Amazon Video Games Recommendation System

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Agenda

01 Problem & Solution

02 Data Overview

03 Methods & Results

04 Conclusion & Next Step

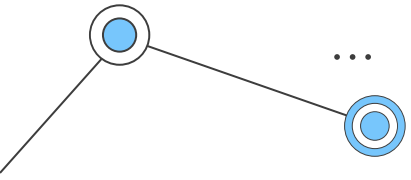
Understanding the Problem

- Internet-based E-commerce sells different product ranges.
- Millions of games and accessories
- Need a good way to guide customers and personalize their shopping experience

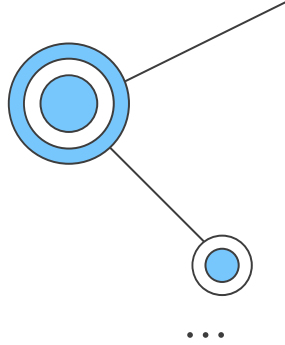
Solution

Recommendation System

1. Trending products Recommendation System
2. Content Based
3. Collaborative Filtering



Why Recommendation System?



According to the research on personalization

- Customers are likely to use a brand that offers personalized experience.
- Personalization improves e-commerce website owners' relationships with customers.

Data Overview

- 497,000 5-core product ratings and reviews from 55,000 users.
- 84,000 video games/accessories.

Methods & Results

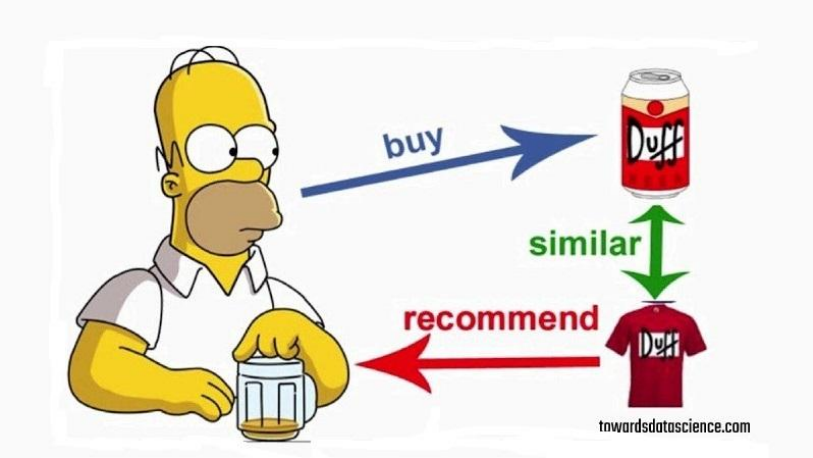
1. Trending Products Recommendation System
    - Top 10 most rated products
    - It solves cold start problem

Most Reviewed Products

	asin	title	description	brand	imageURL
34644	B000P46NMA	Assassin's Creed - Playstation 3	Video Games,PlayStation 3,Games,	Ubisoft	[https://images-na.ssl-images-amazon.com/image...
36938	B000XJNTNS	Mario Kart Wii with Wii Wheel	Video Games,Wii,Accessories,Controllers,Racing...	Nintendo	[https://images-na.ssl-images-amazon.com/image...
37219	B000ZK7ZOE	inFAMOUS - Playstation 3	Video Games,PlayStation 3,Games,	Sony	[https://images-na.ssl-images-amazon.com/image...
37225	B000ZK9QCS	God of War III - Playstation 3	Video Games,PlayStation 3,Games,	Sony	[https://images-na.ssl-images-amazon.com/image...
37226	B000ZKA0J6	StarCraft II: Wings of Liberty	Video Games,PC,Games,	Blizzard Entertainment	[https://images-na.ssl-images-amazon.com/image...
37754	B0012N94WO	Resident Evil 5 - Playstation 3	Video Games,PlayStation 3,Games,	Capcom	[https://images-na.ssl-images-amazon.com/image...
38709	B00178630A	Diablo III	Video Games,PC,	Blizzard Entertainment	[https://images-na.ssl-images-amazon.com/image...
47584	B003ZSP0WW	Xbox 360 Wireless Controller - Glossy Black	Video Games,Xbox 360,Accessories,Controllers,G...	Microsoft	[https://images-na.ssl-images-amazon.com/image...
62781	B00GODZYNA	Uncharted 4: A Thief's End - PlayStation 4	Video Games,PlayStation 4,Games,	Sony	[https://images-na.ssl-images-amazon.com/image...
65843	B00JK00S0S	The Last of Us Remastered - PlayStation 4	Video Games,PlayStation 4,Games,	Sony	[https://images-na.ssl-images-amazon.com/image...

2. Content-Based

- Suggest similar items based on a particular item (category and brand/publisher name)
- Sort out similar items by doing cosine similarity



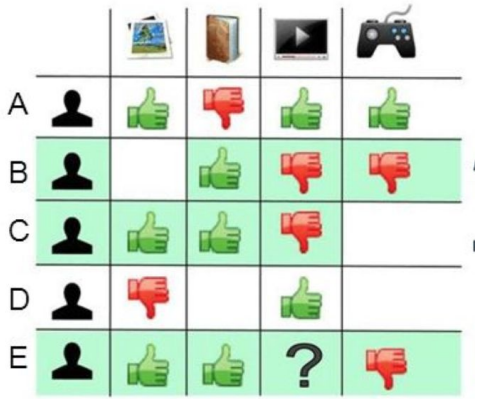
Example of Recommended Products

```
# input product: Mario Kart 64(Retro Gaming & Microconsoles, Nintendo)
recom = give_recommendation('B00000DMAX', 10)
recom
```

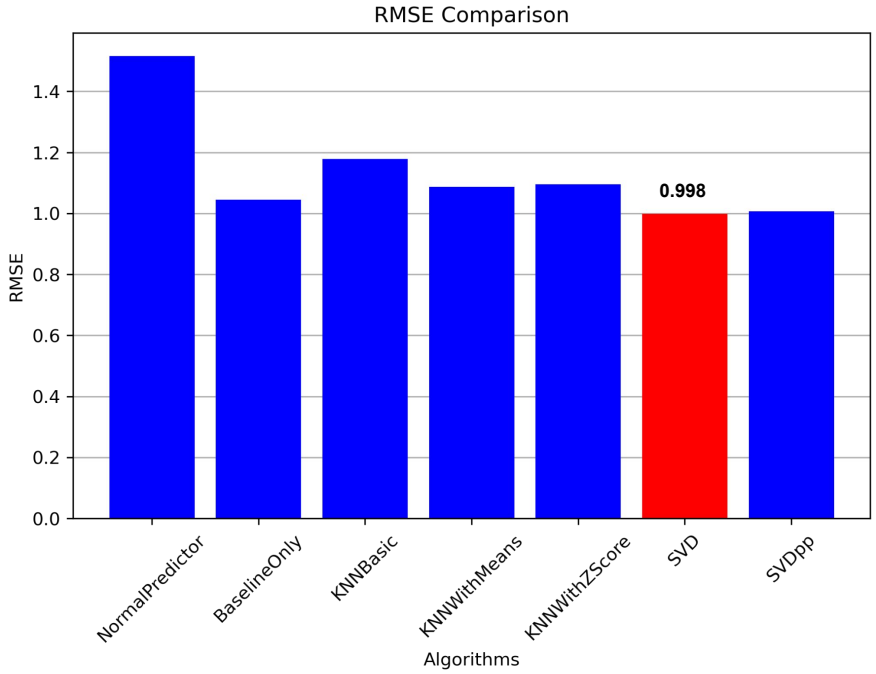
	asin	title	description	brand	imageURL
3740	B000046Q7Q	Mario Party 2	Video Games,Retro Gaming & Microconsoles,Ninte...	Nintendo	[https://images-na.ssl-images-amazon.com/image...
8061	B000068GV4	The Legend of Zelda: Triforce of the Gods [Nin...	Video Games,Retro Gaming & Microconsoles,Super...	Nintendo	[https://images-na.ssl-images-amazon.com/image...
9448	B00007KUW5	Rayman 3: Hoodlum Havoc	Video Games,Retro Gaming & Microconsoles,GameC...	Nintendo	[https://images-na.ssl-images-amazon.com/image...
13134	B0002Z2RUO	NFL Blitz Special Edition	Video Games,Retro Gaming & Microconsoles,Ninte...	Nintendo	[]
29407	B000B8J7KA	Dr. Mario and Puzzle League	Video Games,Retro Gaming & Microconsoles,Game ...	Nintendo	[https://images-na.ssl-images-amazon.com/image...
32223	B000GXD2UG	Ready 2 Rumble Boxing	Video Games,Retro Gaming & Microconsoles,Ninte...	Nintendo	[]
32225	B000GXDEWW	NFL Blitz 2001	Video Games,Retro Gaming & Microconsoles,Ninte...	Nintendo	[]
32228	B000GYTSPS	Jimmy Connors Tennis-Super Nintendo	Video Games,Retro Gaming & Microconsoles,Super...	Nintendo	[https://images-na.ssl-images-amazon.com/image...
33031	B000J3O1QM	Super Star Wars Trilogy 3 Game Bundle (Super S...	Video Games,Retro Gaming & Microconsoles,Super...	Nintendo	[https://images-na.ssl-images-amazon.com/image...
37000	B000Y0J29G	Nail N Scale	Video Games,Retro Gaming & Microconsoles,Game ...	Nintendo	[]

3. Collaborative Filtering

- Try to predict the rating a user would give an item.
- Use items with high predicted rating as recommendation



Models


RMSE Comparison
RMSE
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.998
NormalPredictor
BaselineOnly
KNNBasic
KNNWithMeans
KNNWithZScore
SVD
SVDpp
Algorithms

Example of Recommended Products

```
# Select a random user and get recommendations
recom = buyer_recommended_products('A1JGAP0185YJI6', 10)
recom
```

	asin	title	brand	description	imageURL	predicted_rating
11175	B0000DJX7I	Grand Theft Auto Double Pack: Grand Theft Auto...	Rockstar Games	Video Games,Retro Gaming & Microconsoles,Xbox,...	[https://images-na.ssl-images-amazon.com/image...	5.000000
912	B00001XDKO	Unreal Tournament - PC	Atari	Video Games,PC,Games,	[https://images-na.ssl-images-amazon.com/image...	5.000000
11148	B0000DC64H	Driving Force Wheel for PlayStation 2 and Play...	Logitech	Video Games,PlayStation 3,Accessories,Controll...	[https://images-na.ssl-images-amazon.com/image...	5.000000
6529	B00005N7YR	Medal of Honor: Allied Assault - PC	Electronic Arts	Video Games,PC,Games,,Battle in over 20 missio...	[https://images-na.ssl-images-amazon.com/image...	5.000000
16514	B000B9RI14	Xbox 360 LIVE 1600 Points	Microsoft	Video Games,Xbox One,Currency & Subscripti...	[https://images-na.ssl-images-amazon.com/image...	5.000000
37068	B004XV6ST4	Kinect Sensor TV Mounting Clip - Xbox 360	PDP	Video Games,Xbox 360,Accessories,Mounts, Brack...	[https://images-na.ssl-images-amazon.com/image...	5.000000
45914	B00CBVHJ00	Thrustmaster HOTAS Warthog Flight Stick PC	ThrustMaster	Video Games,PC,Accessories,Controllers,Flight ...	[https://images-na.ssl-images-amazon.com/image...	5.000000
3500	B000035Y6D	Super Nintendo Console (SNES System)	Nintendo	Video Games,Retro Gaming & Microconsoles,S...	[https://images-na.ssl-images-amazon.com/image...	4.997846
68232	B01BSQV64I	DOOM [Online Game Code]	Bethesda	Video Games,PC,,Youve come here for a reason. ...	[https://images-na.ssl-images-amazon.com/image...	4.995242
29688	B001REZLY8	Fallout 3: Game of the Year Edition	Bethesda	Video Games,Xbox 360,	[]	4.980431

Conclusion

- Trending products recommendation system
  - Lists out the popular products
  - Avoid cold start problem
- Content-based
  - Filters out users' interested categories/brand
- Collaborative filtering,
  - The best model is SVD algorithm.
  - rmse 0.998.

Next Steps

- Deploy the recommendation system on the website.
- Find a better data with genres and more complete brand information.
- Web scraping the most updated data.
- Try Hybrid method.

Thanks!

Do you have any questions?

GitHub Linkedin

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