

How does it work?

Amazon

Recommendations

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Background



A little history about Amazon

- Started by Jeff Bezos in 1994 along with the help of his then wife Mackenzie Scott
- Initially sold books to customers in 50 states
- Expanded to other domains such as electronics etc
- Now has expanded its market to multiple countries
- Generated up to \$ 280.5 billion in net profit in 2019



1995 - 1997



1997 - 1998

amazon.com
EARTH'S BIGGEST BOOKSTORE

1998

AMAZON.COM

1998

amazon.com

1998 - 2000

amazon.com

2000 - now

1846

Why a recommendation system?

- 91% of online store customers admit that they are more likely to use a brand's offer that personalizes their experience
- 98% of eCommerce website owners say that personalization improves their relationships with customers
- Providing recommendations to maximize potential value for individual customers, Amazon can keep consumers engaged and offer products of interest to them that they might not even think about

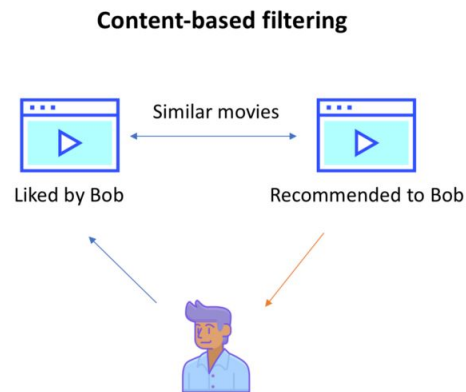
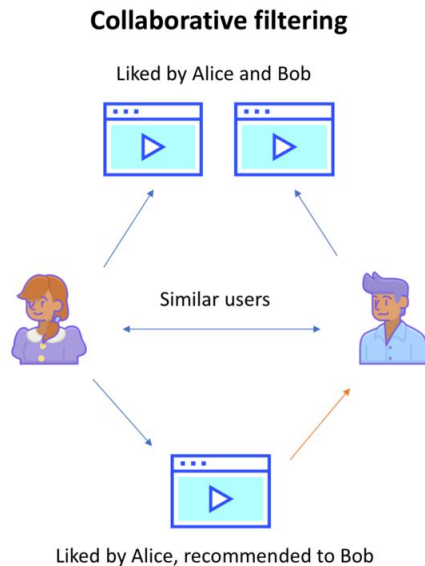


Amazon's recommendation



The algorithm - filtering

- First proposed in 1998
- Item-to-Item Collaborative Filtering
- selects recommended products for each user based on their
 - previous purchases,
 - interactions and ratings of other items on display,
 - combines them with similar items viewed by users with similar preferences and interests
- Amazon also uses content-based filtering as well
- Collaborative and Content-based methods offer the best and most effective results if they work together



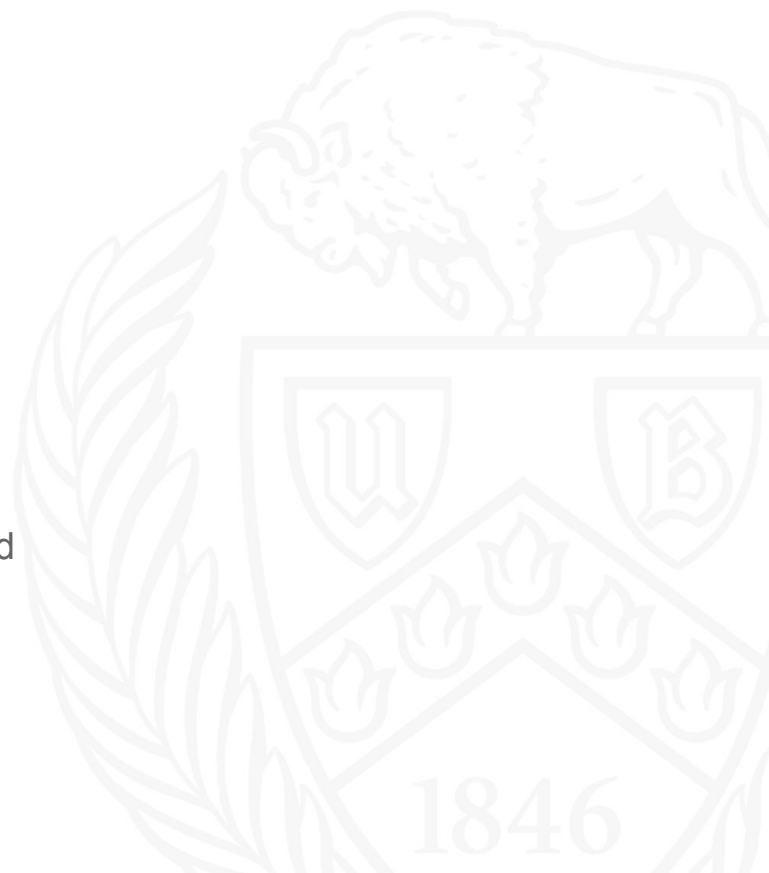
A9/A10 algorithm for scoring

- Ranking/Scoring for the items after filtering
- Signals between products and targeted user is calculated
- Signals (not an exhaustive list):
 - Product Rank
 - Sales Velocity
 - Keyword Relevancy
 - Price Competitiveness
 - Conversion Rate
 - Detail Page View Rate
 - Average Star Ratings
- Weight given to each feature

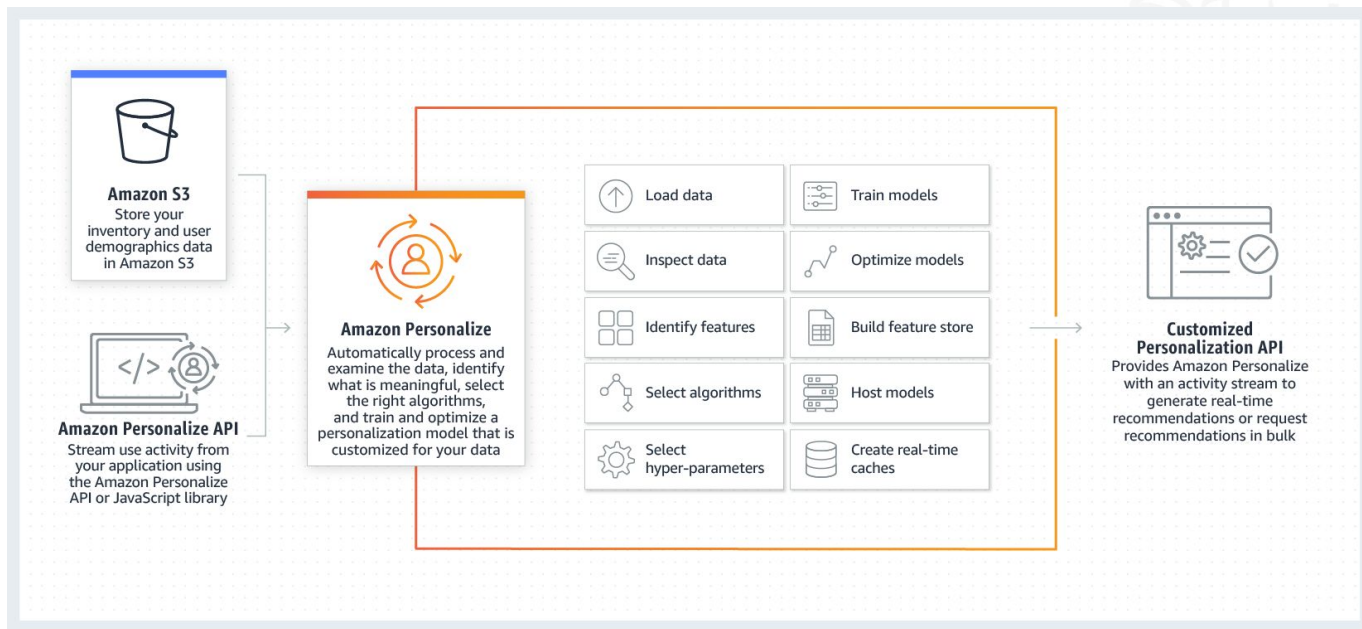


Hybrid Approaches

- A mix of new approaches:
 - **Bandit-approaches** to balance exploration of new possibilities with exploitation of profitable ones already discovered
 - **Graph Neural Nets** to do link prediction task on a bipartite graph (users and items)
 - **Causal Statistics** focuses on determining “how” and “why” under changing condition



Amazon Personalize Pipeline



Amazon's recommendations (Content-based)

Smart home products inspired by your shopping trends

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Razer Huntsman
Tournament Edition TKL
Tenkeyless Gaming
Keyboard: Fast Keyboard
Switches - Linear Optic...
★★★★☆ 5,171
\$73.05
Prime FREE Delivery



Razer BlackWidow V3
Mechanical Gaming
Keyboard: Green
Mechanical Switches - ...
★★★★☆ 2,812
Amazon's Choice in PC
Gaming Keyboards
\$99.99
✓prime FREE Delivery



Razer Cynosa Chroma
Gaming Keyboard:
Individually Backlit RGB
Keys - Spill-Resistant
Design - Programmabl...
★★★★☆ 17,944
\$39.99
✓prime FREE Delivery



Razer Ornata V2 Gaming
Keyboard: Hybrid
Mechanical Key Switches
- Customizable Chroma
RGB Lighting - ...
★★★★☆ 11,210
\$46.99
Get it Jun 17 - 21
FREE Shipping
Only 20 left in stock - orde...



Govee Glide RGBIC
Smart Wall Light,
Multicolor Customizable,
Music Sync Home Dec...
★★★★☆ 390
Amazon's Choice in Wall
Sconces
\$149.99
✓prime FREE Delivery



Razer Viper Mini
Ultralight Gaming
Mouse: Fastest Gaming
Switches - 8500 DPI...
★★★★☆ 15,946
Amazon's Choice in PC
Gaming Mice
\$23.77
✓prime FREE Delivery



Gaming Mouse (2018
Model), Mercury White
★★★★☆ 30,598
\$22.08
✓prime FREE Delivery




Razer BlackWidow
Mechanical Gaming
Keyboard: Green
Mechanical Switches,
Tactile & Clicky, Chroma
RGB Lighting, Anti-...
★★★★☆ 1,883
\$161.75
\$17.26 shipping
Only 2 left in stock - order...


Amazon's recommendations (Item-based)

Customers who viewed items in your browsing history also viewed


Page 1 of 2




8 Pcs Glide RGBIC Smart Wall Light, Multicolor Music Sync LED Wall Light Bar with Smart APP and Remote...
★★★★☆ 20
\$59.99
✓prime FREE Delivery




Glide RGBIC Smart Wall Light, 8 Pack with 200+ Dynamic Scenes, Smart APP and Remote Control, Multicolor Music Sync...
★★★★★ 1
\$69.99
✓prime FREE Delivery




Bar Free Bilevel Rev L/R Cmplt
\$1,484.85
Get it Jun 22 - 27
\$41.90 shipping




Govee RGBIC Monitor Backlight, DreamView G1 Pro Gaming Light, Smart Light Bars & LED Neon Strip with Camera...
★★★★☆ 9
\$179.99
✓prime FREE Delivery




LUMINOSIA Hexagon Lights | Premium Set of LED Wall Lights | Modular, Touch-Sensitive...
★★★★☆ 625
Amazon's Choice in Night-Lights
\$49.97
✓prime FREE Delivery



Glide RGBIC Smart Wall Light, Multicolor Customizable, Music Sync...
★★★★★ 5
Save 30%
\$48.99 Was: \$69.99
Lowest price in 30 days
✓prime FREE Delivery



Nanoleaf Lines WiFi Smart RGBW 16M+ Color LED Dimmable Gaming and Home Decor Wall Lights Starter Kit (9 LED Panels)
★★★★★ 57
\$179.99
✓prime FREE Delivery



Hexiher Smart Hexagon RGB LED Wall Light Panels APP Control 10 Pack, Sync to Music, Modular Light...
★★★★☆ 37
\$79.99
✓prime FREE Delivery

References

1. [Amazon's A9/A10 Algorithm: How to Rank at the Top of Page One | Channel Key](#)
2. [Amazon's Product Recommendation System In 2021: How Does The Algorithm Of The eCommerce Giant Work? - Recostream](#)
3. [The history of Amazon's recommendation algorithm - Amazon Science](#)
4. [What's new in recommender systems | AWS Media Blog \(amazon.com\)](#)



Questions



Thank You!

