

# Recommendation Engines

Metis SF Fall 2016 Data Science Cohort 4



# Recommendation Engines





## Frequently Bought Together



Price for all three: **\$94.23**

Add all three to Cart

Add all three to Wish List

Show availability and shipping details

- ☒ **This item:** 1500 Thread Count Queen 4pc Bed Sheet Set Egyptian Quality Deep Pocket White by Choice Linen **\$25.75**
- ☒ Chezmoi Collection White Goose Down Alternative Comforter, Full/Queen with Corner Tab by Chezmoi Collection **\$44.49**
- ☒ Dream Supreme Plus Gel Fiber-Filled Pillows, Standard (Set of 2) by Dream Supreme Plus **\$23.99**

## Customers Who Bought This Item Also Bought



1500 Thread Count Queen  
4pc Bed Sheet Set Egyptian  
Quality Deep Pocket Sage  
★★★★☆ (216)  
**\$25.75**



Dream Supreme Plus Gel  
Fiber-Filled Pillows, Standard  
(Set of 2)  
★★★★☆ (920)  
**\$23.99**



Royal Hotel's 1200 Thread  
Count Queen Size Siberian  
Goose Down Alternative  
Comforter 100% Egyptian ...  
★★★★☆ (32)  
**\$84.99**



Chezmoi Collection White  
Goose Down Alternative  
Comforter, Full / Queen with  
Corner Tab  
★★★★☆ (242)  
**\$44.49**



3pc Egyptian Duvet Cover  
Set 1200 Thread Count  
Queen Size White  
★★★★☆ (139)  
**\$23.49**



Queen Size  
Feather  
Pillows - 2  
★★★★☆  
**\$26.24**

Because you watched Hannibal Buress: Animal Furnace >



Up next

Autoplay



a-ha - Take On Me (Official  
Video)  
RHINO  
307,150,432 views



Mix - Rick Astley - Never Gonna  
Give You Up  
YouTube



Rick Astley - Together Forever  
RickAstleyVEVO  
23,787,355 views



I Wanna Dance With  
Somebody (Legendado)  
Beyoncé LEGENDAS  
8,070,450 views



MC Hammer - U Can't Touch  
This  
emimusic  
258,728,525 views

# Recommendation = Filtering

## Collaborative Filtering

- Past behavior
- Similar users
- Search history, purchase history, viewing history

# Collaborative Filtering

## Pros:

Recommendations are based on qualitative data inputs and comparisons to peers in a similar userbase for personally tailored or serendipitous/“unexpected” suggestions.

## Cons:

Cold start - insufficient data to generate useful recommendations.

# Recommendation = Filtering

## Content-Based Filtering:

- Item-focused features/tags/ratings/rankings
- Machine Learning (Bayes-ian classifiers, clusters, decision trees, neural networks)
- Apply weighting vectors

# Content-Based Filtering

Pros:

No Cold Start effect. Does not rely on user input or behavior.

Cons:

Attributes must be machine-recognizable.

No personal consideration of style or quality or POV



# Hybrid Filtering

Combine Collaborative & Content-Based:

- Example: Netflix
- CF: Users watched/search history
- C-BF: Recommended based on shared tags/features with films user rated highly

# 67% of Netflix Users Share An Account with Friends/Family



# Multiple Account Creation

Who's watching?



Dave



Dave and friends



Sad, reflective  
Dave



Dave after a few  
drinks



Guns and  
explosions