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SEARCH SYSTEM MILESTONE 3



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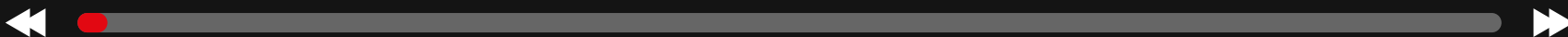
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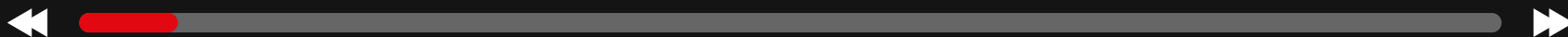
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01

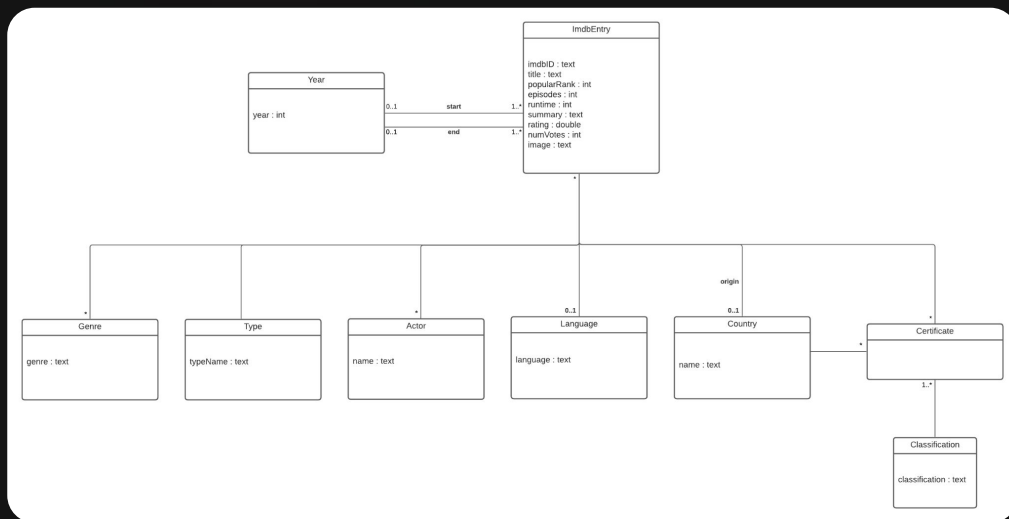
Collection





| Collection

- **Collection:** All shows in the dataset obtained from Milestone 1
- **Document:** A show
- The dataset is a single CSV file which, for convenience, we transform into a JSON file



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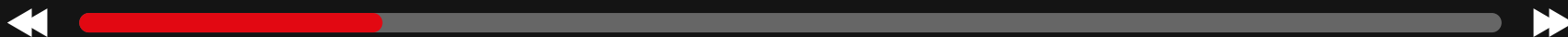
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02

Indexing





| Indexing

- Run Docker image based on Solr's container
- Dockerfile to define a custom image and perform all the basic setup operations
 - Added query 5, synonyms file and new config file modified to include spellcheck
- Script to automatically create a core (shows), define our schema and populate the database
 - Copied the new config file to Solr

```
FROM solr:8.10

COPY netflix_list.json /data/netflix_list.json

COPY query1.json /data/query1.json

COPY query2.json /data/query2.json

COPY query3.json /data/query3.json

COPY query4.json /data/query4.json

COPY query5.json /data/query5.json

COPY schema.json /data/schema.json

COPY synonyms.txt /data/mysynonyms.txt

COPY solrconfig.xml /data/config.xml

COPY startup.sh /scripts/startup.sh

ENTRYPOINT ["/scripts/startup.sh"]
```

```
#!/bin/bash

precreate-core shows

# Start Solr in background mode so we can use the API to upload the schema
solr start

sleep 2

# Define Synonyms
cat /data/mysynonyms.txt >> /var/solr/data/shows/conf/synonyms.txt

cat /data/config.xml > /var/solr/data/shows/conf/solrconfig.xml

# Schema definition via API
curl -X POST -H 'Content-type:application/json' \
  --data-binary @/data/schema.json \
  http://localhost:8983/solr/shows/schema

sleep 2

# Populate collection
bin/post -c shows /data/netflix_list.json
# bin/post -c shows /data/query1.json
# bin/post -c shows /data/query2.json
# bin/post -c shows /data/query3.json
# bin/post -c shows /data/query4.json
# bin/post -c shows /data/query5.json

# Restart in foreground mode so we can access the interface
solr restart -f
```



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03

Revisions Introduced



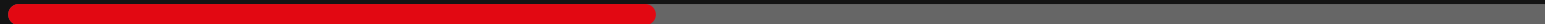


| Revisions Introduced

Changes introduced to the system:

- **Metrics:** Modify, improve and add new Metrics. Update Precision, Recall, Average Precision and add MAP
- **Improvements:** Spellcheck and Synonyms
- **Interface:** Creation of an interface for the search system

	Schema-less	Enhanced Schema	Final Schema
MAP	1.0	0.88	1.0



| Synonyms and Spellcheck

- Search for PRC, the initials for Popular Republic of China

```
{
  "responseHeader":{
    "status":0,
    "QTime":7,
    "params":{"q":"title:prc",
      "indent":"true",
      "q.op":"OR",
      "_":"1642450558223"}},
  "response":{"numFound":3,"start":0,"numFoundExact":true,"docs":[
    {
      "imdbID":"tt8983180",
      "title":["Made in China"],
```

- Spellcheck suggestions when we misspell the word "friends" as "fiends"

```
"spellcheck":{
  "suggestions":[
    "fiends",{
      "numFound":5,
      "startOffset":6,
      "endOffset":12,
      "origFreq":0,
      "suggestion":[{
        "word":"friend",
        "freq":49},
        {
          "word":"field",
          "freq":7},
        {
          "word":"find",
          "freq":11}}]}
```



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Final System Evaluation





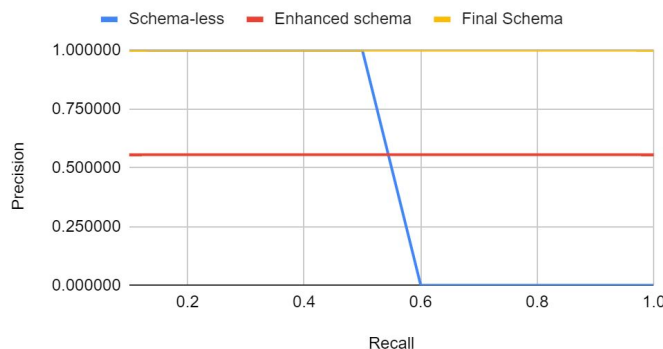
| Final System Evaluation

Query 4 (revisited)



- 30 shows
- 5 relevant
- User expects only series and miniseries

Precision-Recall Curve



Schema-less:

Metric	Value
1 Average Precision	1.0
2 Precision at 9 (P@9)	0.222222
3 Recall at 9 (R@9)	0.4
4 F1 at 9 (R@9)	0.285714

Enhanced schema:

Metric	Value
1 Average Precision	0.403492
2 Precision at 9 (P@9)	0.555556
3 Recall at 9 (R@9)	1.0
4 F1 at 9 (R@9)	0.714286

Final system:

Metric	Value
1 Average Precision	1.0
2 Precision at 9 (P@9)	0.555556
3 Recall at 9 (R@9)	1.0
4 F1 at 9 (R@9)	0.714286





I Final System Evaluation

Query 5

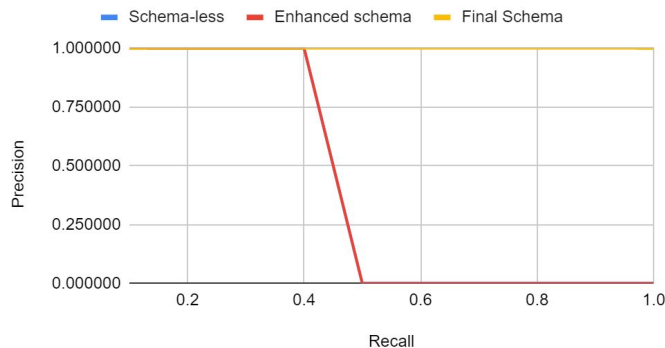


- 30 shows
- 10 relevant
- Shows related to the United Kingdom

Example of Results:

- Criminal: UK
- Battle of Britain

Precision-Recall Curve



Schema-less:

	Metric	Value
1	Average Precision	1.0
2	Precision at 10 (P@10)	0.3
3	Recall at 10 (R@10)	0.3
4	F1 at 10 (R@10)	0.3

Enhanced schema:

	Metric	Value
1	Average Precision	1.0
2	Precision at 10 (P@10)	0.3
3	Recall at 10 (R@10)	0.3
4	F1 at 10 (R@10)	0.3

Final system:

	Metric	Value
1	Average Precision	1.0
2	Precision at 10 (P@10)	1.0
3	Recall at 10 (R@10)	1.0
4	F1 at 10 (R@10)	1.0



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05

User Interface



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| Search Page

NETFLIX

[SORT BY: RELEVANT ▾](#)

Search Fields:

- ☒ title
- ☒ originCountry
- ☒ language
- ☒ cast
- ☒ genres
- ☒ summary
- ☒ imdbID

Show Type:

- ☒ animation
- ☒ miniSeries
- ☒ movie
- ☒ series
- ☒ short
- ☒ special

Start Year:

 TO

Number of Episodes:

 TO

Rating:

 TO

End Year:

 TO

Runtime:

 TO

Number of Votes:

 TO [SUBMIT](#)

No results found





| Results Page

Search Fields:

☒ title
☒ originCountry
☒ language
☒ cast
☒ genres
☒ summary
☒ imdbID

Show Type:

☒ animation
☒ miniSeries
☒ movie
☒ series
☒ short
☒ special

Start Year:

TO

End Year:

TO

Number of Episodes:

TO

Runtime:

TO

Rating:

TO

Number of Votes:

TO

walk

SORT BY: RELEVANT

SUBMIT

100 results found

A NETFLIX ORIGINAL SERIES

SELF MADE

INSPIRED BY THE LIFE OF
MADAM C.J. WALKER

Self Made: Inspired by the
Life of Madam C.J. Walker

MORE INFO

NETFLIX

A NETFLIX ORIGINAL SERIES

KULIPARI
DREAM WALKER

Kulipari: Dream Walker

MORE INFO

BASED ON THE INSPIRATIONAL TRUE STORY

WALK.
RIDE.
RODEO.

A NETFLIX FILM

MARCH 8
NETFLIX

Walk. Ride. Rodeo.

MORE INFO

ROMANET... SPANNING!... TRUE?

He Walked
By Night

HOW MANY FILMS
CAN YOU WATCH
IN ONE NIGHT?

RICHARD BALSAMARD... SHERIFF... CODY... BRADY

He Walked by Night

MORE INFO

CAST... MUSIC... EDIT... PRODUCTION... DIRECTOR...

TAKERS

Takers

MORE INFO



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| Spell Check

NETFLIX

Search Fields:

☒ title
☒ originCountry
☒ language
☒ cast
☒ genres
☒ summary
☒ imdbID

Show Type:

☒ animation
☒ miniSeries
☒ movie
☒ series
☒ short
☒ special

Search
friends

SORT BY RELEVANT ▾

Start Year:
 TO

Number of Episodes:
 TO

Rating:
 TO

End Year:
 TO

Runtime:
 TO

Number of Votes:
 TO

SUBMIT

No results found

Did you mean: [friends](#) [friend](#) [field](#)



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| Show Info

Search Fields

☒ title
☒ originCountry
☒ language
☒ cast
☒ genres
☒ summary
☒ imdbID

Show Type:

☒ animation
☒ miniSeries
☒ movie
☒ series
☒ short
☒ special

Start Year:

TO

Number of Episodes:

TO

Rating:

TO

Number of Votes:

TO

walk

SORT BY: RELEVANT

Self Made: Inspired by the Life of Madam C.J. Walker

INFO

CAST


CERTIFICATES

Biography

Drama

History

1465



Rating: 7.3

Description

The inspiring story of trailblazing African American entrepreneur Madam C.J. Walker who built a haircare empire that made her America's first female self-made millionaire.

Type:

miniSeries

Language:

English

Origin Country:

United States

Runtime:

191

Year of Release:

2020

Episodes:

4

Number of Votes:

9922

Self Made: Inspired by the Life of Madam C.J. Walker

MORE INFO

Kulipari: Dream Walker

MORE INFO

Walk. Ride. Rodeo.

MORE INFO

He Walked by Night

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| Show Cast

Search Fields:

☒ title
☒ originCountry
☒ language
☒ cast
☒ genres
☒ summary
☒ imdbID

Show Type:

☒ animation
☒ miniSeries
☒ movie
☒ series
☒ short
☒ special

Start Year:

 TO

Number of Episodes:

 TO

Rating:

 TO

Number of Votes:

 TO

walk


SORT BY: RELEVANT


Self Made: Inspired by the Life of Madam C.J. Walker

INFO CAST CERTIFICATES

Biography Drama History


1465



Rating: 7.3 

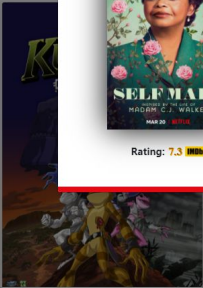
Cast

Octavia Spencer, Tiffany Haddish, Carmen Ejogo, Kevin Carroll, Blair Underwood, Garrett Morris, J. Alphonse Nicholson, Sydney Morton, Karen Glave, Mouna Traor, Cornelius Smith Jr, Bill Bellamy, Rothaford Gray, Sophia Deerr, Zahra Bentham, Sheila Isaro, Kiki Hammill, Keeya King



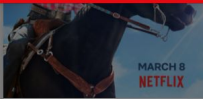
Self Made: Inspired by the Life of Madam C.J. Walker

MORE INFO




Kulipari: Dream Walker

MORE INFO




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MORE INFO



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| Show Certificates

Search Fields:

- ☒ title
- ☒ originCountry
- ☒ language
- ☒ cast
- ☒ genres
- ☒ summary
- ☒ imdbID

Show Type:

- ☒ animation
- ☒ miniSeries
- ☒ movie
- ☒ series
- ☒ short
- ☒ special

Start Year:

TO

Number of Episodes:

TO

Rating:

TO

Number of Votes:

TO


Sort By: RELEVANT

Self Made: Inspired by the Life of Madam C.J. Walker

INFOCASTCERTIFICATES

BiographyDramaHistory

1465



Rating: 7.3

Certificates

Argentina: 13, Australia: M, Brazil: 16, Germany: 12, Netherlands: 12, Singapore: M18, South Korea: 15, Spain: 13, United Kingdom: 15, United States: TV-MA

Self Made: Inspired by the Life of Madam C.J. Walker

MORE INFO

Kulipari: Dream Walker

MORE INFO

Walk. Ride. Rodeo.

MARCH 8
NETFLIX

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06

Conclusion & Future Work





THANKS!

Do you have any questions?

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