UFMG UNIVERSIDADE FEDERAL DE MINAS GERAIS

Recommender Systems

Characterization

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A taxonomy of recommender systems

> *[…] the **inputs required** from the consumers, the additional **knowledge required** from the database, the **ways the recommendations are presented** to consumers, the **technologies used** to create the recommendations, and the **level of personalization** […]*
>
> ◦ Schafer et al., DMKD 2001

Domain ..... *what is being recommended?*

Purpose ..... *why is it being recommended?*

Context ..... *does it depend on the user's context?*

Feedback ..... *whose opinion is being leveraged?*

Personalization ..... *how personal is the recommendation?*

Privacy ..... *how sensitive is the exploited data?*

Interface ..... *how is the recommendation presented?*

Algorithm ..... *how is the recommendation computed?*

Domain: ***What is being recommended?***

Movies, music, news, books, research articles, web pages, search queries, social tags, experts, dates, …?

Aggregation

- Singles vs. bundles vs. sequences?

Recurrence

- New vs. previously recommended?

Purpose: ***Why is it being recommended?***

Improve sales?

Offer information?

Entertain the user?

Educate the user?

Build a community?

What is success?

Context: *Does it depend on context?*

What is the user doing?

Who is the user with?

Where is the user?

Which device is being used?

How is the recommendation affected?

- Content suitability, level of interruption

Feedback: ***Whose opinion is leveraged?***

Everybody?

People like you?

Experts?

Yourself?

Personalization: ***How personal is it?***

Non-personal (i.e., same for everybody)

Group-based (e.g., using demographics)

Persistent (i.e., matches long-term interests)

Ephemeral (i.e., matches current activity)

- *Which activity is worth considering?*

Privacy: *How sensitive is the exploited data?*

Is personal information revealed?

- Are privacy permissions adjustable?
- Is the user profile editable?

Is the recommendation honest?

- How transparent is it?

Interface: ***How is it presented?***

Predictions vs. rankings?

Is the recommendation organic?

Is the recommendation explained?

How is feedback acquired?

- Explicitly (e.g., ratings)
- Implicitly (e.g., clicks)

Algorithm: ***How is it computed?***

Using community data?

Using item features?

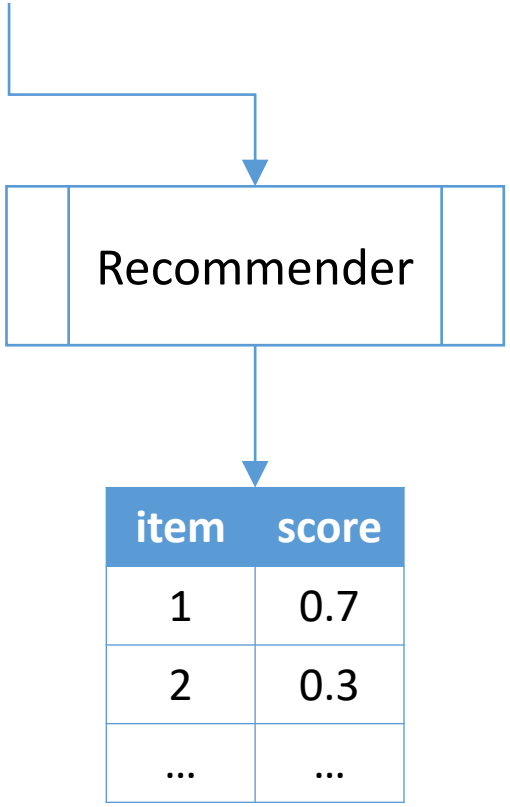
Using knowledge models?

Using multiple approaches?

We may have an educated guess

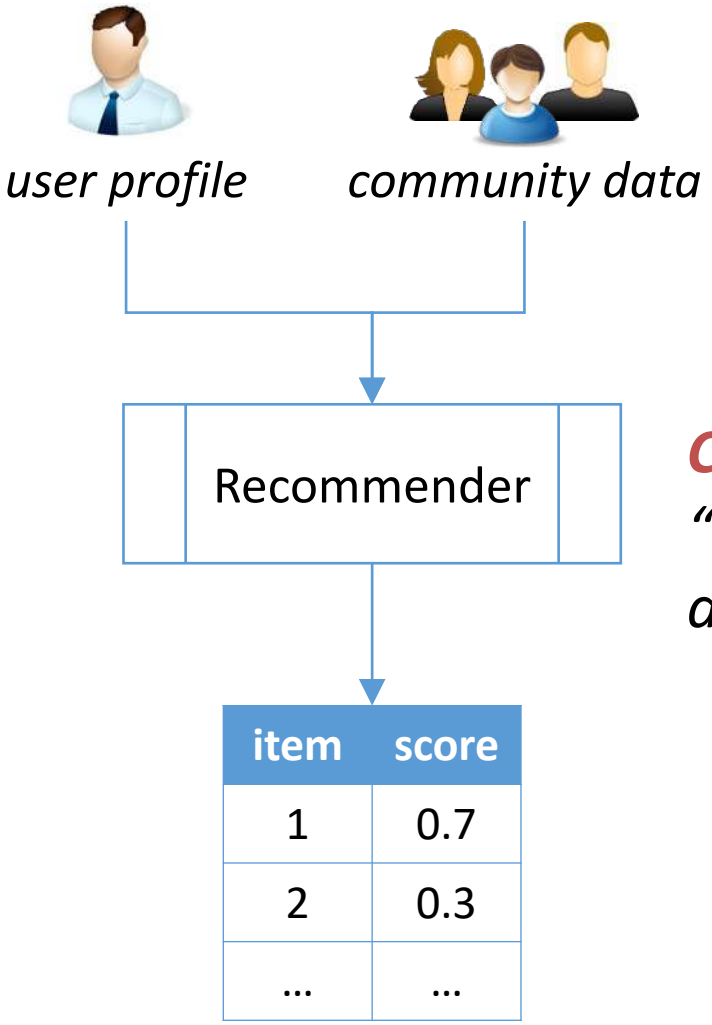
How to recommend?

user profile



Personalized recommendation

How to recommend?



Collaborative

"tell me what's popular among my peers"

How to recommend?

user profile

title	genre	year

item features

Recommender

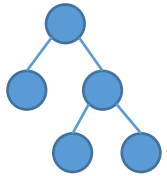
item	score
1	0.7
2	0.3
…	…

Content-based

"show me more of the same what I've liked"

How to recommend?

user profile



knowledge models

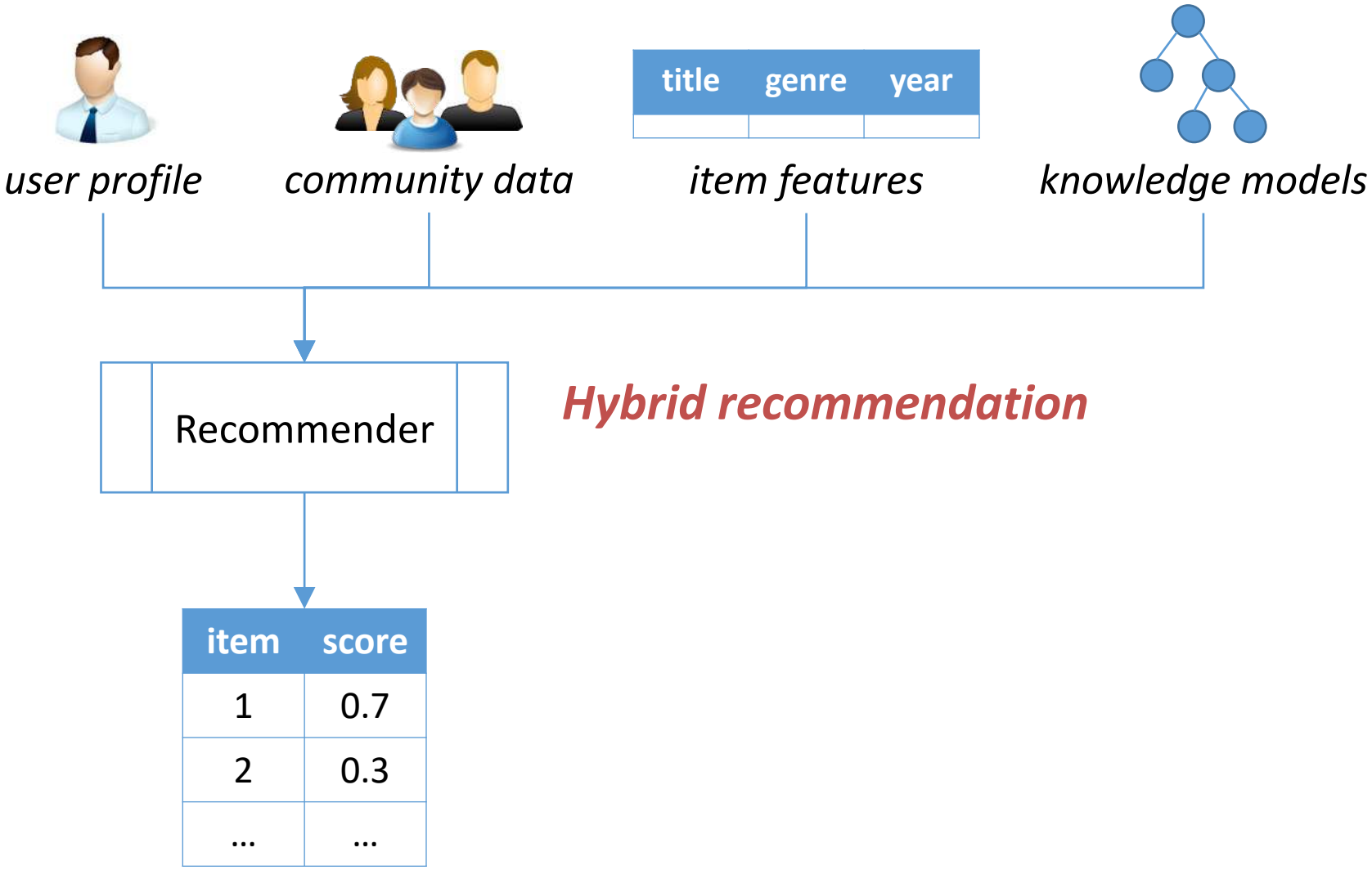
Recommender

Knowledge-based

"tell me what fits based on my needs"

item	score
1	0.7
2	0.3
…	…

How to recommend?



A tour of Amazon.com

> *Have you ever wondered what you look like to Amazon? Here is the cold, hard truth: You are* ***a very long row of numbers*** *in a very, very large table. This row describes everything you've looked at, everything you've clicked on, and everything you've purchased […]*
>
> ◦ Konstan & Riedl, IEEE Spectrum 2012

Writing assignment #1

Using the introduced taxonomy, characterize **at least two** distinct recommenders from a website of your choice. You can include screenshots to illustrate your characterization. When choosing a website, **be curious:** look for unusual, **exotic recommendation scenarios**!