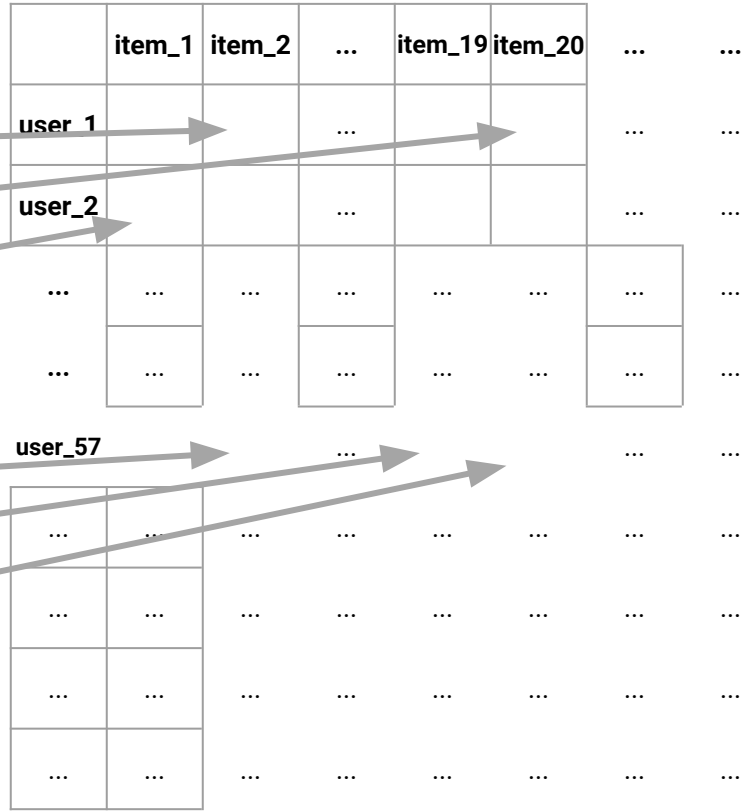
Basics of User Based Collaborative Filtering

List of ratings → user-item matrix

User	Item	Rating
user_1	item_2	5
user_1	item_20	1
user_2	item_1	4
...	...	...
user_57	item_2	5
user_57	item_19	2
user_57	item_20	4
...	...	...

pivot



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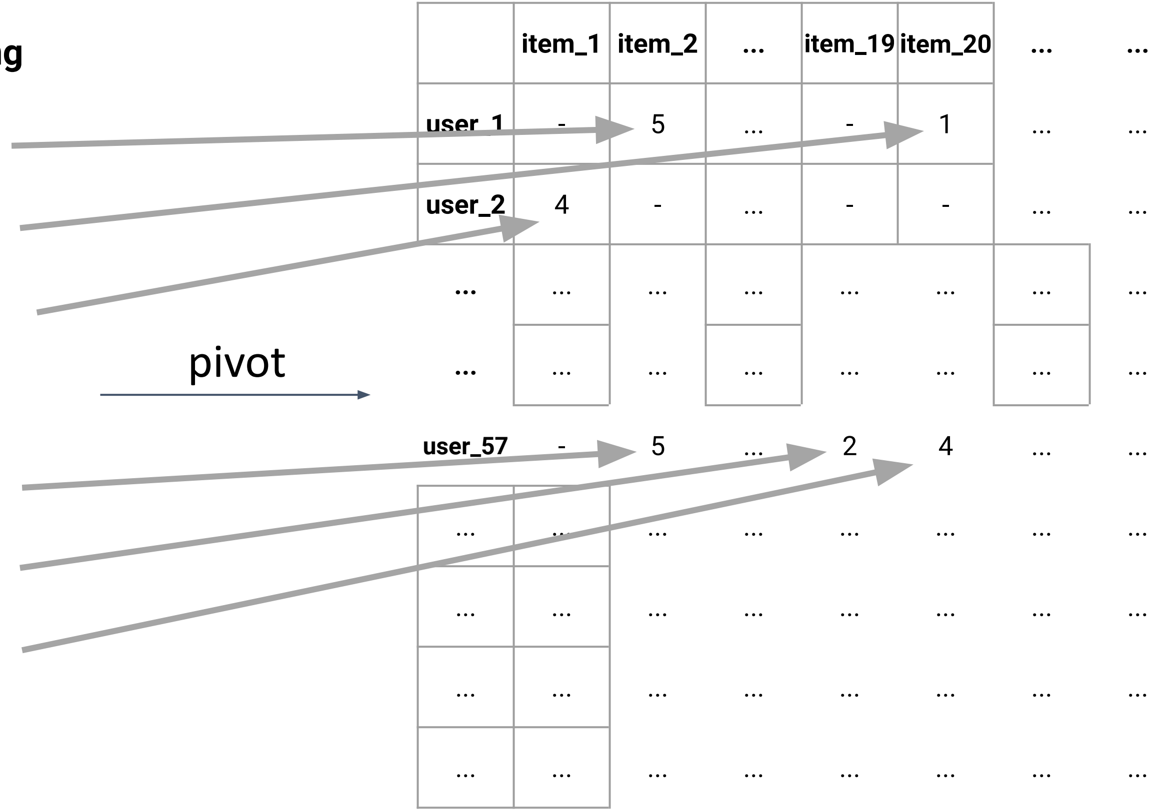

User-based nearest-neighbor collaborative filtering

The basic technique

Given an "active user" (Alice) and an item i not yet seen by Alice

- Find a set of users (peers/nearest neighbors) who liked the same items as Alice in the past **and** who have rated item i
- Use, e.g. the average of their ratings to predict, if Alice will like item i
- Do this for all items Alice has not seen and recommend the best-rated

Basic assumption and idea

- If users had similar tastes in the past they will have similar tastes in the future

User-based nearest-neighbor collaborative filtering

- Some questions
  - How do we measure similarity?
  - How many neighbors should we consider?
  - How do we generate a prediction from the neighbors' ratings?

Analytics Vidhya