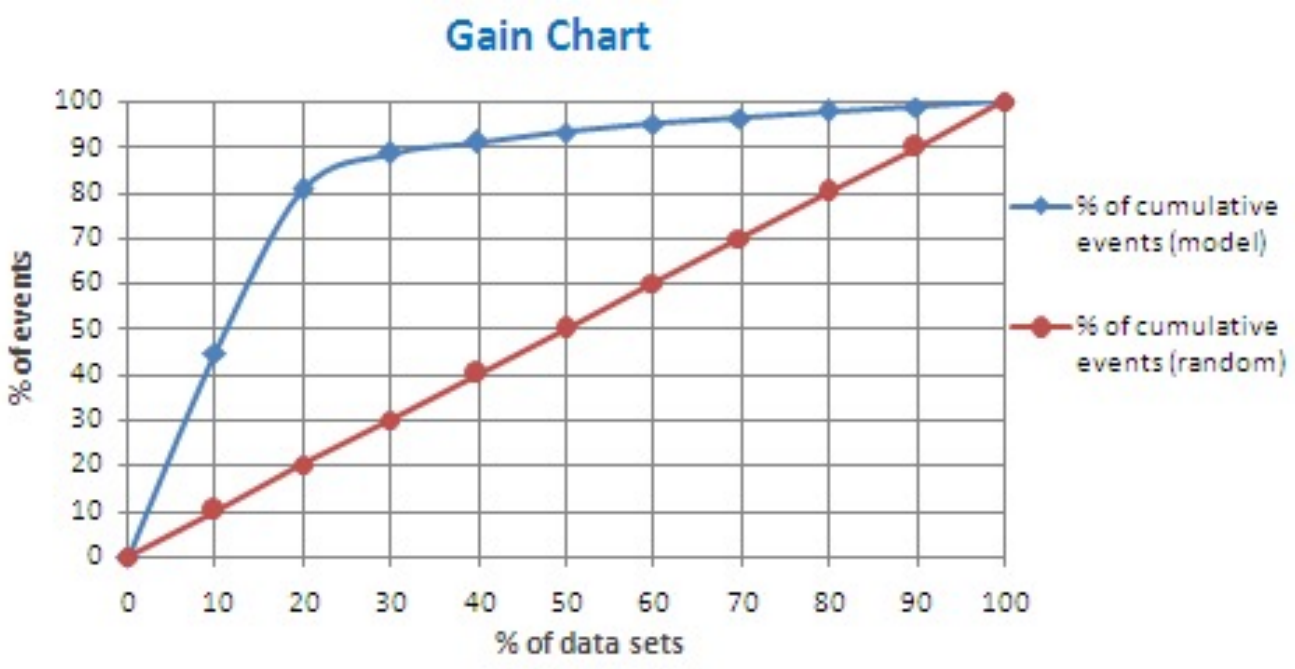
AUC (Area Under Curve)

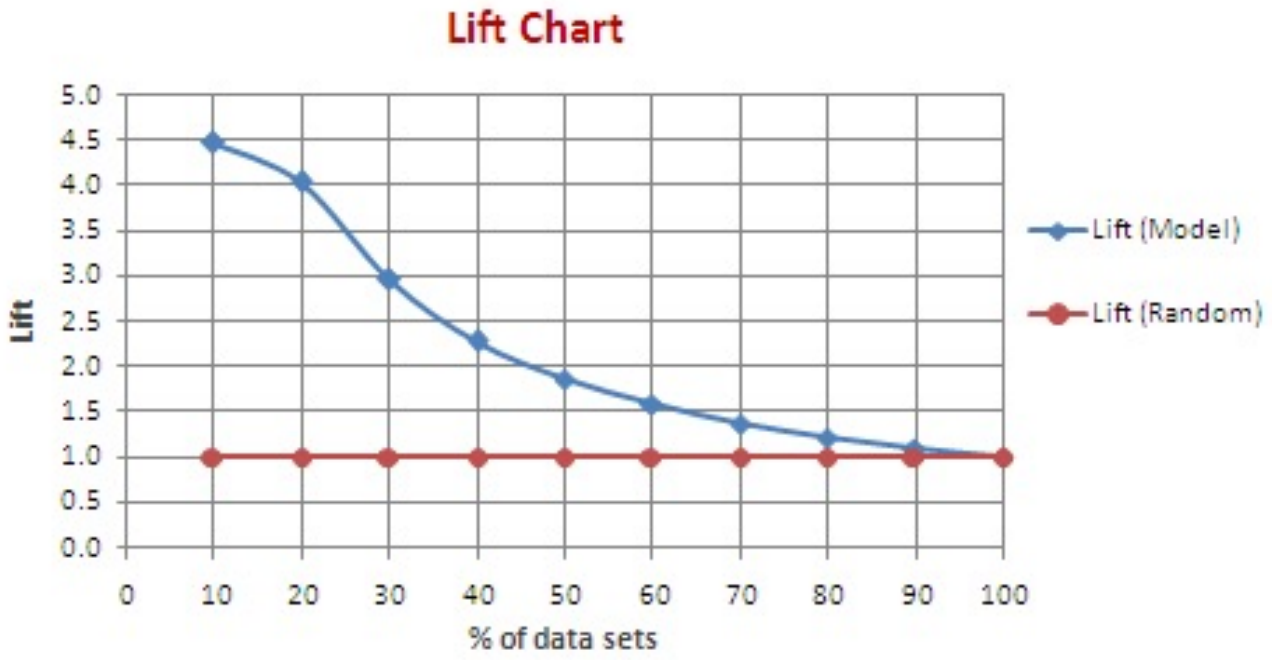
An AUC of 1 being a perfect classifier, and an AUC of .5 being that which has a precision of 50%.

	Gains	ROC
X axis:	$\frac{count\ TP + count\ FP}{count\ all\ observations}$	$\frac{count\ FP}{count\ TN + count\ FP}$
Y axis:	$\frac{count\ TP}{count\ TP + count\ FN}$	$\frac{count\ TP}{count\ TP + count\ FN}$









A Lift chart come directly from a Gains chart, where the X axis is the same, but the Y axis is the ratio of the Gains value of the model and the Gains value of a model choosing customers randomly.

In other words, it shows how many times the model is better than the random choice of cases.