# RECOMENDATION SYSTEM on STEAM

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# Presentation plan

RECEIVING, PROCESSING AND PREPARING DATA COLLABORATIVE MODEL CONTENT MODEL (TF-IDF) HYBRID RECOMMENDATION

# Data

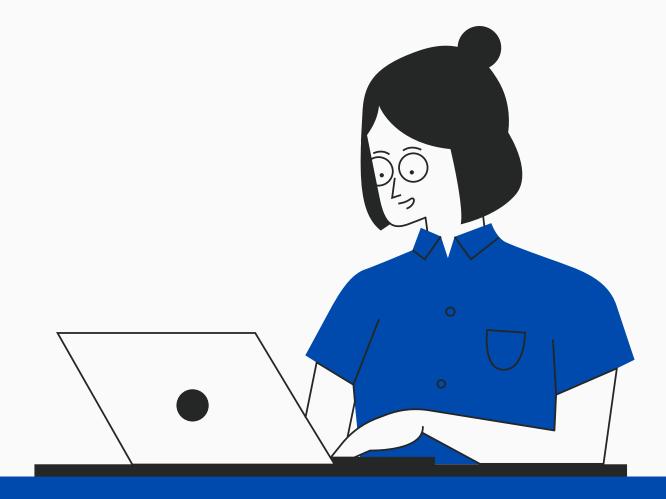
!kaggle datasets download -d antonkozyriev/game-recommendations-on-steam

recommendations_df.tail(2)								
	app_id	helpful	funny	date	is_recommended	hours	user_id	review_id
41154792	696170	0	0	2018-06-11	True	4.0	1044289	41154792
41154793	1089980	2	0	2020-09-16	True	14.0	13971935	41154793

games	df.tail(	<u>2</u> )						]				
	app_id	title	date_release	win	mac	linux	rating	positive_ratio	user_reviews	price_final	price_original	discount
50870	2272250	Forgive Me Father 2	2023-10-19	True	False	False	Very Positive	95	82	17.0	0.0	0.0
50871	2488510	FatalZone	2023-10-23	True	False	False	Very Positive	88	144	4.0	0.0	0.0

games_	metadata	tail(2)	
	app_id	description	tags
50870	2272250	Embark on a journey into the darkest nightmare [Early Access, FPS, Action, Retro, F	rst-Perso
50871	2488510		П

users_df.tail(2)				
	user_id	products	reviews	
14306062	5074363	0	0	
14306063	5081164	0	0	



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Data	/	I	)
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	app_id	tags_string	user_id	title	rating_numeric
0	13500	Action, Adventure, Parkour, Third Person, Grea	3369378	Prince of Persia: Warrior Within™	4.5
1	13500	Action, Adventure, Parkour, Third Person, Grea	11294916	Prince of Persia: Warrior Within™	4.5

```
sampled_data = merged_data.sample(n=1000000, random_state=42)
sampled_data.shape
```

(1000000, 5)



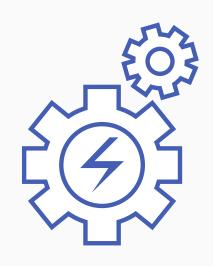
```
games_df['rating'].unique()
array(['Very Positive', 'Positive', 'Mixed', 'Mostly Positive',
                                                                                                                                                  Score Layout Visualization
                                                                                                                      14000
       'Overwhelmingly Positive', 'Negative', 'Mostly Negative',
       'Overwhelmingly Negative', 'Very Negative'], dtype=object)
                                                                                                                      12000 -
# convert text scores to numeric values
rating_map = {
                                                                                                                      10000
    'Overwhelmingly Positive': 5,
    'Very Positive': 4.5,
                                                                                                                       8000
    'Positive': 4,
    'Mostly Positive': 3.5,
                                                                                                                       6000
    'Mixed': 3,
    'Mostly Negative': 2.5,
                                                                                                                       4000
    'Negative': 2,
    'Very Negative': 1.5,
     'Overwhelmingly Negative': 1
                                                                                                                       2000 -
                                                                                                                                                          3.0
                                                                                                                                                                 35
                                                                                                                                                                        0.0
                                                                                                                                                       rating_numeric
games_df['rating_numeric'] = games_df['rating'].map(rating_map)
games_df.head()
```

# Data

### Total unique tags: 483







### TEST

RMSE: 0.1895

RMSE: 0.18946312252954234

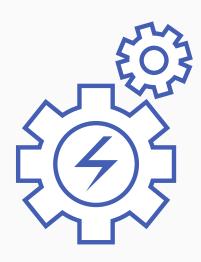
### **CROSS-VALIDATION**

Evaluating RMSE, MAE of algorithm SVD on 3 split(s).

Fold 1 Fold 2 Fold 3 Mean Std
RMSE (testset) 0.2037 0.2017 0.2028 0.2027 0.0008
MAE (testset) 0.0854 0.0846 0.0853 0.0851 0.0004
Fit time 21.67 22.23 22.48 22.13 0.34
Test time 5.89 2.70 2.51 3.70 1.55

Mean RMSE: 0.20272424232845862 Mean MAE: 0.08508051635758906

# SVD model



### **PREDICTION**

```
Top-10 user recommendations 11892793:

Game ID: 261180.0, Title: Lethal League, Predicted Rating: 4.993917959651524

Game ID: 4570.0, Title: Warhammer® 40000: Dawn of War® - Game of the Year Edition, Predicted Rating: 4.992551669631116

Game ID: 562220.0, Title: Zup! 2, Predicted Rating: 4.992293232858197

Game ID: 511470.0, Title: Glass Masquerade, Predicted Rating: 4.991928619989361

Game ID: 35700.0, Title: Trine Enchanted Edition, Predicted Rating: 4.991906572698225

Game ID: 230270.0, Title: N++ (NPLUSPLUS), Predicted Rating: 4.991647525768363

Game ID: 1147690.0, Title: NGU IDLE, Predicted Rating: 4.9916151450575

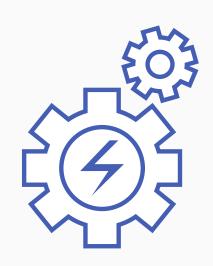
Game ID: 359050.0, Title: Shower With Your Dad Simulator 2015: Do You Still Shower With Your Dad, Predicted Rating: 4.9909247

52496756

Game ID: 593280.0, Title: Cat Quest, Predicted Rating: 4.9908989269675885

Game ID: 597760.0, Title: Yuppie Psycho: Executive Edition, Predicted Rating: 4.989804906891887
```

# SVD model



### PREDICTION CHECK

User: 10230654.0, Item: 221380.0, Actual Rating: 5.0, Predicted Rating: 4.9855876863615896
User: 13006684.0, Item: 552450.0, Actual Rating: 4.5, Predicted Rating: 4.4632838910094925
User: 5664018.0, Item: 1056960.0, Actual Rating: 3.0, Predicted Rating: 3.0383065718651183
User: 5696620.0, Item: 274170.0, Actual Rating: 4.5, Predicted Rating: 4.494901214436889
User: 4993.0, Item: 298110.0, Actual Rating: 4.5, Predicted Rating: 4.487848187518251
User: 6721805.0, Item: 22610.0, Actual Rating: 3.5, Predicted Rating: 3.523356967354458
User: 9517654.0, Item: 1222690.0, Actual Rating: 3.5, Predicted Rating: 3.5063810182611688
User: 7452664.0, Item: 329440.0, Actual Rating: 3.0, Predicted Rating: 3.0656124097418016
User: 11678674.0, Item: 409720.0, Actual Rating: 3.0, Predicted Rating: 3.0110724431325164
User: 3823175.0, Item: 70600.0, Actual Rating: 4.5, Predicted Rating: 4.51603523833254

# TF-IDF matrix, Vectorizer and AnnoyIndex

**EVALUATE** 

Average Precision: 0.37

Average Recall: 0.97

### **PREDICTION**

Enter User ID: 5324004

	nded Games:	Recomme
tags_string	title	
cyberpunk action topdown shooter great soundtr	RUINER	49168
platformer adventure action indie remake cult	Wonder Boy: The Dragon's Trap	565264
vampire rpg choices matter story rich action o	Vampyr	73291

# Hybrid recommender



### PREDICTION

Enter user ID: 9255103

Top 10 recommended games for user 9255103:

1. Gears 5

2. Yuppie Psycho: Executive Edition

3. Gorogoa

4. Placid Plastic Duck Simulator

5. DOOM II

6. Motor Town: Behind The Wheel

7. Senren \* Banka

8. Poly Bridge 2

9. LYNE

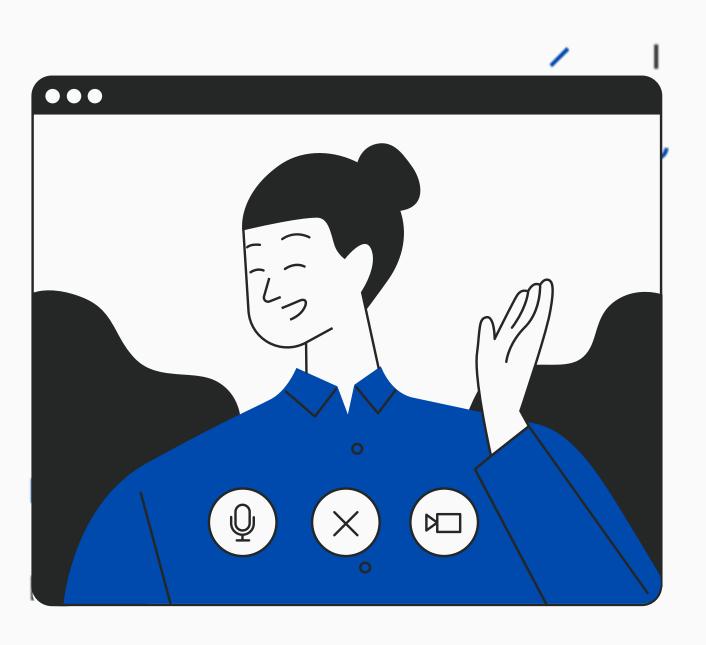
10. Neon White

### **EVALUATE**

Recommendations: [597760, 1999360, 557600, 1369670, 1533420, 1144400, 1062160, 1097840, 2300, 266010]

Precision: 1.0, Recall: 1.0, F1: 1.0

# Thank you!





https://github.com/malpka1/c ollaborative--gamerecommendations-on-steamplatform