

mycoCLAP, the Database for Characterized Lignocellulose-Active Proteins of Fungal Origin: Resource and Text Mining Curation Support

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Outline

What! Only 10 minutes!

I hope you spoke with Kimchi at the poster session for details :-)

... or read the paper in Database: Biocuration Virtual Issue

mycoCLAP

... is database ... ongoing curation ... now over 800 proteins

mycoSORT — *Breaking news: new and improved*

... for triage of articles

mycoMINE

... text mining relevant articles

mycoCLAP Curation



Searchable online database of fungal enzymes

Industrial processes    

Manual curation since 2011

Extensive review of scientific publications

804 enzymes from 226 fungal species | one⁺ reference paper
by entry

  "fung*" → over 250,000 documents

<https://mycoclap.fungalgenomics.ca>

Literature Triage



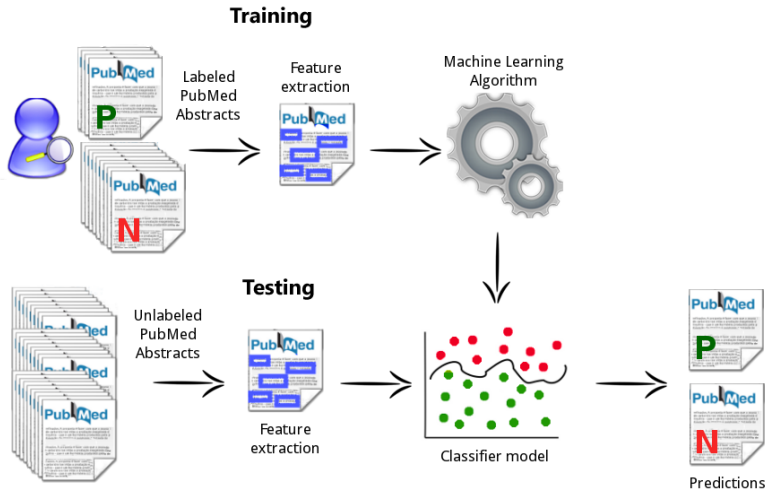
Manual screening: **few documents** actually kept

Demanding, time consuming and error-prone

Not guaranteed to be exhaustive

Severe **bottleneck** in manual curation workflow

Supervised Learning Workflow for mycoSORT Triage



Dataset Balance

4 biocurators with inter-annotator agreement $> 80\%$

Instances labeled as **non-relevant**: 6,834 (90.12%)

Negative examples \rightarrow Majority class

Instances labeled as **relevant**: 749 (9.88%)

Positive examples \rightarrow Minority class

Underlying distribution \rightarrow real scenario of triage task

Imbalance affects decision boundary

Baseline (Naive Bayes) vs. mycoSORT Performance

mycoSORT

- ▶ Classifier is Logistic Model Trees
- ▶ Under Sampling Factor is 40%
- ▶ Feature selection strategy is Odds Ratio

Scores	Baseline	mycoSORT
Precision	0.307	0.368 (+19.8%)
Recall	0.720	0.860 (+19.4%)
F-measure	0.430	0.515 (+19.7%)
F-2	0.570	0.680 (+19.3%)

In practice, ... for 1000 abstracts ... where 900 irrelevant

Baseline triage keeps 72 + 162 = 234 and eliminates 738 + 28

mycoSORT triage keeps 86 + 147 = 233 and eliminates 753 + 14

Thank You!

Questions Please?