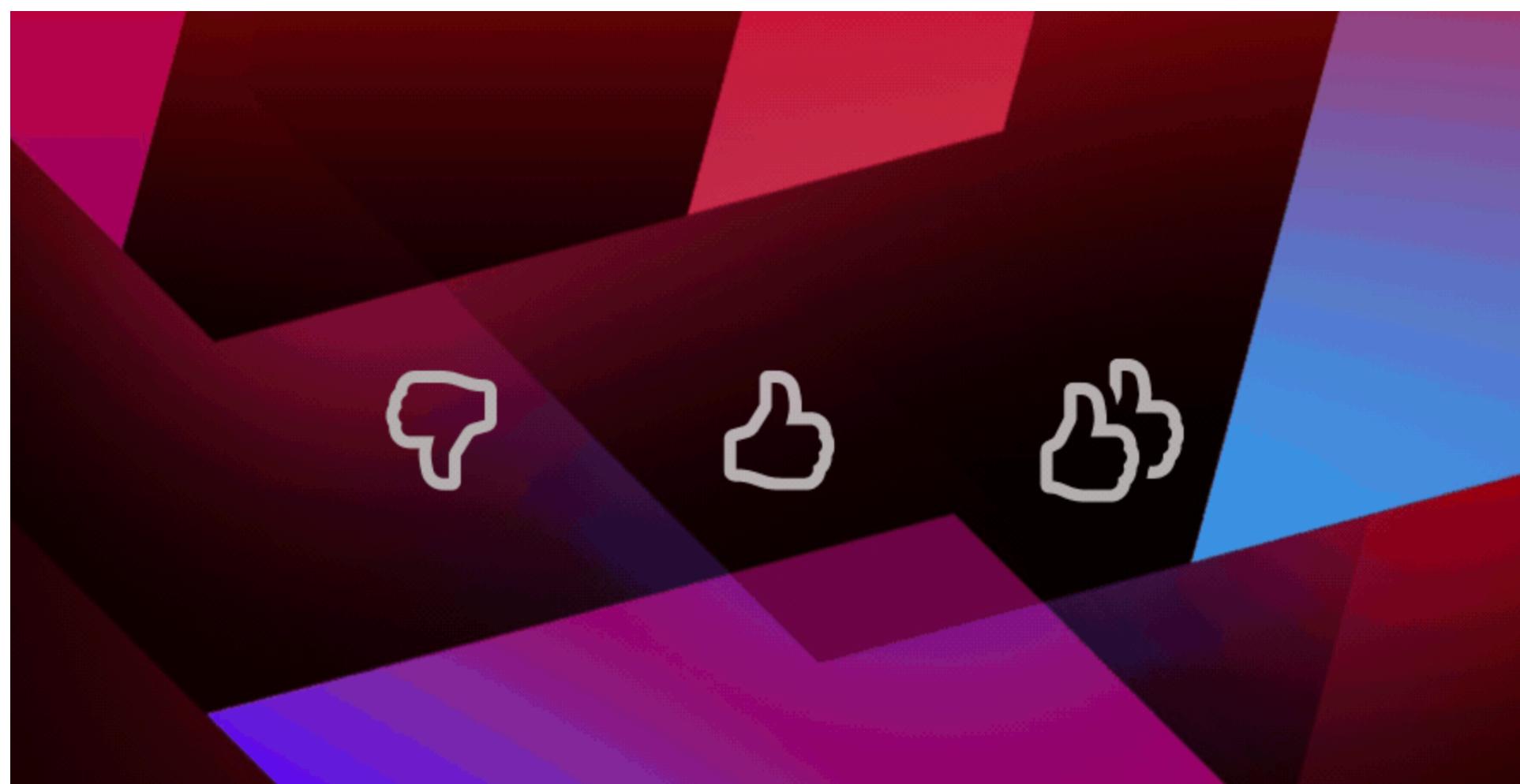


Implicit

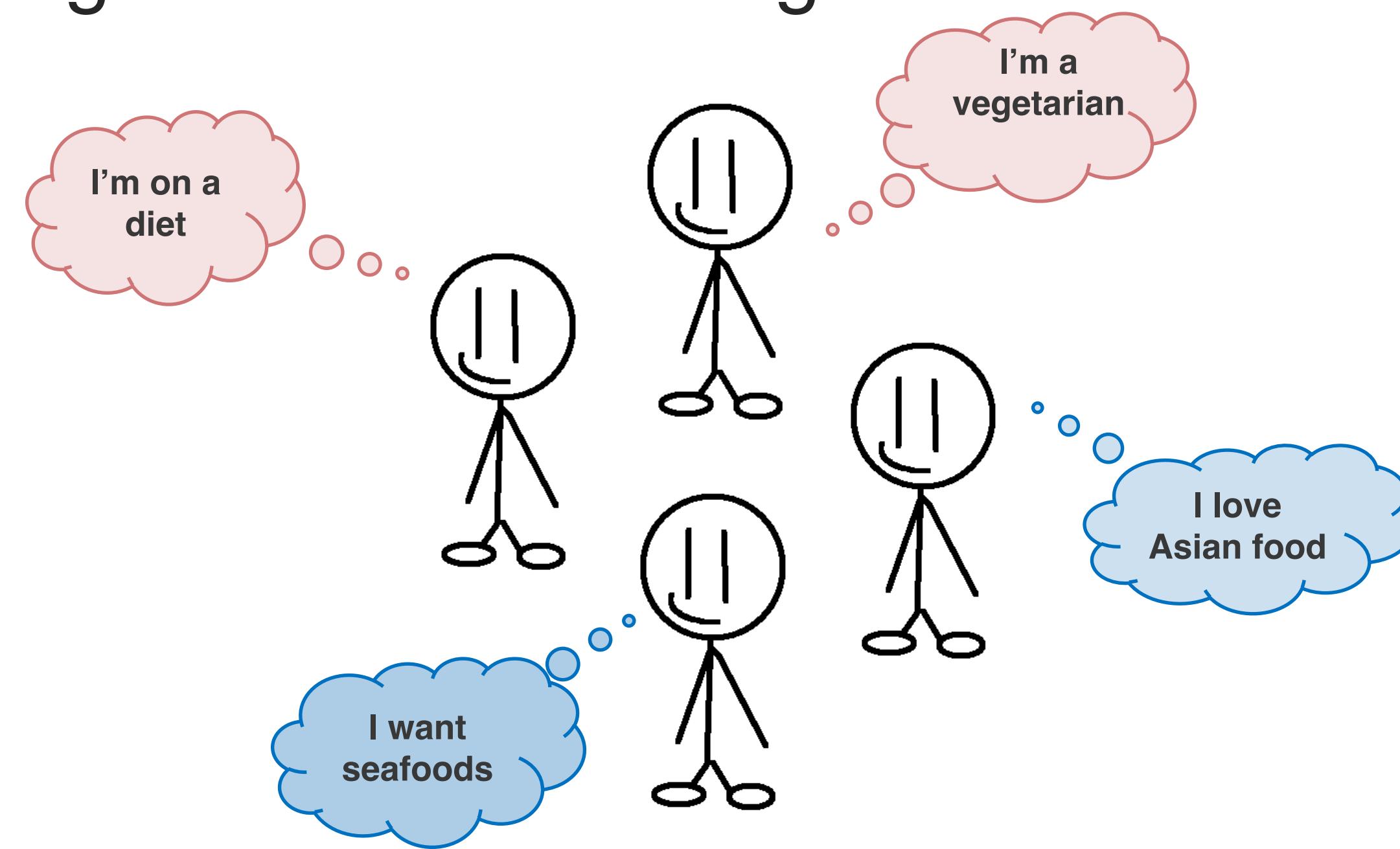
- Implicit feedback is more reliable. E.g.,
 - User watches a movie for 1 hour then probably they ‘like’ the movie
 - Readily available from every user, i.e., easy to collect
 - Not much ‘effort’ from user



Group Recommendation

In many situations, people often participate in activities as a group of users

- Having picnics with friends
- Watching movie with family
- Having dinner with colleagues

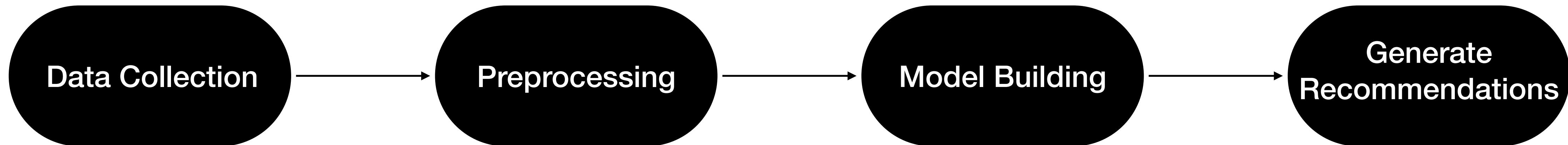


Pipelines

General Pipeline

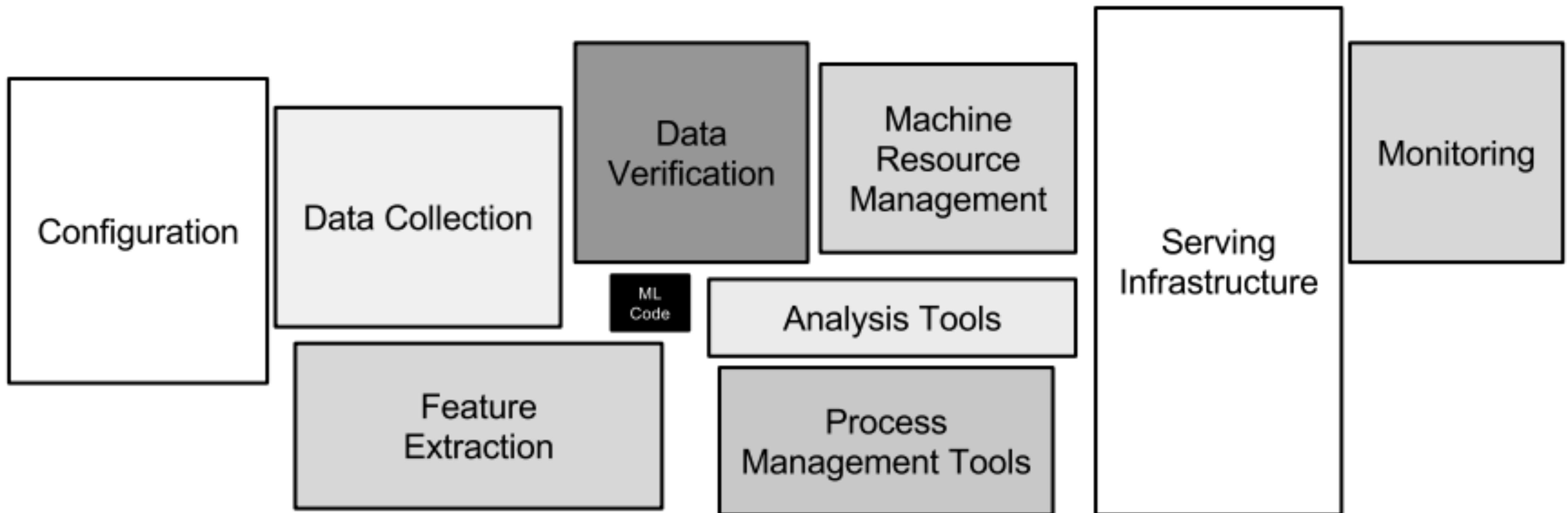
Academia

- Data collection: download from published datasets, crawl, generate synthetic dataset, etc.
- Processing: filter users/items, remove noise, re-rating, etc.
- Model Building: Collaborative filtering, content-based filtering, cold-start, etc.
- Generate Recommendations: predict/return top-K for users, evaluate on accuracy, etc.



General Pipeline

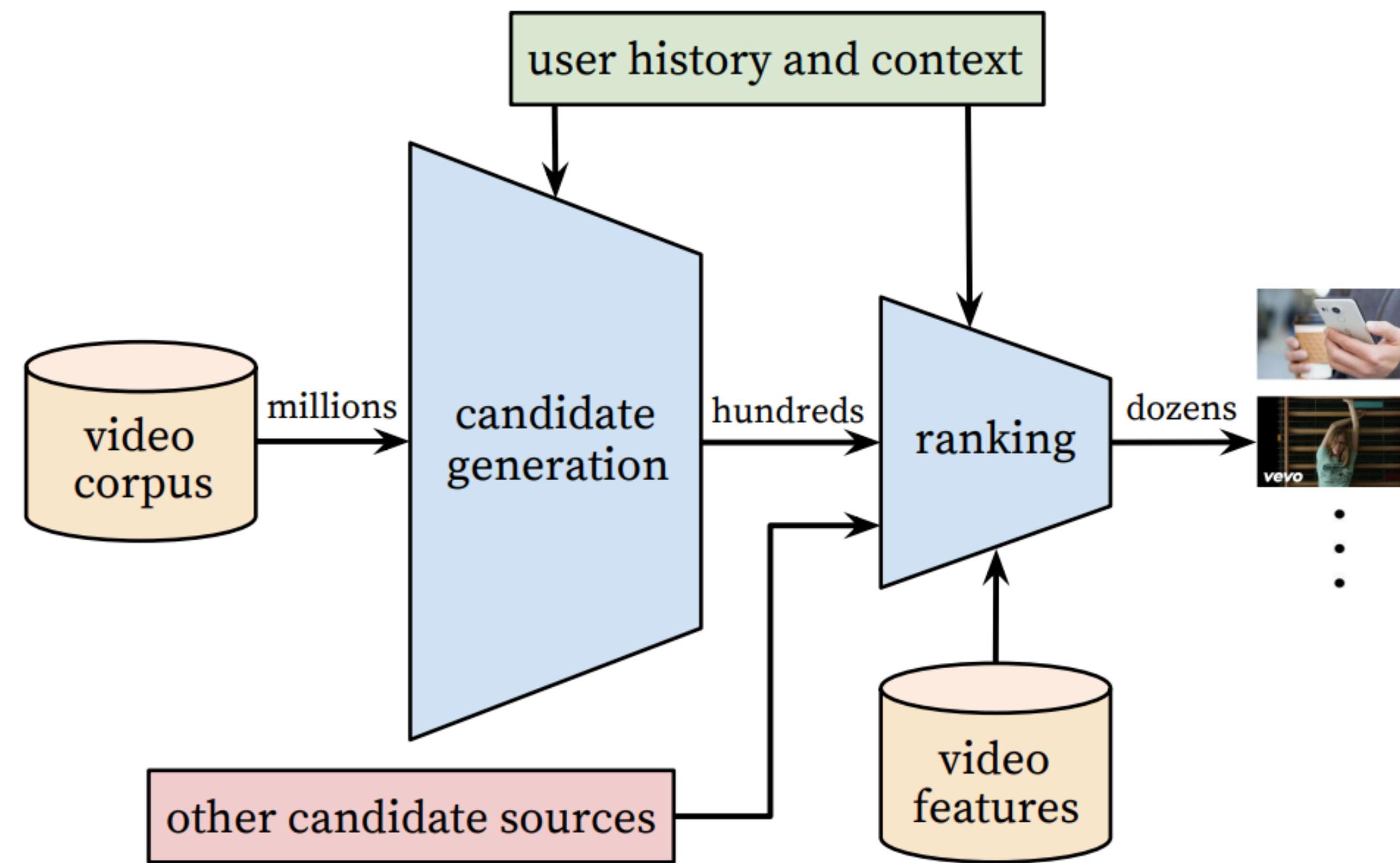
Industry



General Pipeline

Industry

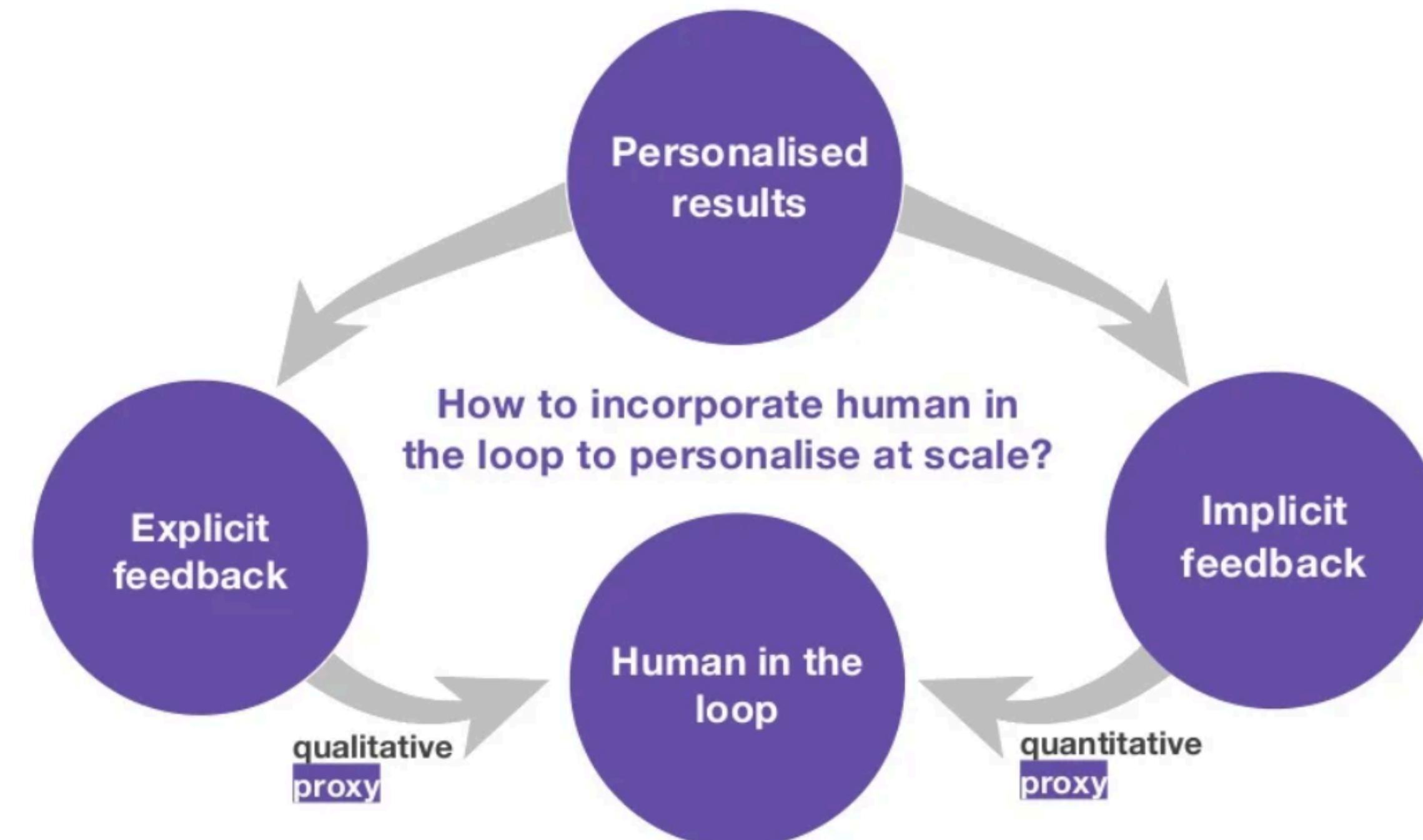
- We usually have two-stage pipelines:
 - Retrieval: generate candidates
 - Ranking: rank candidates



General Pipeline

Industry

- Human in the loop (HTL)
 - Model that requires human interaction
 - E.g., understand user intents, generate curated candidates, optimize the right metrics, etc.

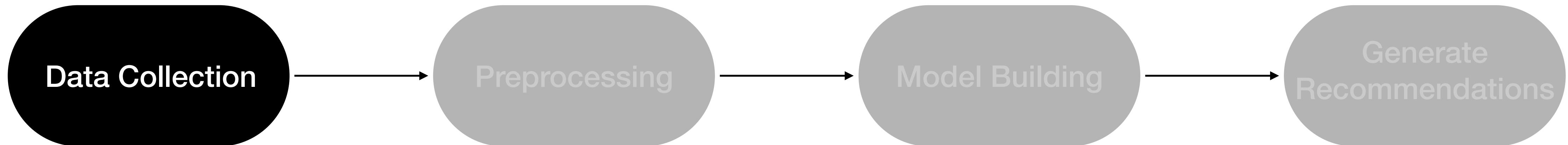


Data

Data Academia

Widely-adopted benchmark and real-world datasets with diverse domains and densities

- MovieLens20M
- MovieLens1M*
- MovieLens100k
- MovieLens HetRec
- Yelp
- Goodbooks
- Meetup*
- Amazon Reviews
- Epinions
- Plancast*
- etc.



Data Industry

- User behaviour? Features? Negative Signals?
Views? Clicks? Search? etc.

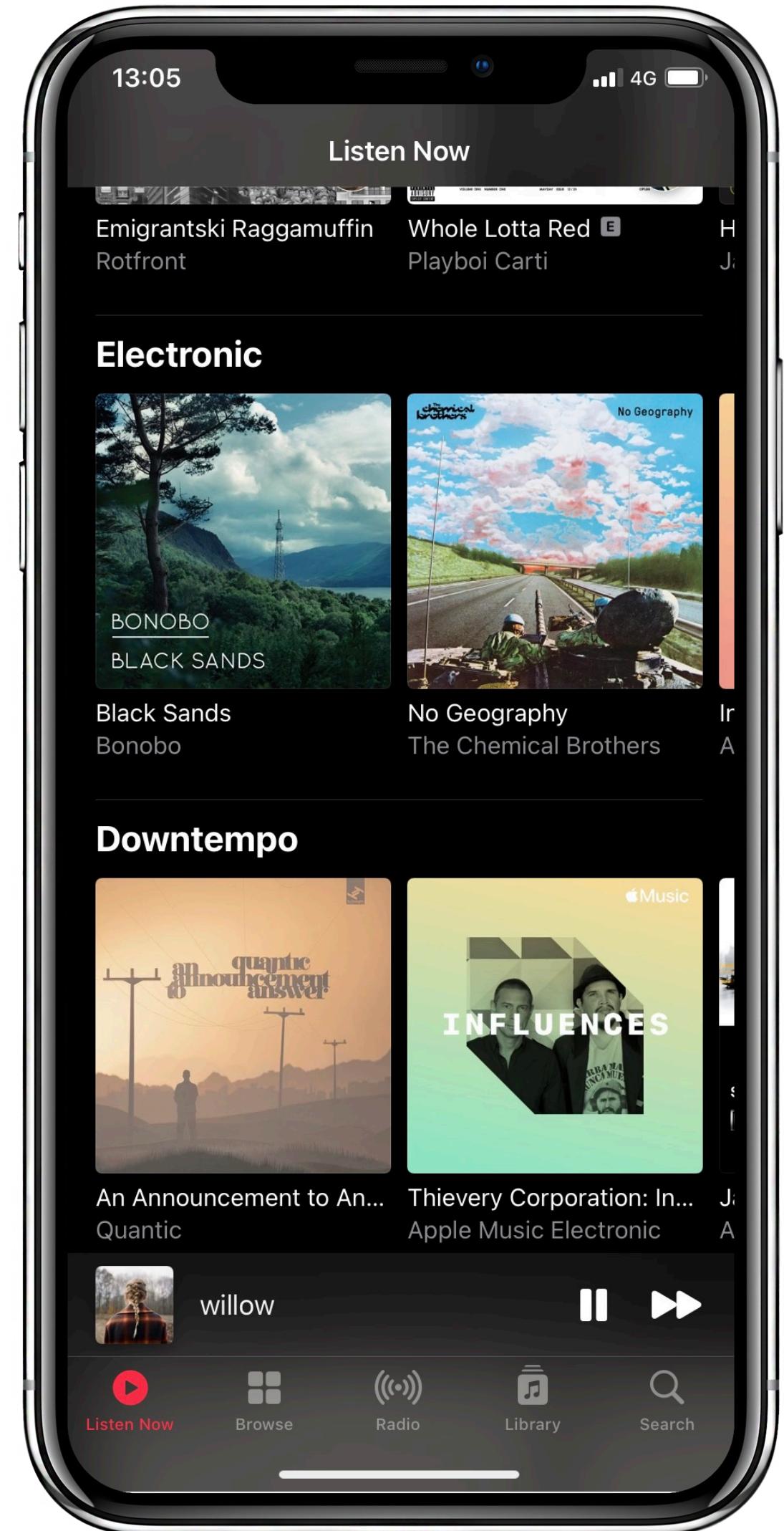
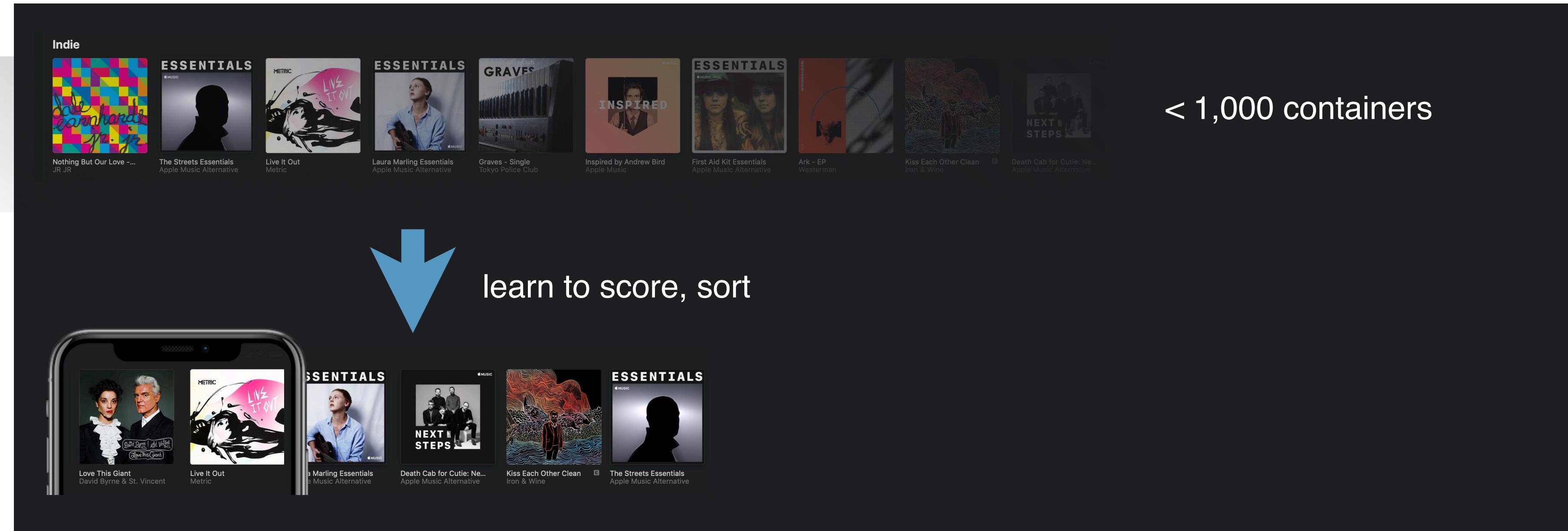
| Event | Meaning | Event name |
|---|---|-------------|
| Scrolling a themed row | User is interested in the theme, here Dramas. | genreView |
| Placing the mouse over a film to request an overview of content | User is interested in the movie (a drama), thereby showing interest in this category. | details |
| Clicking the film to request the details of content | User is more interested in the movie. | moreDetails |
| Adding the film to My List | User intends to watch the movie later. | addToList |
| Starting to watch the film | User “purchases” the movie. | playStart |



| userId | contentId | Event | Date |
|--------|-----------|-------------|------------------------|
| 1234 | 2 | genreView | 2017-06-07 20:01:00 |
| 1234 | 41335 | details | 2017-06-07 20:02:21 |
| 1234 | 41335 | moreDetails | 2017-06-07 20:02:30 |
| 1234 | 41335 | addToList | 2017-06-07 20:02:55 |
| 1234 | 41335 | playStart | 2017-06-07 20:03:01 |

Data Industry

- Streaming data, search query data, entity matching (e.g., Taylor Swift vs. Taylor \$wift), etc.



Model