

PC Game Recommendations

Content-based and Collaborative Recommenders
for Steam Users



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Overview



#1 Business Problem

Steam and recommendations

#2 Data Understanding

Game labels and user playtimes

#3 Modeling and Results

Content-based and Collaborative

#4 Conclusions and Next Steps

Limitations and app deployment

Business Problem

- Digital downloads
- Steam storefront/distribution
- Leveraging user data

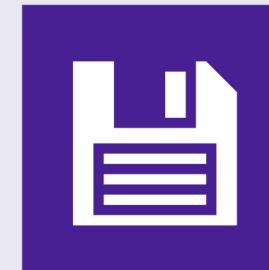


Data Understanding



Steam Store Games

- Kaggle dataset
- ~26,000 games
- Categories, genres, tags



Steam User Libraries

- Steam Web API
 - ~1,650 users
 - ~3,000 games

Modeling

Content-based



Labels

- Categories
- Genres
- User-voted Tags

Collaborative

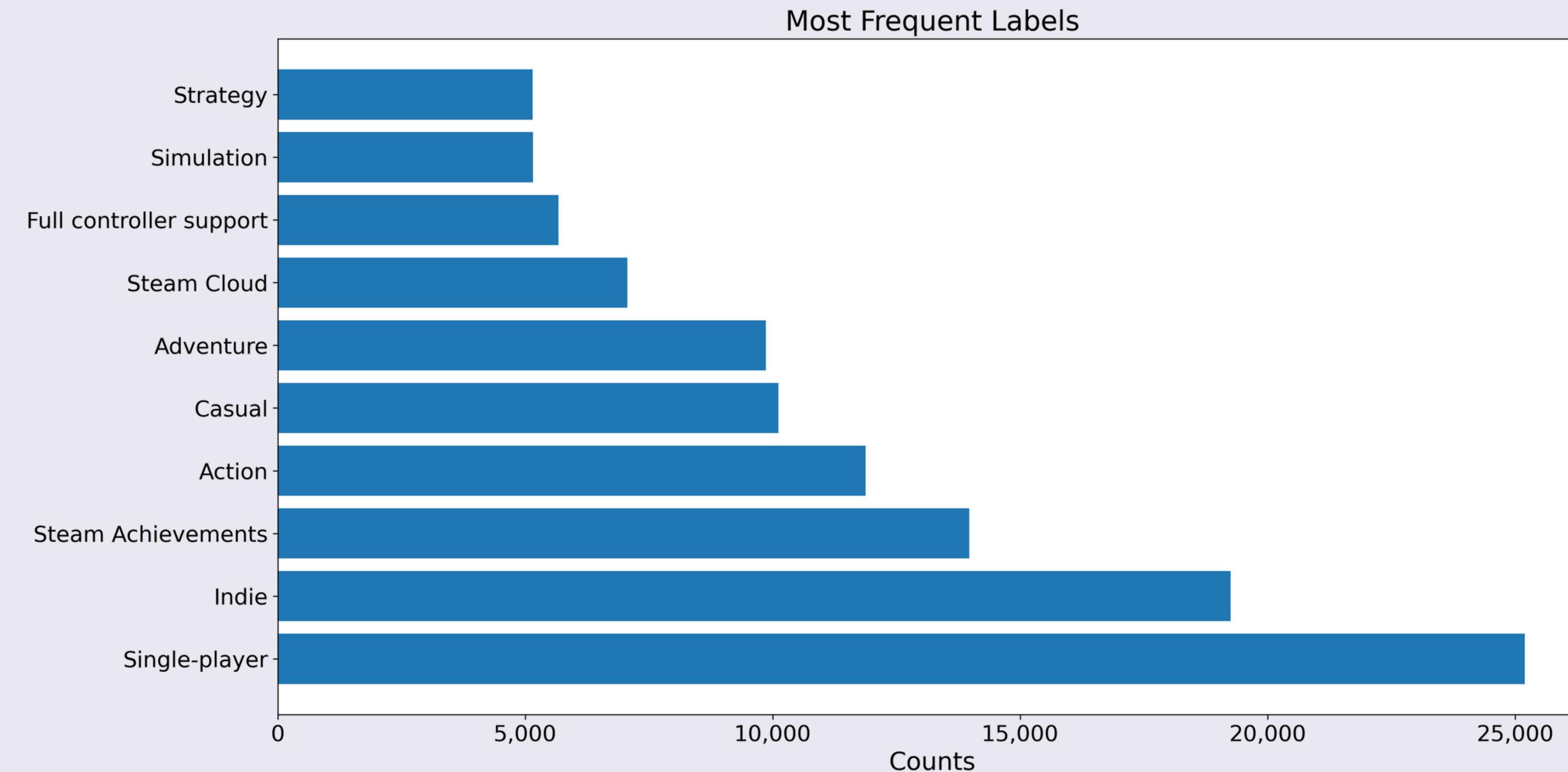


Ratings

- Implicit
- Playtimes

Modeling

Content-based Recommender



Compare labels
using cosine
similarity

Example

Content-based Recommender



Name of game you would like recommendations for? Stardew Valley
 Finding recommendations for Stardew Valley (app id 413150):
 Number of recommendations? 5

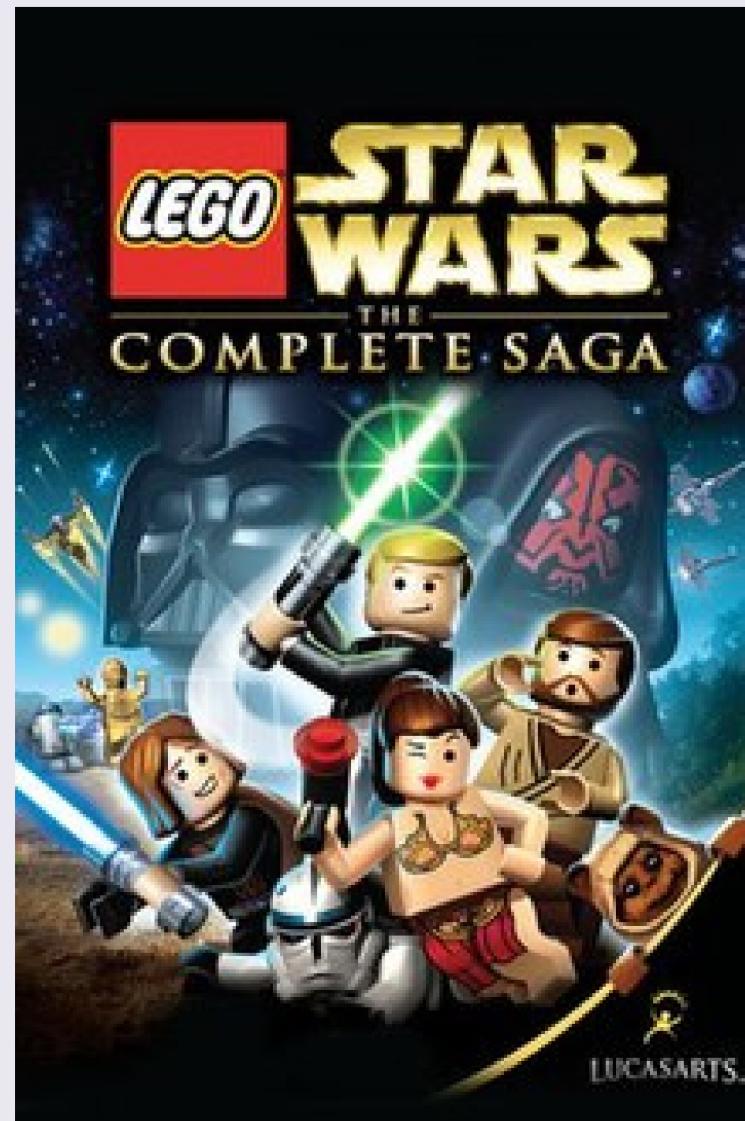
	App ID	Name	Release Date	Developer	Platforms	Owners	Price (GBP)	% of Positive Ratings	Content Labels	Similarity Score
1	431180	WolfQuest	2016-03-25	eduweb	Windows, Mac	50,000 - 100,000	6.99	88.80	Co-op, Indie, Multi-player, Partial Controller Support, RPG, Simulation, Single-player, Steam Achievements, Survival	0.843274
2	984560	HEARTBEAT	2018-12-12	CHUMBOSOFT LLC	Windows, Mac, Linux	0 - 20,000	11.39	97.84	Indie, Partial Controller Support, Pixel Graphics, RPG, Single-player, Steam Achievements, Steam Cloud	0.836660
3	432010	World's Dawn	2016-01-25	Wayward Prophet	Windows	20,000 - 50,000	6.99	81.63	Casual, Indie, Partial Controller Support, RPG, Simulation, Single-player, Steam Achievements, Steam Cloud	0.782624
4	220260	Farming Simulator 2013 Titanium Edition	2013-10-09	Giants Software	Windows, Mac	500,000 - 1,000,000	11.39	91.23	Casual, Co-op, Multi-player, Partial Controller Support, Simulation, Single-player, Steam Achievements, Steam Cloud	0.782624
5	1022280	CosPuzzle: Gru Hellsing	2019-03-07	AnimeBomb	Windows	0 - 20,000	0.79	50.00	Casual, Indie, Partial Controller Support, RPG, Simulation, Single-player, Steam Achievements, Steam Cloud	0.782624

Content Labels

Co-op, Indie, Multi-player, Partial Controller Support, Pixel Graphics, RPG, Simulation, Single-player, Steam Achievements, Steam Cloud

Example

Content-based Recommender



Name of game you would like recommendations for? LEGO® Star Wars™ - The Complete Saga
 Finding recommendations for LEGO® Star Wars™ - The Complete Saga (app id 32440):
 Number of recommendations? 5

									Content Labels	
	App ID	Name	Release Date	Developer	Platforms	Owners	Price (GBP)	% of Positive Ratings		Similarity Score
1	438640	LEGO® STAR WARS™: The Force Awakens	2016-06-27	Traveller's Tales;TT Games;Feral Interactive (Mac)	Windows, Mac	200,000 - 500,000	24.99	81.24	Adventure, Full controller support, LEGO, Shared/Split Screen, Single-player, Star Wars, Steam Cloud	0.801784
2	267530	The LEGO® Movie - Videogame	2014-02-27	TT Fusion;Traveller's Tales;Feral Interactive (Mac)	Windows	200,000 - 500,000	14.99	82.99	Action, Adventure, Full controller support, LEGO, Shared/Split Screen, Single-player, Steam Achievements, Steam Cloud	0.801784
3	311770	LEGO® Pirates of the Caribbean: The Video Game	2014-10-06	Traveller's Tales	Windows	50,000 - 100,000	15.49	81.01	Action, Adventure, Full controller support, LEGO, Local Co-op, Shared/Split Screen, Single-player, Steam Cloud	0.801784
4	21000	LEGO® Batman™: The Videogame	2008-09-29	Traveller's Tales	Windows	200,000 - 500,000	14.99	81.27	Action, Adventure, Full controller support, LEGO, Shared/Split Screen, Single-player	0.771517
5	204120	LEGO® Harry Potter: Years 5-7	2012-01-05	Traveller's Tales	Windows	200,000 - 500,000	14.99	85.79	Action, Adventure, Full controller support, LEGO, Magic, Shared/Split Screen, Single-player	0.771517

Modeling

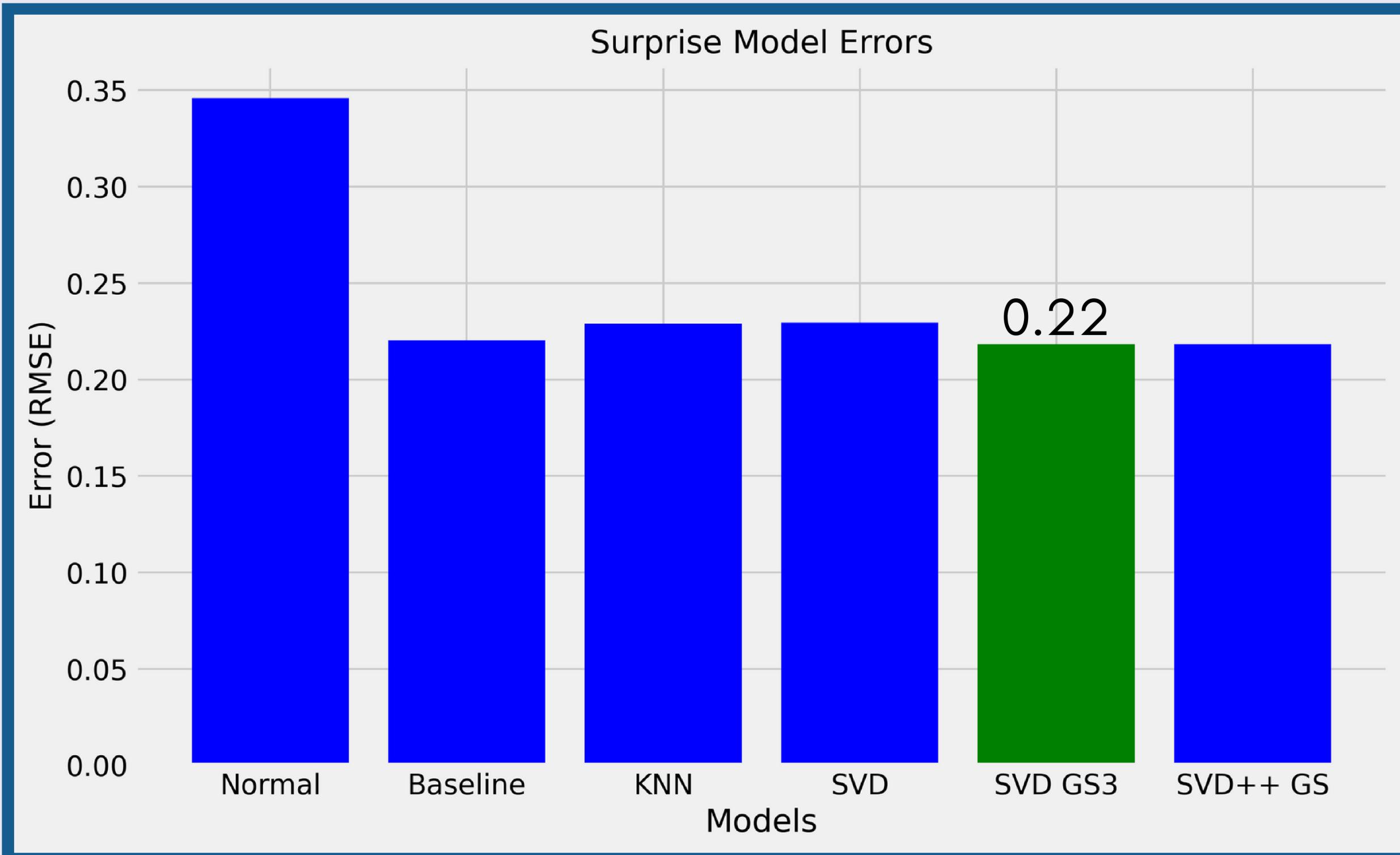
Collaborative Filtering Recommender

- Implicit rating
- Predict playtimes
- Standardize playtime for each game



Modeling

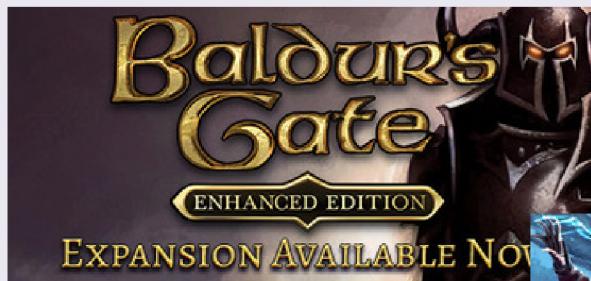
Collaborative Filtering Recommender



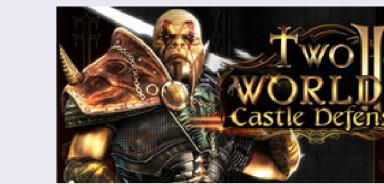
Example

Collaborative Filtering Recommender

0.71



0.58



Number of recommendations? 5

Type the Steam ID of the user you would like recommendations for: 76561198199900595

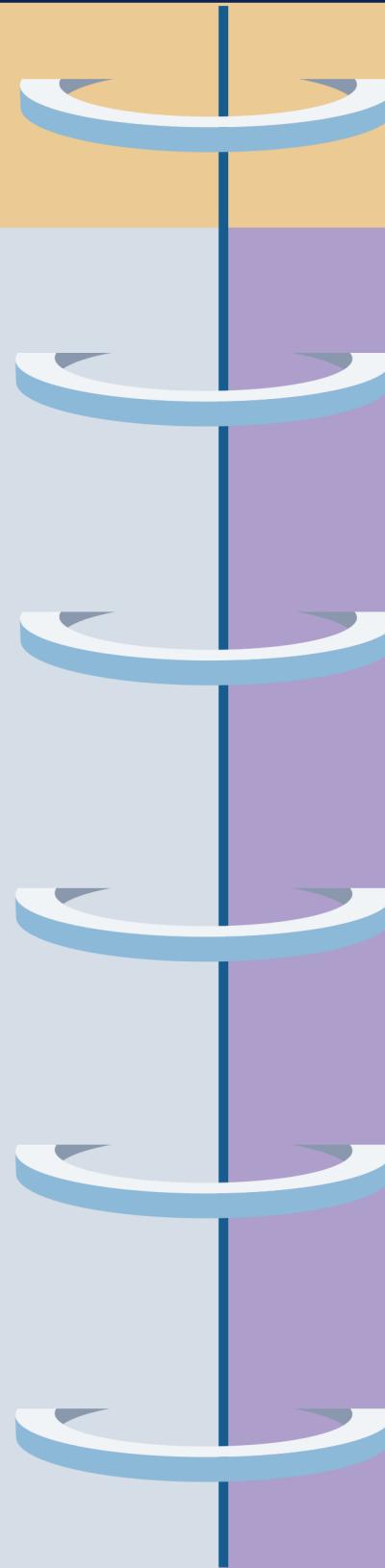
Here are 5 recommendations for Steam ID 76561198199900595:

	Name	App ID	Est. Rating	Owned	Content Labels
1	World War III: Black Gold	254080	0.685	No	Cross-Platform Multiplayer, Includes level editor, Multi-player, Online Co-op, Online Multi-Player, RTS, Single-player, Steam Cloud, Strategy, War
2	Jack Orlando Director's Cut	253960	0.660	No	Adventure, Noir, Point & Click, Single-player
3	POLYWAR	444490	0.643	No	Action, Indie, Massively Multiplayer, Online Multi-Player
4	Two Worlds II Castle Defense	7530	0.643	No	Fantasy, Single-player, Steam Cloud, Strategy, Tower Defense
5	Data Hacker: Initiation	311860	0.638	No	Adventure, Indie, RPG, Simulation, Single-player

Conclusion

Limitations

- ★ Ratings without reviews
- ❄️ 'Cold Start'
- 🌐 Steam labels insufficient



Next Steps

- 🔗 Streamlit app
- 💡 NLP features



Thank You

Any questions?



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<https://github.com/yuhkulele>

