




Product Recommendation System

—

By Echo Zhao

How Many Recommenders are here?




Fitbit Versa Smart Watch, Black/Black Aluminium, One Size (S & L Bands Included)

★★★★☆ ~ 3,808

\$119⁹⁵ \$169.95

✓prime Get it as soon as Fri, Dec 6

FREE Shipping by Amazon




Fitbit Versa Lite Edition Smart Watch, One Size (S & L Bands included)

★★★★☆ ~ 1,203

\$144⁹⁴ \$199.95

FREE Shipping

Only 3 left in stock - order soon.




Fitbit Versa Smart Watch, Peach/Rose Gold Aluminium, One Size (S & L Bands Included)

★★★★☆ ~ 1,411

More Buying Choices

\$146.75 (\$9 new offers)



Roll over image to zoom in

play 300+ songs on your wrist (subscription required)

- With a larger display and an always-on display, always on display requires more frequent updates
- Track heart rate 24/7, steps, distance, floors climbed
- Works around the clock with 6 plus day
- Get call, text, calendar and smartphone send quick replies and voice replies on /

Compare with similar items

17 new from \$195.50



LETSFIT

Smart Watch with Heart Rate Monitor

Shop now

Ad feedback

Frequently bought together


Total price: **\$217.98**

Add both to Cart

Add both to List

Customers who viewed this item also viewed


Page 1 of 6



IQ Shield Screen Protector Compatible with Fitbit Versa 2 (6-Pack) Anti-Bubble Clear Film

★★★★★ 571


\$9.95



Fitbit Versa Lite Smartwatch, Charcoal/Silver Aluminium, One Size (S & L Bands...)

★★★★★ 1,200

\$153.99




Only fit for Fitbit Versa 2

Seltureone (3 Pack) Screen Protector Case Compatible for Fitbit Versa 2, Full Body Cover Scratch Resistant...

★★★★★ 121


\$6.99 ✓prime



Fitbit Versa Lite Edition Smart Watch, One Size (S & L Bands Included)

★★★★☆ 1,200


\$145.39



Fitbit Ionic Watch

★★★★★ 5,777


\$200.68 ✓prime



Fitbit Versa Lite Edition Smart Watch, One Size (S & L bands included)

★★★★★ 1,200

\$99.95 ✓prime




Fitbit Versa Lite Edition Smart Watch, 1 Count (S & L bands included)

★★★★★ 1,200

\$147.00 ✓prime

Sponsored products related to this item


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Fitbit Versa Lite Edition Smart Watch, One Size (S & L Bands included), 1 Count

★★★★★ 1,200


\$100.00 ✓prime



Garmin vivoactive 3 Music, GPS Smartwatch with Music Storage and Built-In Sports App...

★★★★★ 2,180


\$106.96 ✓prime



Forenechi Smart Watch for Android/Samsung/iPhone, Activity Fitness Tracker with IP68...

★★★★★ 242


\$20.00 ✓prime



Letsfit Smart Watch, Fitness Tracker with Heart Rate Monitor, Activity Tracker with...

★★★★★ 707


\$37.00 ✓prime



Amazfit Verge Smartwatch with Alexa Built-in, GPS Plus GLONASS All-Day Heart Rate...


★★★★★ 286

\$160.00 ✓prime



Fitness Tracker for Men - Waterproof Fitness Watch with Heart Rate Blood Pressure B...

\$39.99 ✓prime




Amazfit BIP smartwatch by Huami with All-Day Heart Rate & Activity Tracking, Sleep...

★★★★★ 4,952

\$76.00 ✓prime

Lower Priced Items to Consider




Aresh Bands Compatible with Fitbit Versa 2 Bands/Versa/Versa Lite/Versa SE, Soft Silicone Band Wristbands Strap Accessories for Women Men (Black+White+Sangria, La...

★★★★★ 48

\$11⁸⁶ ✓prime


Is this feature helpful? Yes No



Letsfit Smart Watch, Fitness Tracker with Heart Rate Monitor, Activity Tracker with 1.3" Touch Screen, IP68 Waterproof Pedometer Smartwatch with Sleep Monitoring...

★★★★★ 700

\$37⁹⁹ ✓prime



Fitbit Versa 2 Health & Fitness Smartwatch with Music, Alexa Built-in, Sleep & Swim Tracking One Size (S & L Bands Included)

by Fitbit

★★★★★ 1,310 ratings | 541 answered questions

#1 Best Seller in Smartwatches

Price: **\$195.98** & FREE Shipping, Details

Get \$60 off instantly: Pay \$195.98 \$135.98 upon approval for the Amazon Prime Card. No annual fee.

Color: Black/Carbon

Edition: Versa 2 Smartwatch

Versa 2 Smartwatch Special Edition

Amazon Certified

Using data from amazon to reproduce recommenders to give suggestions with less noise, and users can see results on an independent Flask app



Data on hand:

Existing Data

Customer Reviews with rating for electronics:

Data Range: 1999 to 2018

Total number of reviews: 6,739,590

Review peak: 2016: 1,426,496

Data size: 3.02GB

For 2018:

Total Reviews: 377,430

Unique UserIDs: 168,153

Unique products: 56,675

Scraped Data by Selenium

Content: categories, brand, name, description

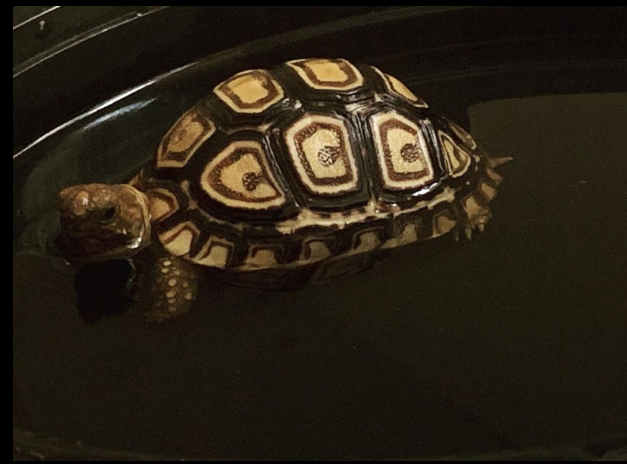
For 2018, scraped around 15000 products

Valid products: 10,910

Core of recommender system

- Cosine similarity: turn variables into vectors, analysis the relationship between them
 - Collaborative recommender: user based
 - For buying together
 - Content-based recommender: product features
 - For product comparison
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User-Based Recommender



- Rating are based on purchase
- Calculate item similarity based on rating and users
- Frequently buy from one category

Item You Are Looking For

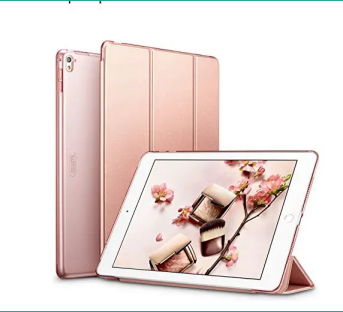
- iPad Pro 9.7 Inch White Back Case - Companion Cover - Perfect match for smart keyboard.



Recommendation

You may also like

ESR iPad Pro 9.7 Case, Clear Hard Case [Perfect Match with Smart Keyboard] with Soft TPU Bumper [Corner Protection] Slim Fit Back Shell Cover for iPad Pro 9.7 inch (Charcoal Gray)



Apple Silicone Case for iPad Pro 9.7 Inch - Retail Packaging - Charcoal Gray

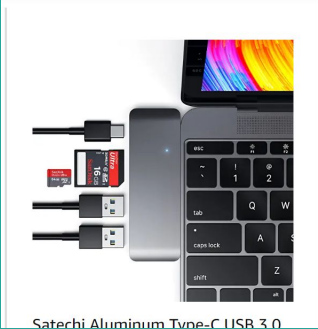


Apple Smart Keyboard for iPad Pro 9.7-inch (2016 Model)

Satechi Aluminum Type-C USB 3.0 3-in-1 Combo Hub with USB-C Pass-Through - Compatible with 2018 MacBook Air, 2018 iPad Pro, 2015/2016/2017 MacBook 12-Inch and More (Space Gray)




AmazonBasics USB Type-C to Micro-B 2.0 Charger Cable - 3 Feet (0.9 Meters) - White



Content Based Recommender

Electronics > Wearable Technology > Smartwatches


Lower Priced Items to Consider



Aresh Bands Compatible with Fitbit Versa 2 Bands/Versa/Versa Lite/Versa SE, Soft Silicone Band Wristbands Strap Accessories for Women Men (Black+White+Sangria, La...)

★★★★☆ 48


\$11.88 **prime**



Letsfit Smart Watch, Fitness Tracker with Heart Rate Monitor, Activity Tracker with 1.3\" Touch Screen, IP68 Waterproof Pedometer Smartwatch with Sleep Monito...

★★★★☆ 710

\$35.99 **prime**




Fitbit Versa 2 Health & Fitness Smartwatch with Heart Rate, Music, Alexa Built-in, Sleep & Swim Tracking, Black/Carbon, One Size (S & L Bands Included)

★★★★☆

\$144.99

Is this feature helpful?



Fitbit Versa 2 Health & Fitness Smartwatch with Heart Rate, Music, Alexa Built-in, Sleep & Swim Tracking, Black/Carbon, One Size (S & L Bands Included)

by Fitbit

★★★★☆ 1,316 ratings | 542 answered questions

#1 Best Seller in Smartwatches

Price: **\$195.99** & **FREE Shipping**. [Details](#)

Get \$60 off instantly: Pay ~~\$195.99~~ \$135.99 upon approval for the Amazon Rewards Visa Card. No annual fee.

Color: **Black/Carbon**

Content Based Recommender

Based on total 10,900 items

Detailed categories: 865

Brand:3570

Group by Brand and category

Name NLP

Group by Name NLP

Group by Brand, Categories and top 1000 features of Name NLP(worked!)



Item You Are Looking For

- iPad Pro 9.7 Inch White Back Case - Companion Cover - Perfect match for smart keyboard.

Recommendation

You may also like

OtterBox Defender Series Case for iPad Air - Retail Packaging - Black

RUBAN 360 Degree Rotating Automatic Wake/Sleep Stand Case with Screen Protector for Apple iPad 2 / iPad 3 / iPad 4 - Black

Case for Kindle Fire 7 (5th and 7th Generation) Tablet - Folio Case with Stand for Kindle Fire 7 Inch Tablet - Light Blue

iPad 2/3 / 4 Case, Hocase Rugged Slim Shockproof Silicone Protective Case Cover for 9.7 iPad 2nd / 3rd / 4th Generation - Navy Blue/Fluorescent Green

Samsung Book Cover for Galaxy Tab S 10.5 (EF-BT800BLEGUJ)



Summary and Recommendation

- From my test on my data, user based recommender suggest more related product that you can buy together
- Content based recommender shows more of similar items you can compare and choose one
- Currently needs to give it specific item to find recommendation

By using the app, customer can get cross reference compare with amazon, to see if there is different item shows up as there are more sponsored brand does not necessarily provide relevant items

Venders can see what the recommender would suggestion to utilize their name and description

Future Work and Expansion

- Flask app can aggregate two recommenders together
- More data from several years, add description and review sentiment analysis
- Add photos to flask for each recommendation to give a more direct view of each item
- Track users' click history to improve accuracy
- Improve the recommender to search the keyword, and get the most relevant item

Source

<https://github.com/rachelkoenig10/recommender-system-capstone>

<https://nijianmo.github.io/amazon/index.html>

<https://www.amazon.com/>

<https://github.com/minghaoecho/Predicting-Neighborhood-Affluence-with-Yelp-1>





The experiment

