M.EIC PRI 2022/2023 G55

arXiv - Scientific Papers

Scientific Articles Search System

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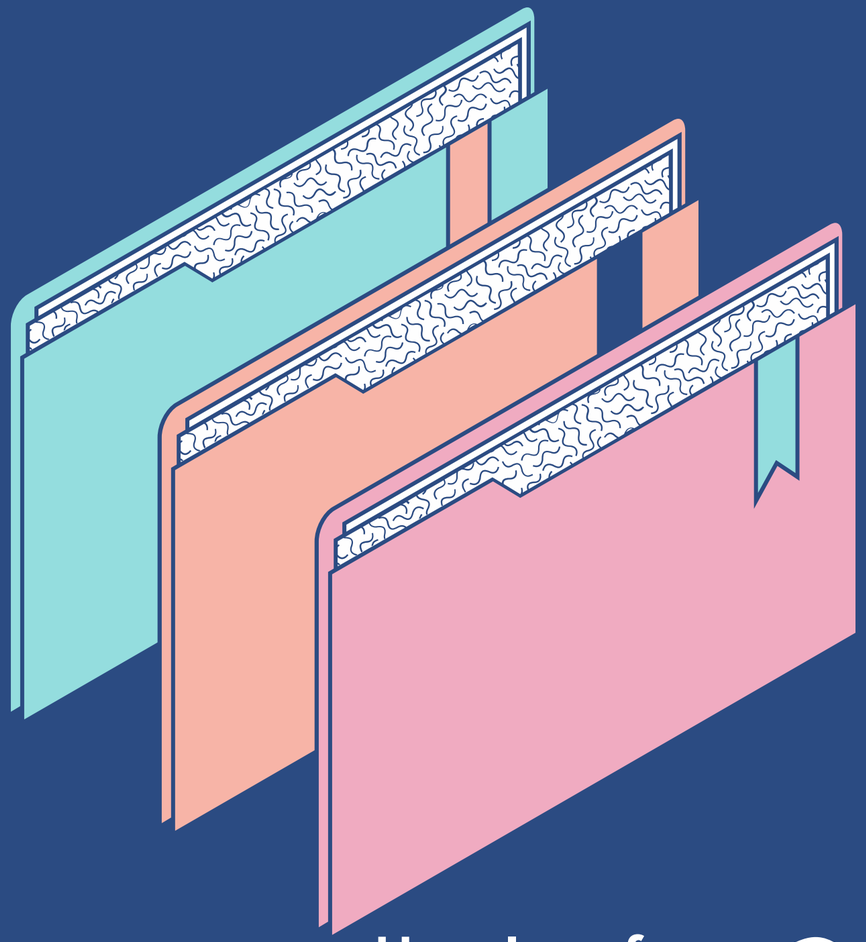


Dataset

Data

kaggle

Data

Information Retrieval

Solr

Information Retrieval

JSON

User Interface

Collection of scientific papers and their corresponding information from the website ARXIV

Collection

A paper defines a document which has the paper's information.

Most relevant fields:

- Title
- Summary
- Authors
- Areas
- Fields
- Subjects

System Improvements

Highlighting

When a user searches for a specific term, Solr will highlight the term within the search results, making it easy for the user to see where the term appears within the documents.

This feature is useful for quickly locating the relevant information within the search results.

In our case, we use and to highlight these results

MoreLikeThis

MoreLikeThis feature in Solr works by analyzing the text of the input document and then finding other documents in the index that have a similar text of the fields specified. The documents with the highest similarity scores are then returned as the results of the MoreLikeThis query.

Schema

In order to obtain a better search, we looked for more filters that would be possible to add to the schema and decided to test EdgeNGramFilterFactory.

However, we came across schemas that did not obtain the result that we wanted.

Schema "improved" but not really

Upon searching black-holes...

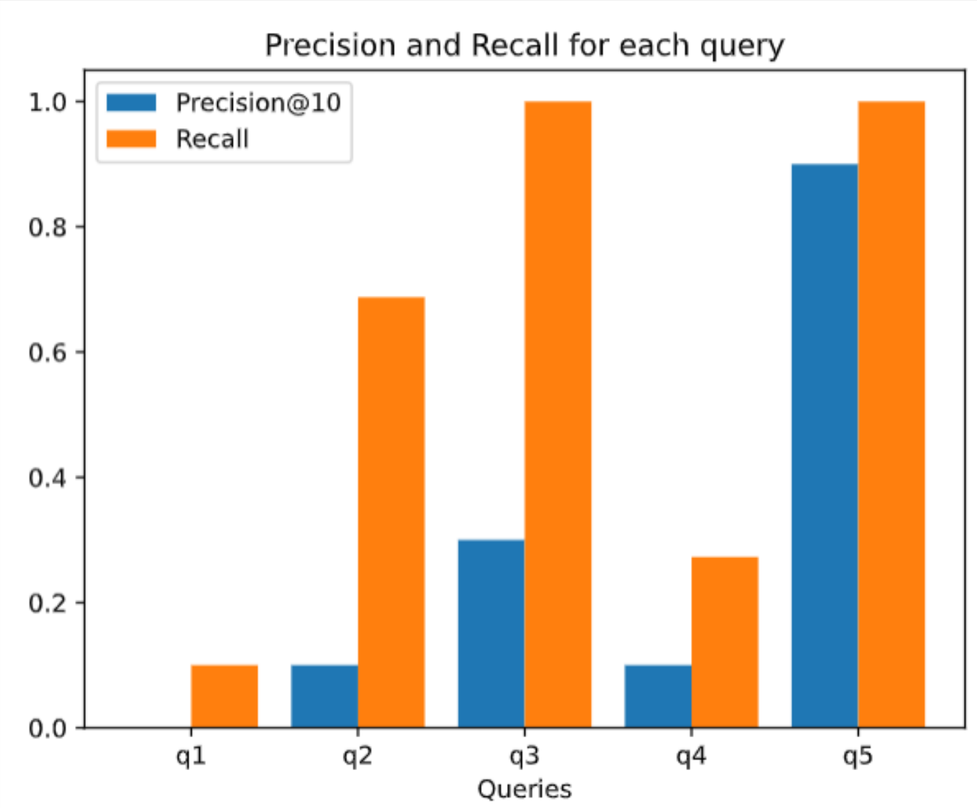

```
"13649":{
  "summary":["We <b>have</b> introduced two crossover operators, MMX-<b>BLXexploit</b> and\nMMX-<b>BLXexplore</b>, for"]},
"38328":{
  "summary":[" Americans. In response\nto #BlackLivesMatter, other Twitter users <b>have</b> adopted #AllLivesMatter, a\ncounter"]},
"31800":{
  "summary":["In this paper, we formulate a novel problem for finding <b>blackhole</b> and volcano\npatterns in <b>a large</b>"]},
```

Current Schema

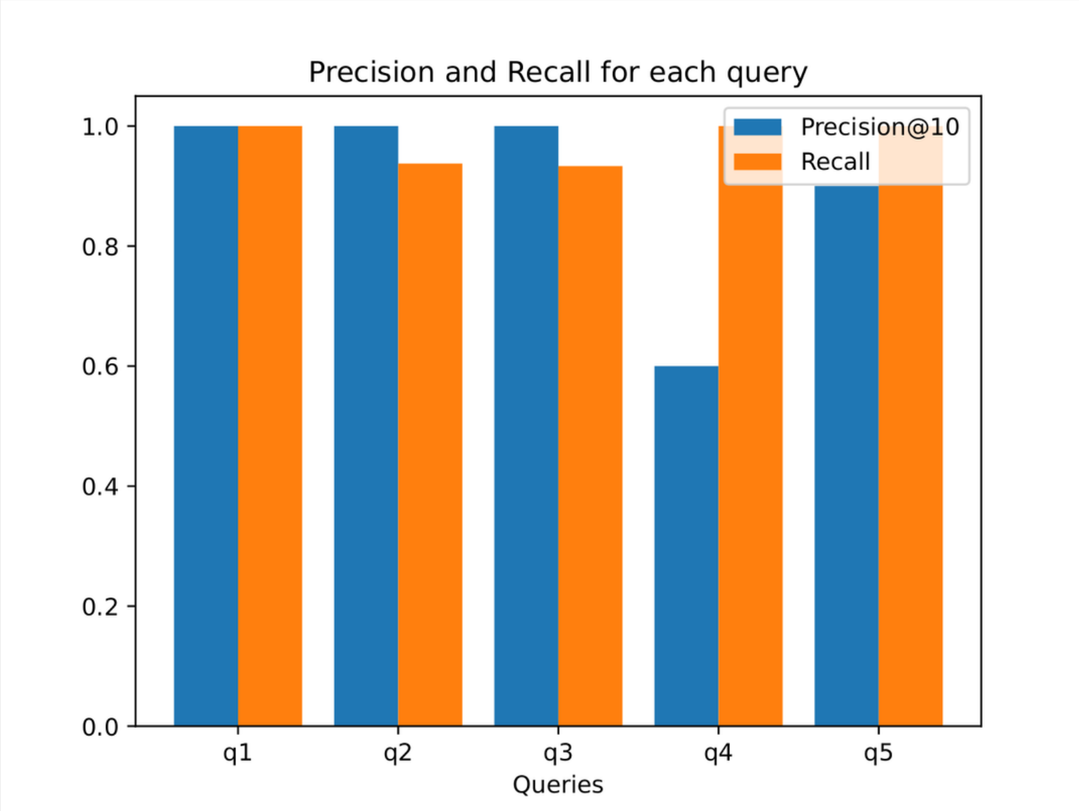
Upon searching black-holes...


```
"40142":{
  "summary":["Supermassive <b>black</b> <b>holes</b> at centers of clusters of galaxies strongly interact\nwith their host"],
  "title":["Towards understanding feedback from supermassive <b>black</b> <b>holes</b> using\n  convolutional neural networks"]},
"3955":{
  "summary":["The Building <b>Block</b> Hypothesis suggests that Genetic Algorithms (GAs) are\nwell-suited"],
  "title":["Overcoming Hierarchical Difficulty by <b>Hill</b>-Climbing the Building <b>Block</b>\n  Structure"]},
"40112":{
  "summary":[", for quickly evolving sources,\nsuch as the galactic center's supermassive <b>black</b> <b>hole</b> (Sgr A*) targeted by the\nEHT"]},
```

Worst schema results (boosted)

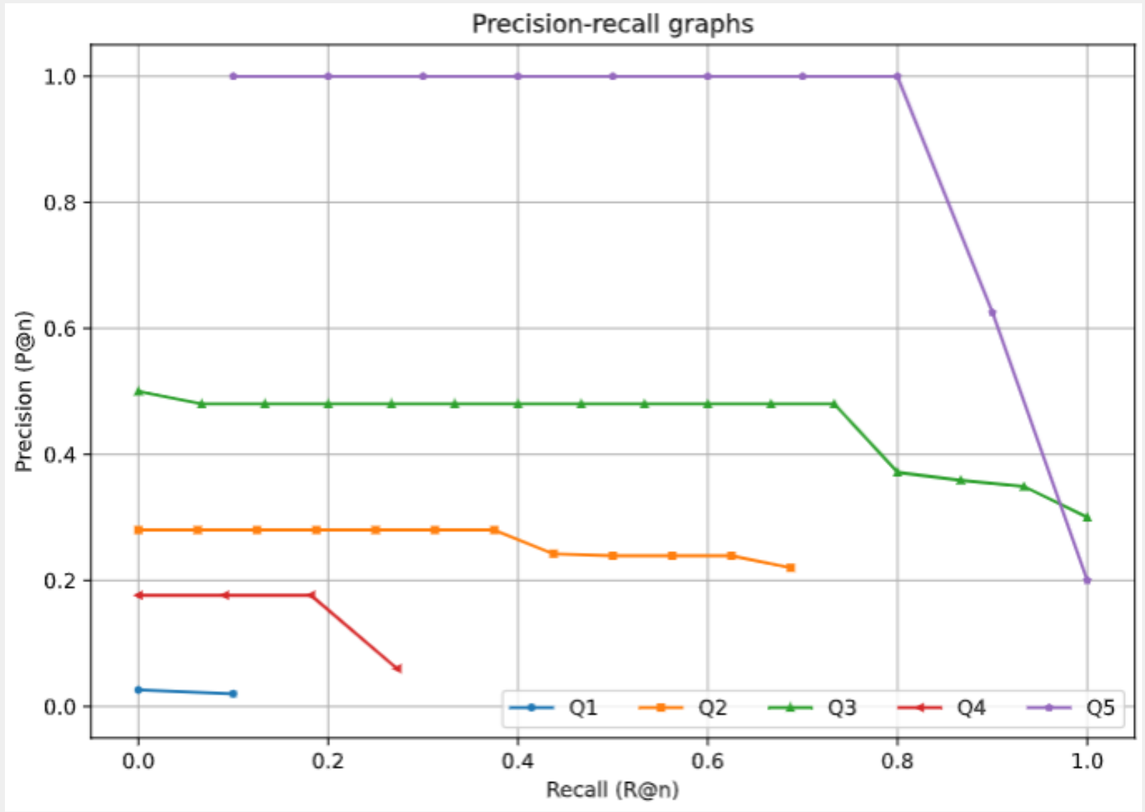


New (worst) schema

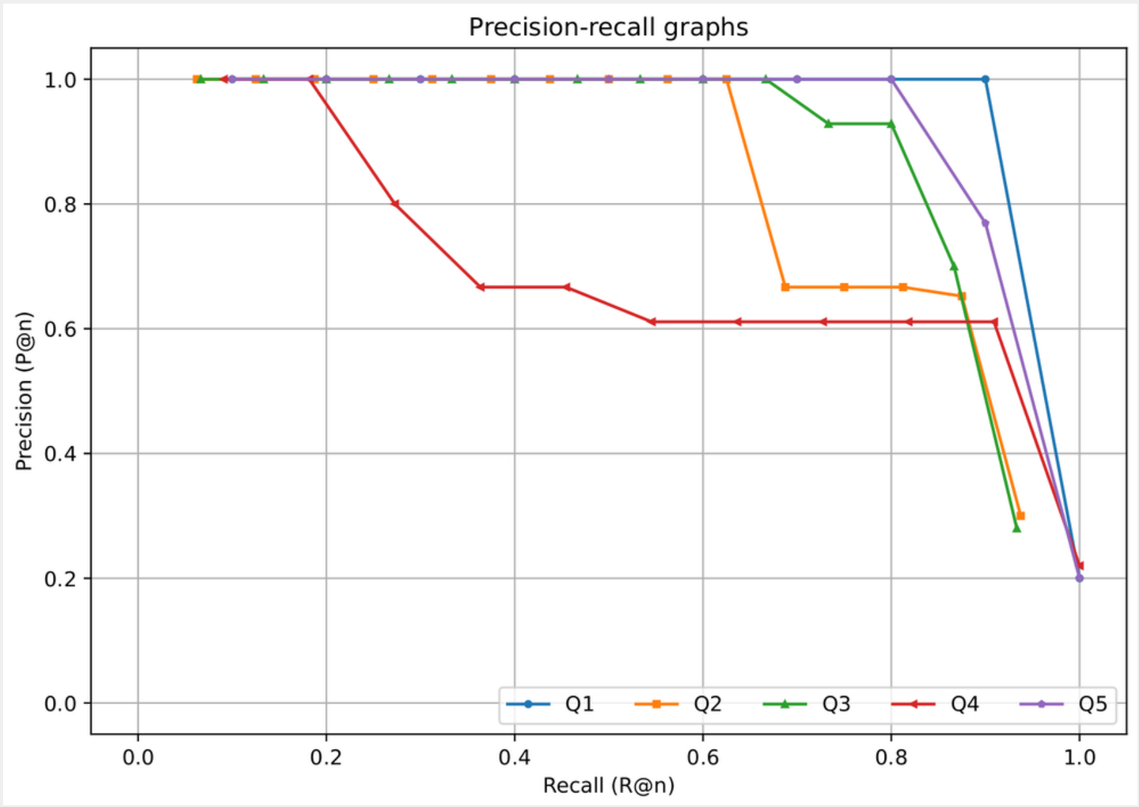


Best schema

Worst schema results (boosted)



New (worst) schema

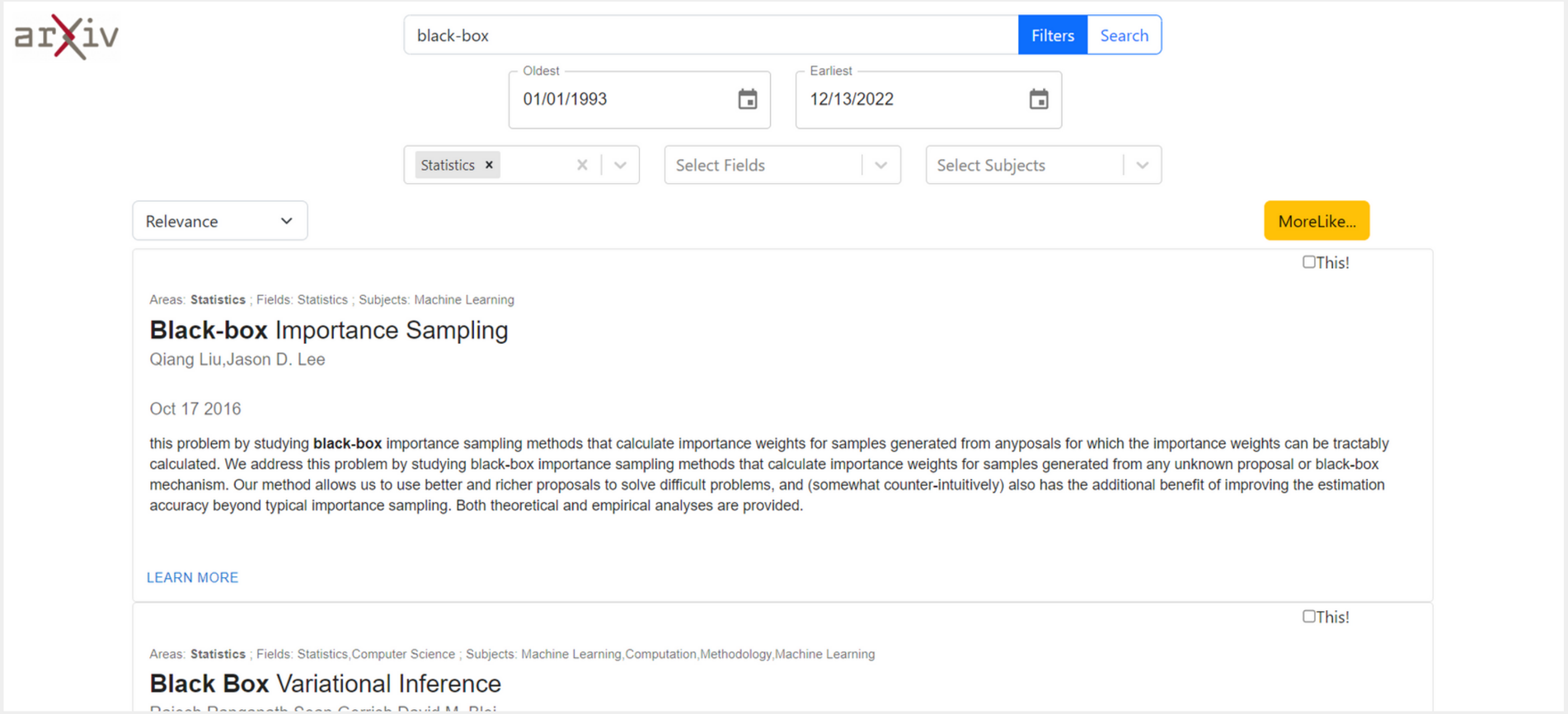


Best schema

Not always having a schema with many filters lead to a good search

Interface

Search System



Questions?