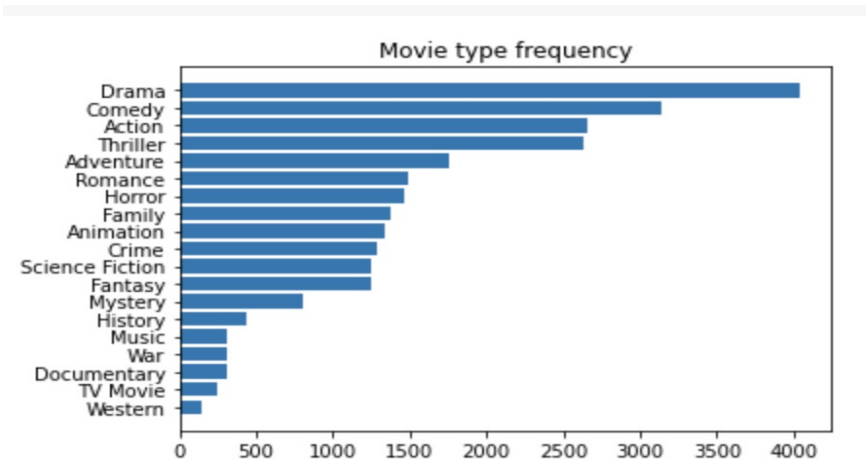


Movie Recommendation System – Genre

If a movie has multiple genres, then each genre will be calculated once. The following figure sorts and counts the number of occurrences of the genres. Drama has the highest frequency, and it can be known that many movies contain the element of drama.

In AMDB, after the user follows a specific movie genre on the setting page, AMDB will recommend the 20 most popular films of the label for the user on the profile page.



Movie type frequency chart

When the user follow ‘Drama’ lable on the setting page, the number one recommend ed movie would be ‘Mobile Suit Gundam Hathaway’ which popularity is 340.001.

```
dx.loc[dx['label'] == 'Drama']
```

Unnamed: 0		title	id	overview	genre_ids	popularity	label
78	78	Mobile Suit Gundam Hathaway	685274	After Char's rebellion, Hathaway Noa leads an ...	18	340.001	Drama
82	82	King Richard	614917	The TRUE STORY of how Richard Williams served ...	18	331.839	Drama
109	109	The Ice Road	646207	After a remote diamond mine collapses in far n...	18	190.415	Drama
114	114	House of Gucci	644495	When Patrizia Reggiani, an outsider from humbl...	18	159.492	Drama
131	131	Sing 2	438695	Buster and his new cast now have their sights ...	18	137.539	Drama
...	...	...	...	...	...	...	...
26247	26247	Madea's Witness Protection	103370	For years, mild-mannered Wall Street banker Ge...	18	11.143	Drama
26260	26260	Don't Worry, He Won't Get Far on Foot	443009	On the rocky path to sobriety after a life-cha...	18	11.140	Drama
26269	26269	Enigma	10491	The story of the WWII project to crack the cod...	18	11.137	Drama
26273	26273	Guilty as Sin	4916	Before a criminal lawyer knows what has happen...	18	11.137	Drama
26276	26276	Anything for Her	14556	Lisa and Julien are married and lead a happy u...	18	11.135	Drama

4047 rows x 7 columns

However, when we searched the recent most popular movie, “Shang-Chi and The Legend of The Ten Rings, ” its genre included Action, Adventure, and Fantasy. Setting genre is action as the search condition, the popularity of number one movie is as high

h as 6665.737. The difference in popularity between the No.1 Action movie and No.1 Drama movie is about 20 times.

Because the genre of a movie usually includes at least two or more labels, we are here to consider and analyze two genres of combinations that often appear simultaneously. Next, we consider using the form of heat map to show the distribution of types that often appear at the same time.

dx.loc[dx['title'] == 'Shang-Chi and the Legend of the Ten Rings']

Unnamed: 0		title	id		overview	genre_ids	popularity	label
0	0	Shang-Chi and the Legend of the Ten Rings	566525	Shang-Chi must confront the past he thought he...		28	6665.737	Action
1	1	Shang-Chi and the Legend of the Ten Rings	566525	Shang-Chi must confront the past he thought he...		12	6665.737	Adventure
2	2	Shang-Chi and the Legend of the Ten Rings	566525	Shang-Chi must confront the past he thought he...		14	6665.737	Fantasy

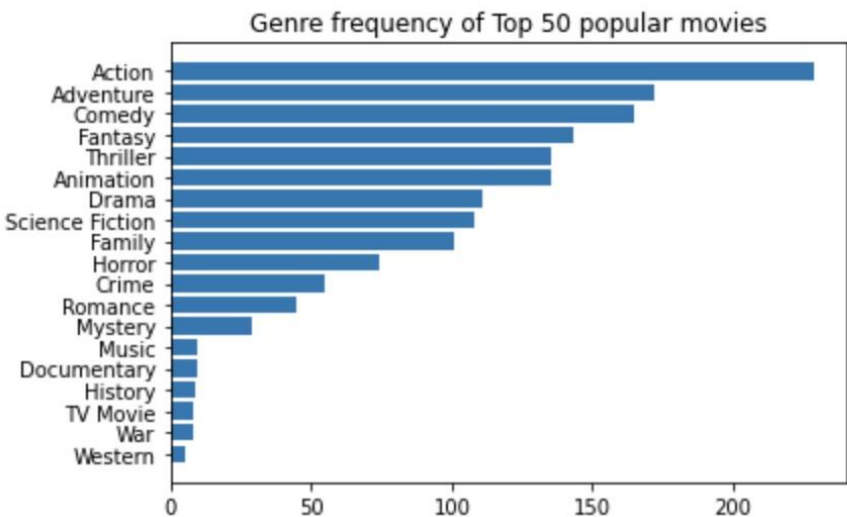
[43] dx.loc[dx['label'] == 'Action']

Unnamed: 0		title	id		overview	genre_ids	popularity	label
0	0	Shang-Chi and the Legend of the Ten Rings	566525	Shang-Chi must confront the past he thought he...		28	6665.737	Action
4	4	Venom: Let There Be Carnage	580489	After finding a host body in investigative rep...		28	4141.331	Action
7	7	No Time to Die	370172	Bond has left active service and is enjoying a a...		28	3491.344	Action
12	12	Apex	763164	Ex-cop James Malone is serving a life sentence...		28	1863.698	Action
15	15	Spider-Man: No Way Home	634649	Peter Parker is unmasked and no longer able to...		28	1782.830	Action
...	...		...	...		...	...	...
26202	26202	Operation Petticoat	9660	A World War II submarine commander finds himse...		28	11.154	Action
26213	26213	Crying Freeman	9501	A lethal assassin for a secret Chinese organis...		28	11.152	Action
26217	26217	The Foreigner	18248	This story is about a freelance agent (Seagal)...		28	11.151	Action
26263	26263	The Beastmaster	16441	Dar, is the son of a king, who is hunted by a ...		28	11.139	Action
26280	26280	Beyond Skyline	271404	Detective Mark Corley storms his way onto an a...		28	11.133	Action

2653 rows x 7 columns

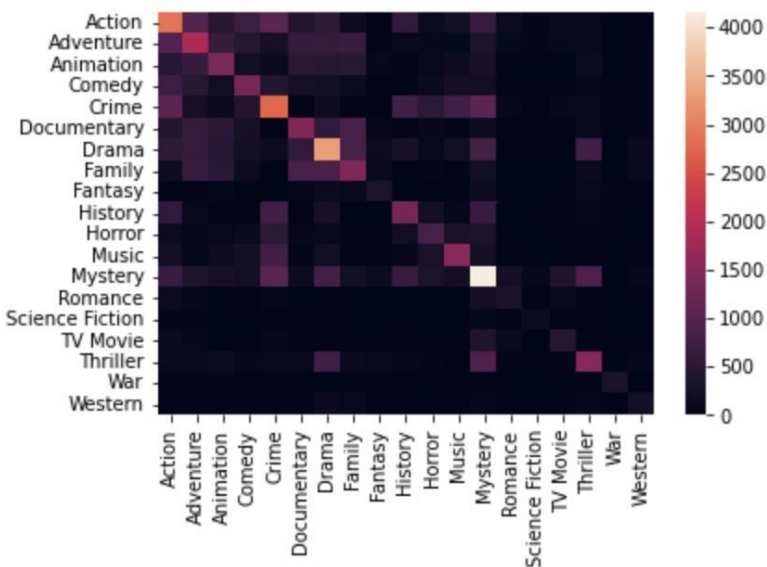
Our goal is to recommend the most popular movies to users according the genre label, so we chose to intercept the top 50 most popular movies for analysis. Then make genre statistics for these 50 movies, the statistical results are shown in histogram 2. At this time, it can be seen that the slope between the labels has slowed down, which is helpful for find out popular genres combination.

```
plt.rcParams['font.sans-serif'] = ['SimHei']
plt.rcParams['axes.unicode_minus'] = False
dis=lab2
a = dis['label']
b = dis['count']
plt.barh(a, b)
plt.title('Genre frequency of Top 50 popular movies')
plt.show()
```



```
import seaborn as sns
annot_lookup = []
for i in range(len(nr_ids)):
    annot_lookup.append(nr_ids[i])
sns.heatmap(visGrid, xticklabels=annot_lookup, yticklabels=annot_lookup)
```

```
[ ]> <matplotlib.axes._subplots.AxesSubplot at 0x7f70479ab910>
```





A prominent square can be found in the middle of this heat map; even if there are some black colour blocks in this square, we do not think this will significantly hinder the recommendation result. Since we believe this can bring novelty to the movie recommendation system.

Based on the above analysis, we can classify the data into 3 categories: category A, including Action, Music, Horror, History, Crime, Comedy and Mystery; category B, including Adventure, Animation, Documentary and Family; category C, including Action, Adventure, Comedy and Fantasy.

As long as the user follows one of the genre labels in category A or B on the setting page, in addition to the label selected by the user, AMDB will randomly select any other label in the same category. Recommend movies to users based on these two tags which ensure the novelty and randomness of every time movie recommendation.

For example, when a user selects the 'Adventure' label to follow, AMDB may recommend the most popular film among the Adventure and Family at the same time, instead of just recommending movies with an adventure label. When users follow War label, because the movies in this genre are relatively less, the system may recommend movies with label War or Action to users in the meanwhile.