VLAD ILIESCU @NDR

MIND READING - UNDERSTANDING RECOMMENDER SYSTEMS

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PARTNER, STRONGBYTES

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A **VERY IMPORTANT** QUESTION™

WHAT SUPER-POWER WOULD YOU LIKE?

MIND READING IS NICE THIS TIME OF YEAR

OFFLINE, IT'S PERSONAL

ONLINE, IT DOESN'T SCALE

ONLINE, IT DOESN'T SCALE UNLESS IT'S AUTOMATIC

EVERYBODY'S DOING IT SO WHY CAN'T WE?

REMEMBER NETFLIX'
3-YEAR COMPETITION

WHAT ARE RECOMMENDER SYSTEMS ANYWAY?

THERE'S **TWO** TYPES OF RECOMMENDER SYSTEMS

1.
CONTENT-BASED FILTERING

2.
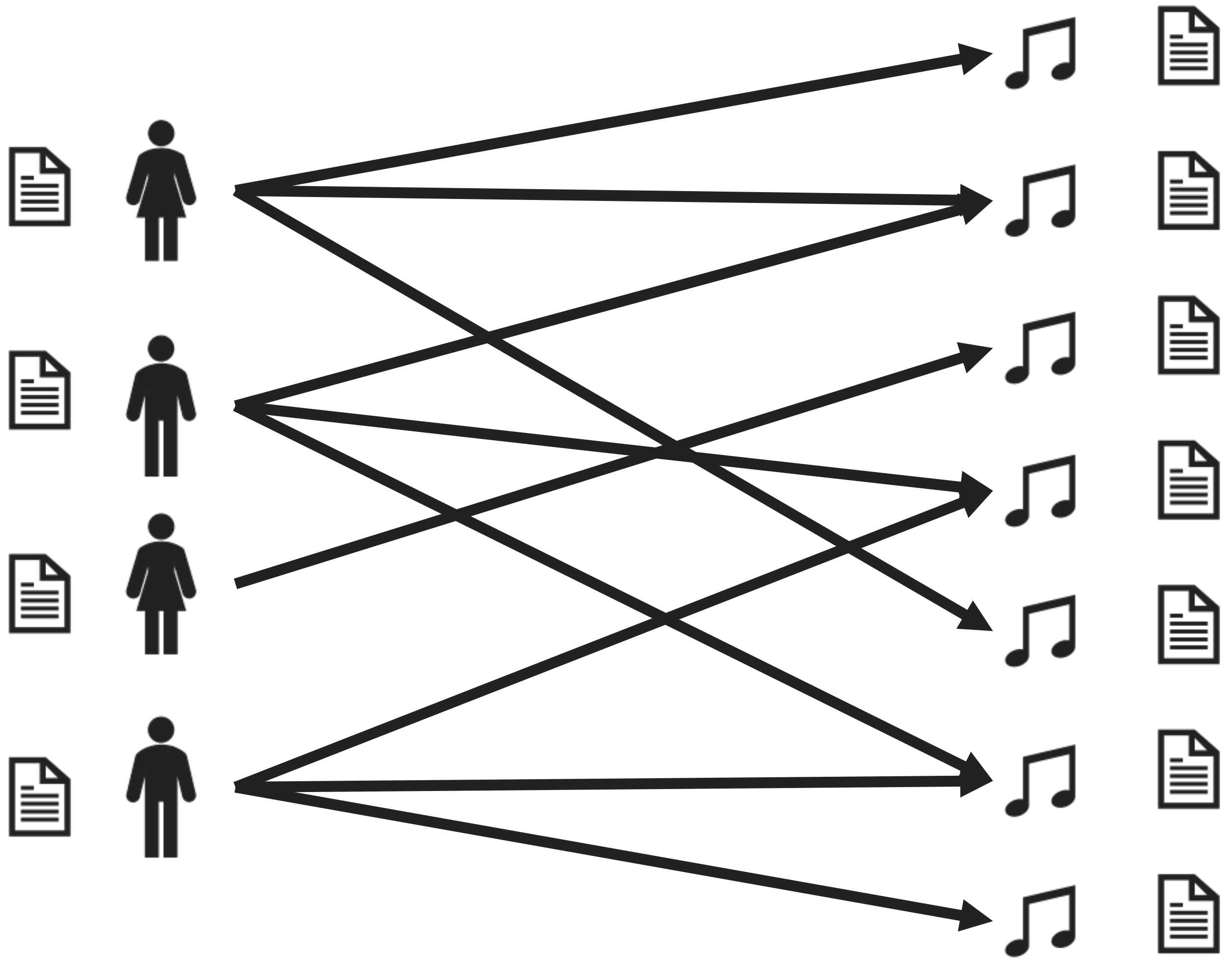# COLLABORATIVE FILTERING

OKAY, MAYBE THERE'S THREE

3.
HYBRID SYSTEMS

LET'S GO INTO A BIT MORE DETAIL

CONTENT-BASED FILTERING

- GENDER
- AGE
- PREFERRED GENRES

- ARTIST
- YEAR
- GENRE
- SONG THEME (EXTRACTED)

Song	Alice	Bob	Carol	Dave	Genre	Year
The Weeknd - Starboy	3			5	Pop	2016
Luis Fonsi - Despacito	1		5		Dance	2017
Lorde - 400 Lux	1	2	4	5	Alternative, Pop	2013
Major Lazer - Light it Up	3	0	5	5	Dance	2016
The White Stripes - Seven Nation Army	4	1	2	1	Alternative	2003
Red Hot Chili Peppers - Scar Tissue	5	2	0		Alternative	2004
Taylor Swift - Shake it Off	3	5		2	Pop	2014

Song	Carol	Genre	Year
The Weeknd - Starboy		Pop	2016
Luis Fonsi - Despacito	5	Dance	2017
Lorde - 400 Lux	4	Alternative, Pop	2013
Major Lazer - Light it Up	5	Dance	2016
The White Stripes - Seven Nation Army	2	Alternative	2003
Red Hot Chili Peppers - Scar Tissue	0	Alternative	2004
Taylor Swift - Shake it Off		Pop	2014

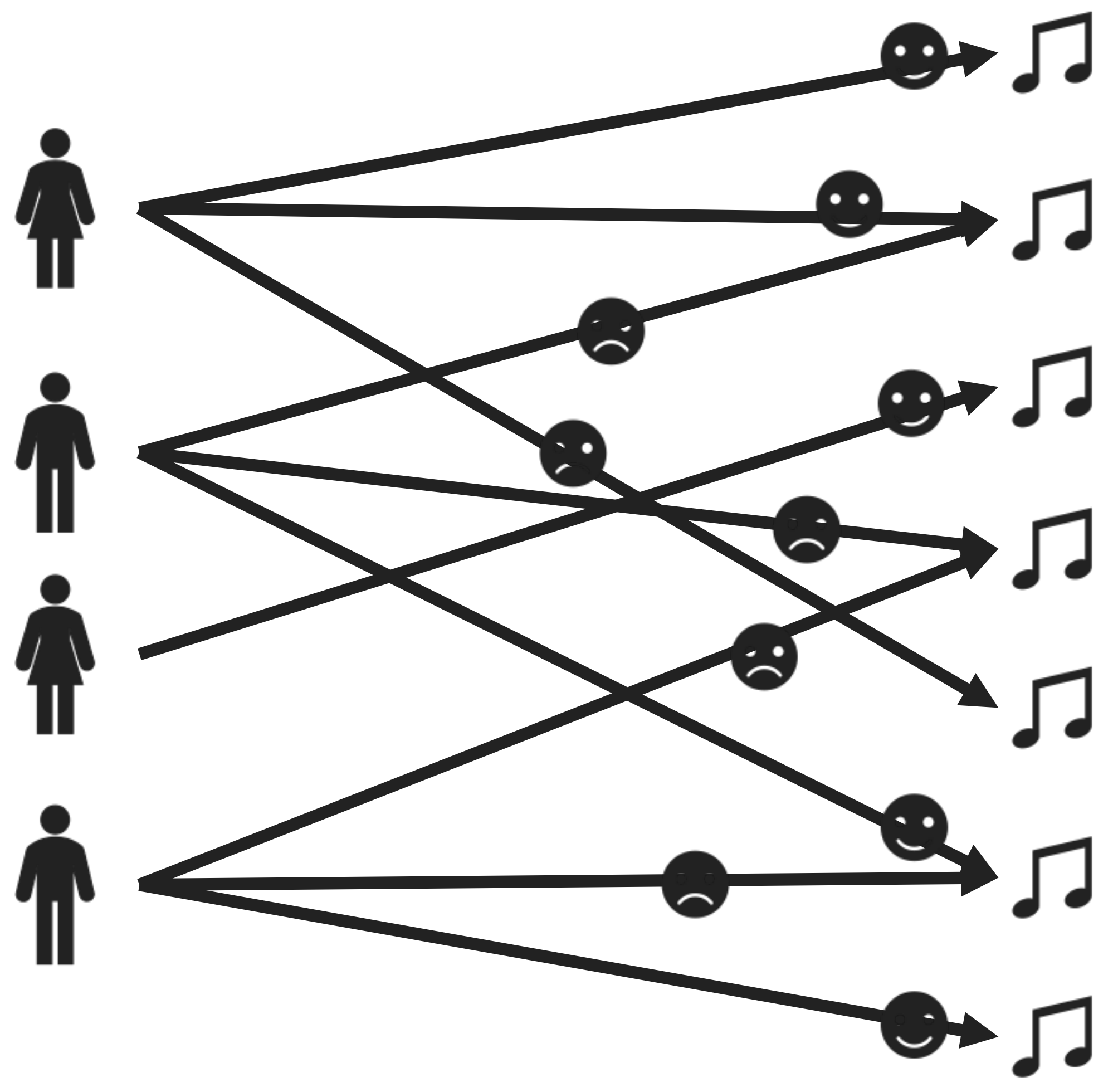| Song	Carol	Alternative	Dance	Pop	Year
The Weeknd - Starboy		0	0	1	2016
Luis Fonsi - Despacito	5	0	1	0	2017
Lorde - 400 Lux	4	1	0	1	2013
Major Lazer - Light it Up	5	0	1	0	2016
The White Stripes - Seven Nation Army	2	1	0	0	2003
Red Hot Chili Peppers - Scar Tissue	0	1	0	0	2004
Taylor Swift - Shake it Off		0	0	1	2014

ADVANTAGES

- DOESN'T DEPEND ON OTHER USERS
- RECOMMEND UNPOPULAR ITEMS
- COLD START ISSUES ARE LESS LIKELY

DISADVANTAGES

- OVERSPECIALIZATION
- DIFFICULTY EXTRACTING ATTRIBUTES FROM RICH MEDIA (IMAGES, AUDIO, MOVIES)

COLLABORATIVE FILTERING

APPROACHES
- USER-USER
- ITEM-ITEM
- MATRIX FACTORIZATION

Song	Alice	Bob	Carol	Dave
The Weeknd - Starboy	3			5
Luis Fonsi - Despacito	1		5	
Lorde - 400 Lux	1	2	4	5
Major Lazer - Light it Up	3	0	5	5
The White Stripes - Seven Nation Army	4	1	2	1
Red Hot Chili Peppers - Scar Tissue	5	2	0	
Taylor Swift - Shake it Off	3	5		2

Song	Alice	Bob	Carol	Dave
The Weeknd - Starboy	3			5
Luis Fonsi - Despacito	1		5	
Lorde - 400 Lux	1	2	4	5
Major Lazer - Light it Up	3	0	5	5
The White Stripes - Seven Nation Army	4	1	2	1
Red Hot Chili Peppers - Scar Tissue	5	2	0	
Taylor Swift - Shake it Off	3	5		2

Song	Alice	Bob	Carol	Dave
The Weeknd - Starboy	3			5
Luis Fonsi - Despacito	1		5	
Lorde - 400 Lux	1	2	4	5
Major Lazer - Light it Up	3	0	5	5
The White Stripes - Seven Nation Army	4	1	2	1
Red Hot Chili Peppers - Scar Tissue	5	2	0	
Taylor Swift - Shake it Off	3	5		2

ADVANTAGES

- DOESN'T NEED TO UNDERSTAND THE DATA

DISADVANTAGES
- CANNOT RECOMMEND NEW ITEMS
  (THAT HAVEN'T BEEN RATED)
- TENDS TO RECOMMEND POPULAR ITEMS

HYBRID SYSTEMS

THINGS TO LOOK OUT FOR

COLD START

CONTEXT MATTERS

RECENT ITEMS MATTER (MORE)

EXPLICIT/IMPLICIT FEEDBACK

QUESTIONS?

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THE END