

Classification Metrics (Part 2)

Dr. Kalidas Y., IIT Tirupati

64) key phrase... “Threshold on Score”

- Human to Decide
 - on which $y_i = 1$ (positive) and
 - on which $y_j = 0$ (negative)
- Get a Data Set
 - $x_1 = (1,1), y_1 = 1$
 - $x_2 = (1,2), y_2 = 1$
 - $x_3 = (1,3), y_3 = 1$
 - $x_4 = (2,1), y_4 = 0$
 - $x_5 = (3,1), y_5 = 0$
- Model Predictions
 - $y_1' = 1$
 - $y_2' = 1$
 - $y_3' = 0$
 - $y_4' = 1$
 - $y_5' = 0$

- Human to Decide
 - on which $y_i = 1$ (positive) and
 - on which $y_j = 0$ (negative)
- Get a Data Set
 - $x_1 = (1,1), y_1 = 1$
 - $x_2 = (1,2), y_2 = 1$
 - $x_3 = (1,3), y_3 = 1$
 - $x_4 = (2,1), y_4 = 0$
 - $x_5 = (3,1), y_5 = 0$
- Model Prediction Scores
 - $y_{1_score} = 0.9$
 - $y_{2_score} = 0.7$
 - $y_{3_score} = 0.3$
 - $y_{4_score} = 0.8$
 - $y_{5_score} = 0.4$

Choose a Threshold

Above which are predicted +
below which are predicted -

For example 0.55 ???

localhost:8888/notebooks/Documents/Teaching-2020/CS3109/ML-HandsOn/Binary%20Classification%20Metrics.ipynb

Paused

How a Kalman filter...Javautf8AII2018 Summer internsLatexAMLConferencesGeneralSWISH -- SWI-Prolog...The backpropagati...

jupyter

Binary Classification Metrics

Last Checkpoint: an hour ago (autosaved)

SWISH -- SWI-Prolog for SHaring
<https://swish.swi-prolog.org/example/kb.pl>

Logout

FileEditViewInsertCellKernelWidgetsHelpPython 2

SaveNewCopy PasteFind

UndoRedo

Run

Code

CellToolbar

0.00.20.40.60.81.0

Recall

Threshold vs Metric

P or R

0.00.20.40.60.81.0

0.20.30.40.50.60.70.80.91.0

Threshold

Precision

Recall

ROC Curve

65) key phrase... “PR Curve”

localhost:8888/notebooks/Documents/Teaching-2020/CS3109/ML-HandsOn/Binary%20Classification%20Metrics.ipynb

Paused

How a Kalman filter...Javautf8AII2018 Summer internsLatexAMLConferencesGeneralSWISH -- SWI-Prol...The backpropagati...

jupyter

Binary Classification Metrics

Last Checkpoint: an hour ago (autosaved)

Logout

FileEditViewInsertCellKernelWidgetsHelpPython 2

Save

+

Cut

Copy

Undo

Redo

Run

Stop

Refresh

Code

CellToolbar

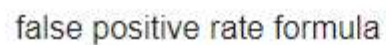
```
plt.legend(loc='best')
plt.show()
```

PR Curve for the moons data

Recall	Precision
0.0	1.00
0.1	1.00
0.2	1.00
0.3	1.00
0.4	1.00
0.5	1.00
0.6	1.00
0.7	1.00
0.7	0.95
0.8	0.95
0.9	0.95
0.9	0.90
0.95	0.90
0.95	0.85
0.95	0.80
1.0	0.80

Threshold vs Metric

66) key phrase... “FPR or Fall out”



Q All

 Images

 Videos



News



 [Maps](#)

: More

Settings

Tools

About 8,77,00,000 results (0.73 seconds)

False positive rate / Formula

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

FP = number of false positives

TN = number of true negatives

N = total number of negatives

From the web

The **false positive rate** is calculated as $FP / (FP + TN)$, where FP is the number of **false positives** and TN is the number of true negatives (FP+TN being the total number of negatives). It's the probability that a **false** alarm will be raised: that a **positive** result will be given when the true value is negative.

[www.split.io](#) › [glossary](#) › [false-positive-rate](#)

False Positive Rate | Split Classery | Split Software

Fall out

67) key phrase... “AUC – Area Under Curve”

