Looking for film to watch?

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Not knowing what to watch?

Movie Recommender

Google Colab Sheet

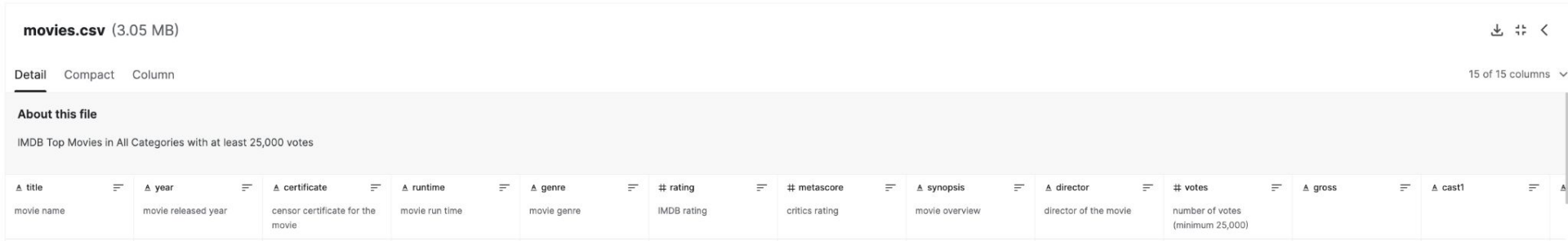
```
[ ] user_input = input("Enter your input: ")
    recommendation = movie_recommendation2(user_input, loaded_model, movies_df)
    #print("Suggested Movie:")
    #print(recommendation)
```

```
Enter your input: mythical creature battle war
+-----------------------------+------+---------+-----------------------------+--------+--------------------------------------------------------------------------
|            title            | year | runtime |            genre            | rating |
+-----------------------------+------+---------+-----------------------------+--------+--------------------------------------------------------------------------
| Big Trouble in Little China | 1986 | 99 min  |  Action, Adventure, Comedy  |  7.2   |                                       A rough-and-tumble trucker and his
|         Patch Adams         | 1998 | 115 min |  Biography, Comedy, Drama   |  6.8   | The true story of a heroic man, Hunter "Patch" Adams, determined to beco
|     The Prince of Egypt     | 1998 | 99 min  | Animation, Adventure, Drama |  7.2   |                                         Egyptian Prince Moses learns of
+-----------------------------+------+---------+-----------------------------+--------+--------------------------------------------------------------------------
Movie Title: Big Trouble in Little China
YouTube Query Link: https://www.youtube.com/results?search_query=Big%20Trouble%20in%20Little%20China

Movie Title: Patch Adams
YouTube Query Link: https://www.youtube.com/results?search_query=Patch%20Adams

Movie Title: The Prince of Egypt
YouTube Query Link: https://www.youtube.com/results?search_query=The%20Prince%20of%20Egypt
```

Dataset

IMDB Movies - All Categories

- Dimension: 15 columns & 10.064 rows
- Source:
  - Author: Dr. Shashikanth Vydyula
  - Methodolgy: Webscraping with R from IMDB Website
  - Link to Dataset: https://www.kaggle.com/datasets/drshashikanthvydyula/imdb-movies




young
Two
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criminal
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prison
small town
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join
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college
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student
high

How does it work?

- Unsupervised ML model - NLP model based on the movie synopsis.
- BERTopic: Topic Modelling Technique (a state-of-the-art model language representation).

The BERTopic algorithm follows these main steps:

1. **Embedding:** Each document in the collection is transformed into a dense vector representation using BERT. This step captures the semantic meaning of the text.
2. **Dimensionality reduction:** The high-dimensional document embeddings are reduced to a lower-dimensional space using the UMAP algorithm. UMAP preserves the local structure and relationships between documents.
3. **Clustering:** The reduced embeddings are clustered using HDBSCAN, which is a density-based clustering algorithm. - HDBSCAN identifies clusters of documents based on their density and connectivity.
4. **Topic extraction:** Representative documents are selected for each cluster to serve as topic labels. These representative documents are usually the most representative or frequent documents within each cluster.

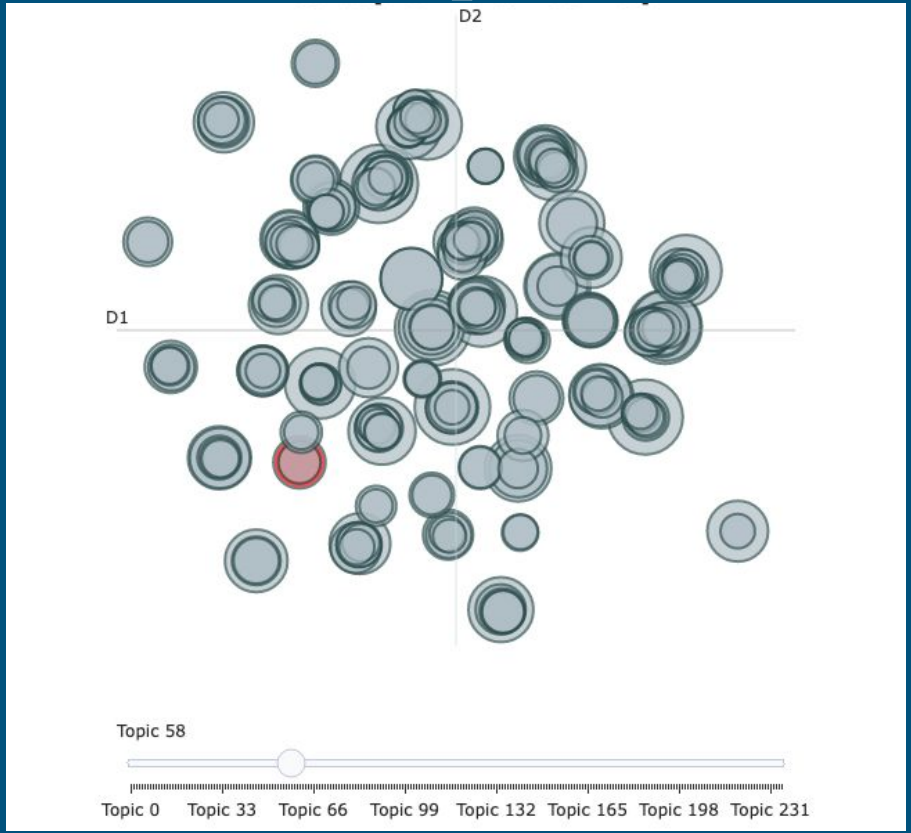
Results

- 233 Topics
- Around 3.000 synopsis are classified as outliers
- Min cluster size: 15 synopsis

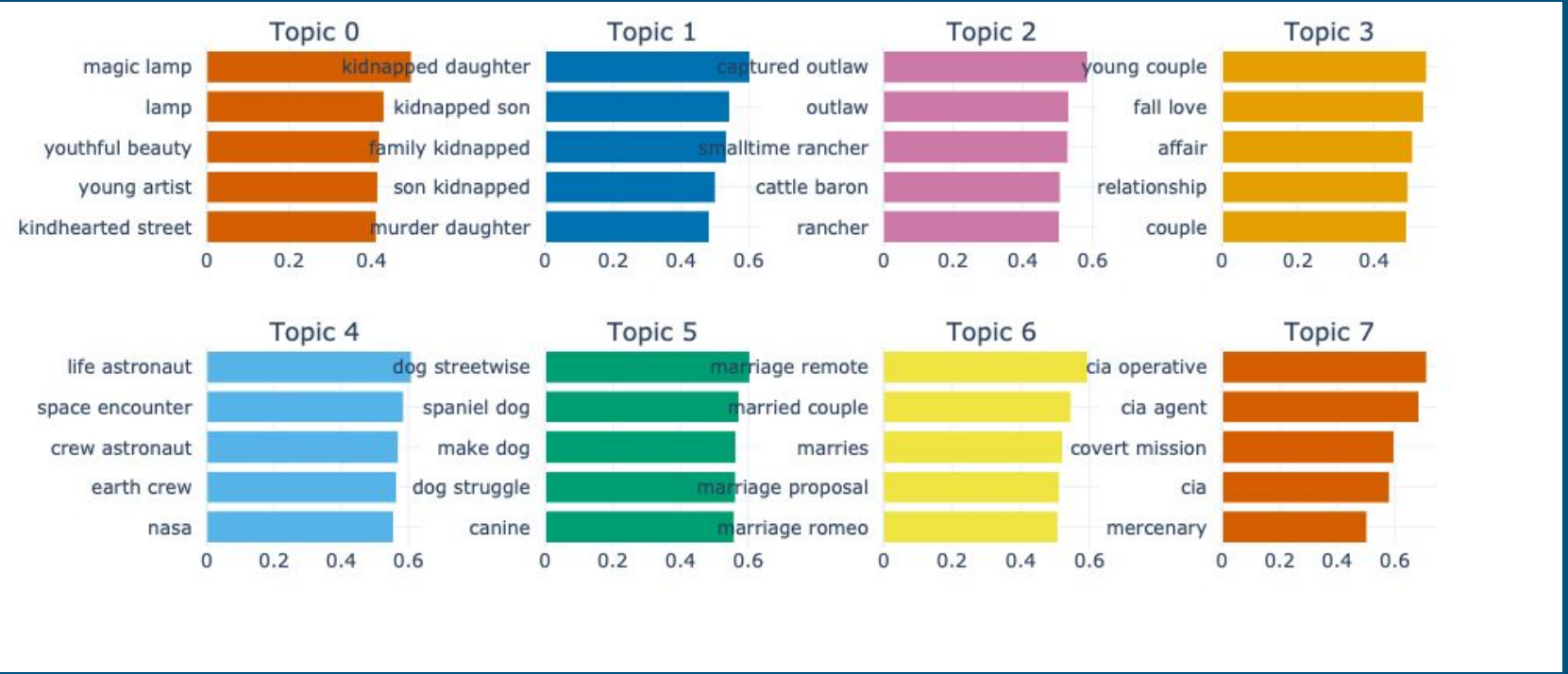
	Topic	Count	Name
0	-1	3058	-1_murder_crime_detective_encounter
1	0	97	0_magic lamp_lamp_youthful beauty_young artist
2	1	97	1_kidnapped daughter_kidnapped son_family kidn...
3	2	93	2_captured outlaw_outlaw_smalltime rancher_cat...
4	3	77	3_young couple_fall love_affair_relationship
...	...	...	...
228	227	15	227_time uncover_officer stuck_masked man_inve...
229	228	15	228_luck curtain_luck secretly_person luckier_...
230	229	15	229_survivor apocalypse_group survivor_survivo...
231	230	15	230_father disappearance_emily missing_discove...
232	231	15	231_holocaust jewishhungarian_auschwitz_fellow...

233 rows × 3 columns

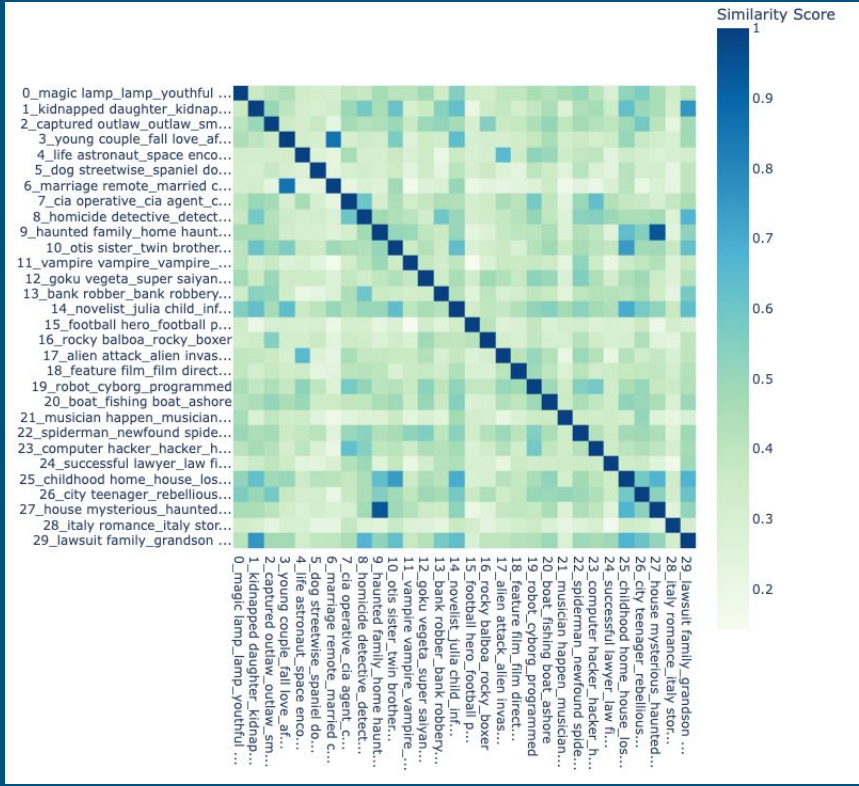
Intertopic Distance Map



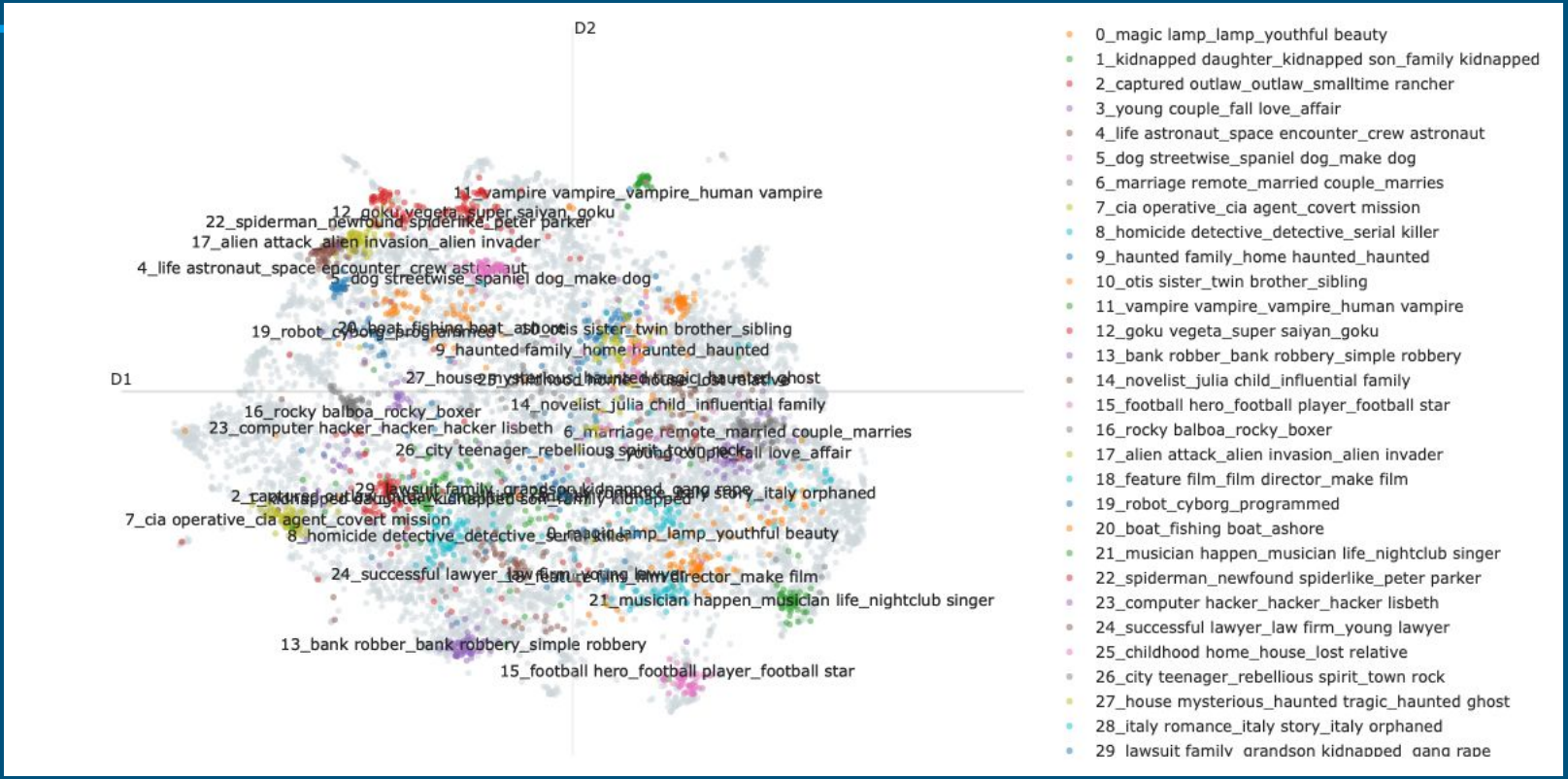
Topic Word Scores



Topic Similarity Heatmap



Synopsis and clusters



Why BERTopic?

- Model performance is subjective. Every model has different classifications
- Strengths:
  - Scales better with larger datasets than traditional models
  - Dimensionality map reduction embedded
  - Outliers: HDBSCAN leads more coherent and consistent topics
  - Finding automatically the optimal number of topics and also creating them
  - Performance is better with shorter documents - synopsis
- Weakness:
  - Longer training time
  - Expensive computational ressources