ORES Custom Documentation VI

Disclaimer: No guarantee for the correctness of information / explanations / sources is given.

Goals

1. Metrics List: Create Table as a general quickview ✓
2. Metrics: which combinations are particularly useful, which are nonsensical?
   - Ask for documentation on IRC (✓)
   - Logically exclude combinations?
   - Document outputs
3. Recent Changes filter classes: how are edits assigned to them?
   - Also ask for documentation on IRC ✓
   - Which metrics are included in the process? ✓but still TODO
   - How are the metrics (precision, recall, threshold) included in the associated API calls? What do the (GET?)-Requests look like?
4. Take a closer look at the Threshold Plot for Logistic Regression (Link)
   - What is the meaning of the areas around the curves? ✓
   - What is queue rate exactly? ✓
5. Take a closer look at the Swagger API Documentation
6. !!! Improve knowledge of ORES Docs and foremost the metrics

1 Metrics List: Table

Metric	**Quick Definition**	**Value**
accuracy	Portion of correctly predicted data	$\frac{\texttt{TP+TN}}{\texttt{Total}}$
counts	Number of **F&T**-labels and predictions	
f1	Harmonic mean of recall and precision	$2 * \frac{\texttt{rec*prec}}{\texttt{rec+prec}}$
filter_rate	Portion of observations predicted to be negative	$1 - \texttt{match\_rate} = \frac{\texttt{TN+FN}}{\texttt{Total}}$
fpr	Probability of a false alarm	$\frac{\texttt{FP}}{\texttt{FP+TN}}$
match_rate	Portion of observations predicted to be positive	$\frac{\texttt{TP+FP}}{\texttt{Total}}$
pr_auc	Measure of classification performance	
precision	Ability to find only relevant cases	$\frac{\texttt{TP}}{\texttt{TP+FP}}$
rates	Proportion of **F&T**-labels to the total	
recall	Ability to find **all** relevant cases	$\frac{\texttt{TP}}{\texttt{TP+FN}}$
roc_auc	Measure of classification performance	
!f1	Negated f1	$2 * \frac{\texttt{!rec*!prec}}{\texttt{!rec+!prec}}$
!precision	Negated precision	$\frac{\texttt{TN}}{\texttt{TN+FN}}$
!recall	Negated recall	$\frac{\texttt{TN}}{\texttt{TN+FP}}$

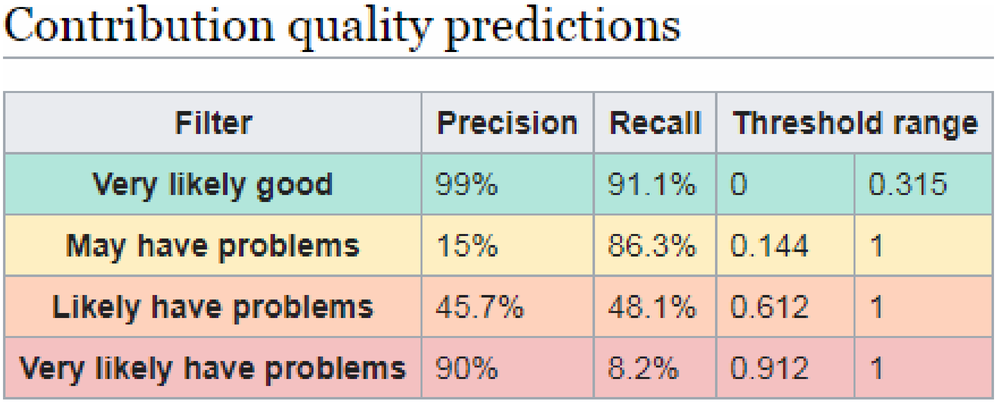
2 Metrics combinations

example: `https://ores.wikimedia.org/v3/scores/enwiki/?models=damaging&model_info=statistics.thresholds.true.%27maximum%20!precision%20@%20precision%20%3E=%200.9%27` More links for quickstart:

- 1
- 2
- 3
- 4

3 Recent Changes Quality Prediction Filters

The Recent Changes quality prediction filters are a helpful tool in varying the precision and recall of catching damaging edits. They can be applied on the Recent changes site (Link).



Contribution quality predictions

Filter	Precision	Recall	Threshold range	
Very likely good	99%	91.1%	0	0.315
May have problems	15%	86.3%	0.144	1
Likely have problems	45.7%	48.1%	0.612	1
Very likely have problems	90%	8.2%	0.912	1

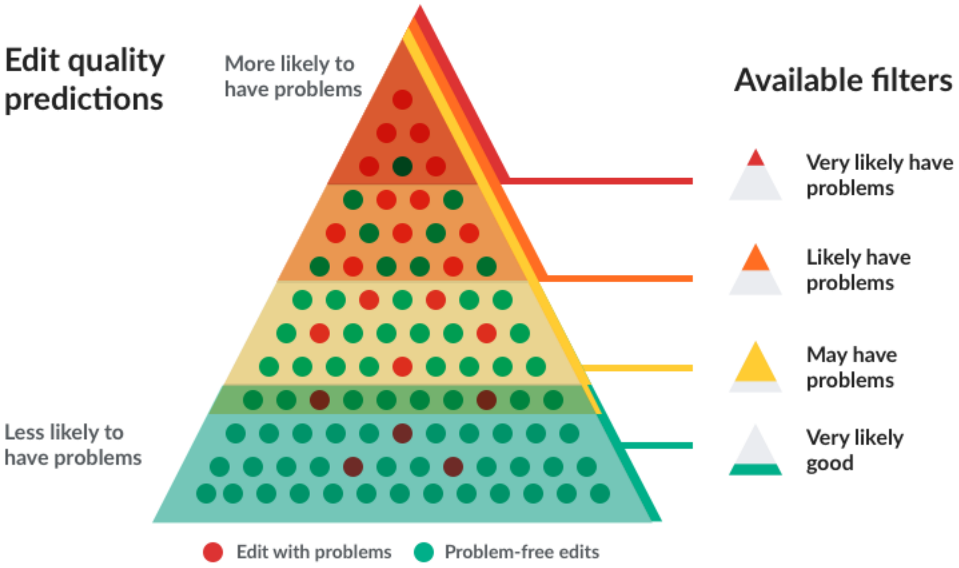
Wikipedia Source

To put those numbers into context: we can expect that, for example, the *Likely have problems* filter will be right about 45.7% of the time, classifying a contribution as damaging while catching 48.1% of problem edits.

Keep in mind that the damaging model classifier is binary, deciding wether a contribution is damaging or not, but does not only output 0 or 1, but instead a probability (between 0 and 1) of how probable it is, that a contribution is damaging. The threshold then decides at which probability the contributions are split into damaging and non-damaging (e.g. a threshold of 0.6 means that every contribution with a value of under 0.6 will be classified as non-damaging and vice versa). Threshold ranges therefore signify the following:

- *Very likely good*: Contributions that score between 0 and 0.315 on the probability-of-being-damaging scale
- *May have problems*: Contributions that score between 0.144 and 1
- *Likely have problems*: Contributions that score between 0.612 and 1
- *Very likely have problems*: Contributions that score between 0.912 and 1

To better understand threshold ranges it's helpful to also take a look at the following graphic:

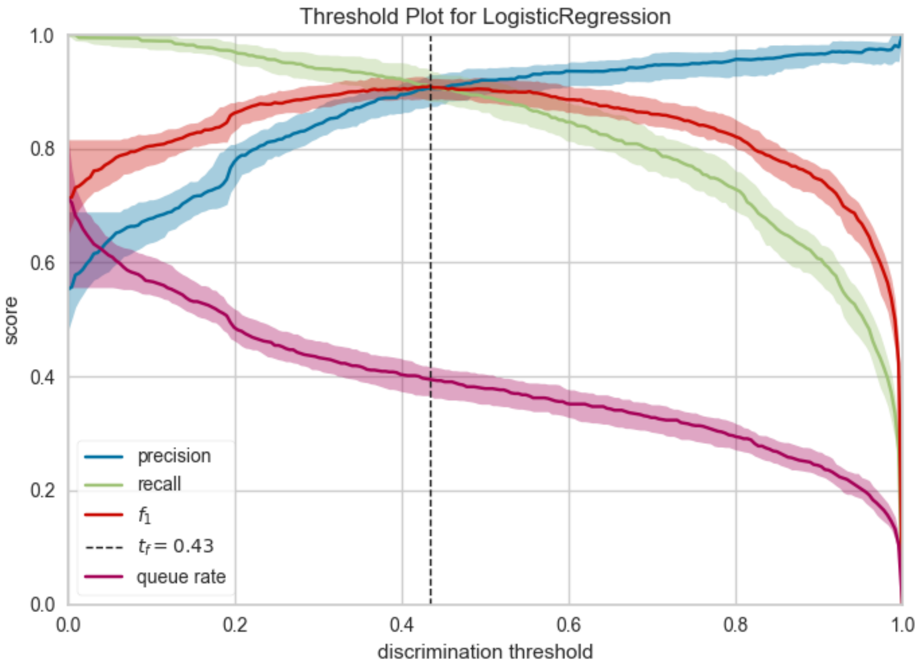


Wikimedia Source, MediaWiki Source
Two things might be confusing:

1. The *May have problems*, *Likely have problems*, and *Very likely have problems* filters overlap

2. The *Very likely good* and *May have problems* filters overlap

4 Discrimination Threshold Visualisation (Logistic Regression)



4.1 Areas - or bands - around the curves

The model will split the data multiple times, differently, into train and test sets and then run the trials. This ensures a certain amount of variability being visualized. Corresponding section on the site:

> "*The visualizer also accounts for variability in the model by running multiple trials with different train and test splits of the data. The variability is visualized using a band such that the curve is drawn as the median score of each trial and the band is from the 10th to 90th percentile.*"

4.2 Queue rate

"This metric describes the percentage of instances that must be reviewed." It can be helpful to think about the costs of reviewing whatever it is that must be reviewed in the context of business decision, where the ability to review is a limited resource and might be a factor in adjusting the threshold in order to find a favourable outcome.