



**IMT Atlantique**

Bretagne-Pays de la Loire  
École Mines-Télécom

# ELU 616: ARTIFICIAL INTELLIGENCE

## PROJET 0: Recommender systems

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# Summary

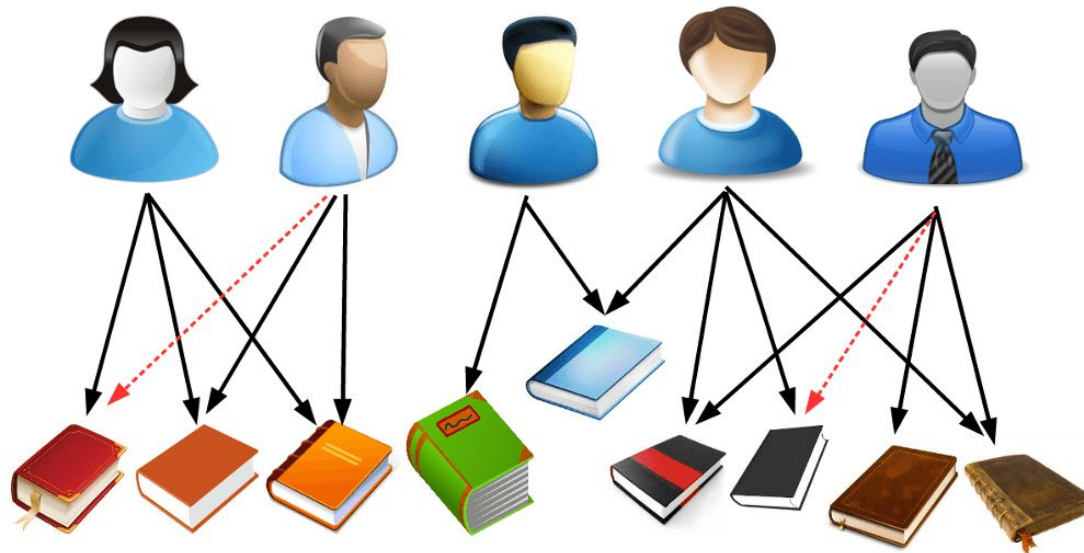
- Introduction
- Current approaches
- Companies that use this
- Ethical problems
- Current limitations and problems



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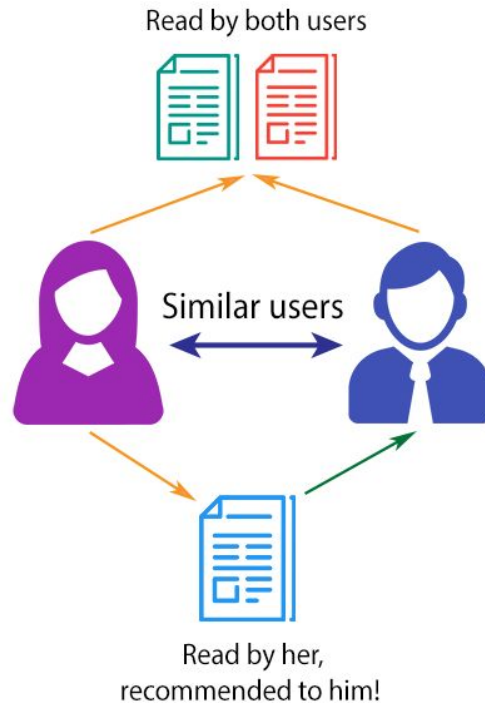
# What is a Recommender System?

A Recommender System is an algorithm that seeks to predict the preference or utility a user would give to an item in order to recommend it to him or not.

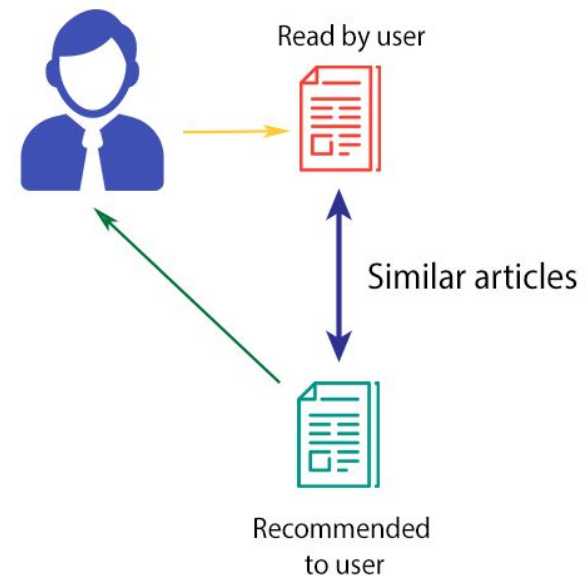


# Two Classical Approaches

## COLLABORATIVE FILTERING



## CONTENT-BASED FILTERING



- Recommends items liked by similar users.
- Enables exploration of diverse content.

- Uses attributes of items/users.
- Recommends items similar to those liked by the user in the past.

# Hybrid Recommender Systems

Most common recommender systems combine these two approaches into Hybrid Systems, increasing the accuracy of recommendations.

- Making content-based and collaborative-based predictions separately and then combining them
- Adding content-based capabilities to a collaborative-based approach (and vice versa)
- Unifying the approaches into one model

# Companies that use this

amazon

YouTube



tinder<sup>TM</sup>

NETFLIX



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# Ethical problems related to RS

A recommender system can have ethical impacts: **Related to the utility and user rights**

1. Ethical content
2. Privacy (*data leaks, anonymity*)
3. Social manipulability
4. Unfair recommendations and autonomy
5. Opacity



# Challenges

1. Cold Start Problem
2. Overspecialization
3. Sparsity
4. Shilling Attacks
5. Changing and scalability



# Questions ?



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