

Rec Systems

9/14

Intro:

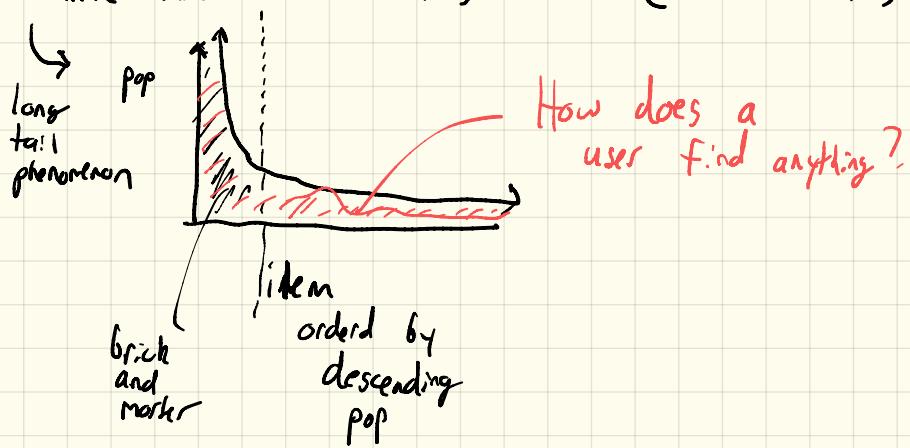
1. news interest \rightarrow suggest article
2. purchasing history \rightarrow suggest item to purchase
3. music listening history \rightarrow suggest new artist

2 "Types":

1. content based systems: properties of items to make recs
e.g. EDM, tempo 160-180 (Drunk Bass)
2. collaborative filtering: sim between users (and/or items)

Long Tail

- Brick & Mortar: limited by shelf space (thousands of books)
- Online retailer: lots of items for sale (Amazon millions of books)



Applications:

1. Products; Amazon
2. Movies; Netflix
3. News Articles; Flipboard, Apple/Google News
4. Music; Spotify, pandora

Model for Recommendation systems

2 classes of entities

1. users - have some preferences teased out from data
2. items - entities that users have preferences about

data rep as utility matrix

- for each user, item pair we have \emptyset or a value from an ordered set
- assume matrix is sparse \nwarrow no info
 \curvearrowleft most of the entries are unknown

(e.g. 1-5 stars)

	HP1	HP2	HP3	TW	SW1	SW2	SW3
A	4			5	1		
B	5	5	4				
C				2	4	5	
D		3					3

problem

Given a utility matrix
predict value of entry w/ current value \emptyset

E.g. Would user A like SW2?

Note. Goal is NOT predict all \emptyset entries
just find some entries in the row that
"relatively high"

Populate utility matrix

Option 1: Ask user

- limited effectiveness - users generally unwilling to respond
- often biased - users generally positive or neg (people willing to respond)

Option 2: infer from user behavior

- 1 means "interested" in item
- 0 means no info (**NOT $O \leq 1$**) ~~X~~