

Recommendation Systems in Social Media

Master in Informatics Engineering – Knowledge and Information
Systems

Topic: SR nas Redes Sociais

Group: N^o4

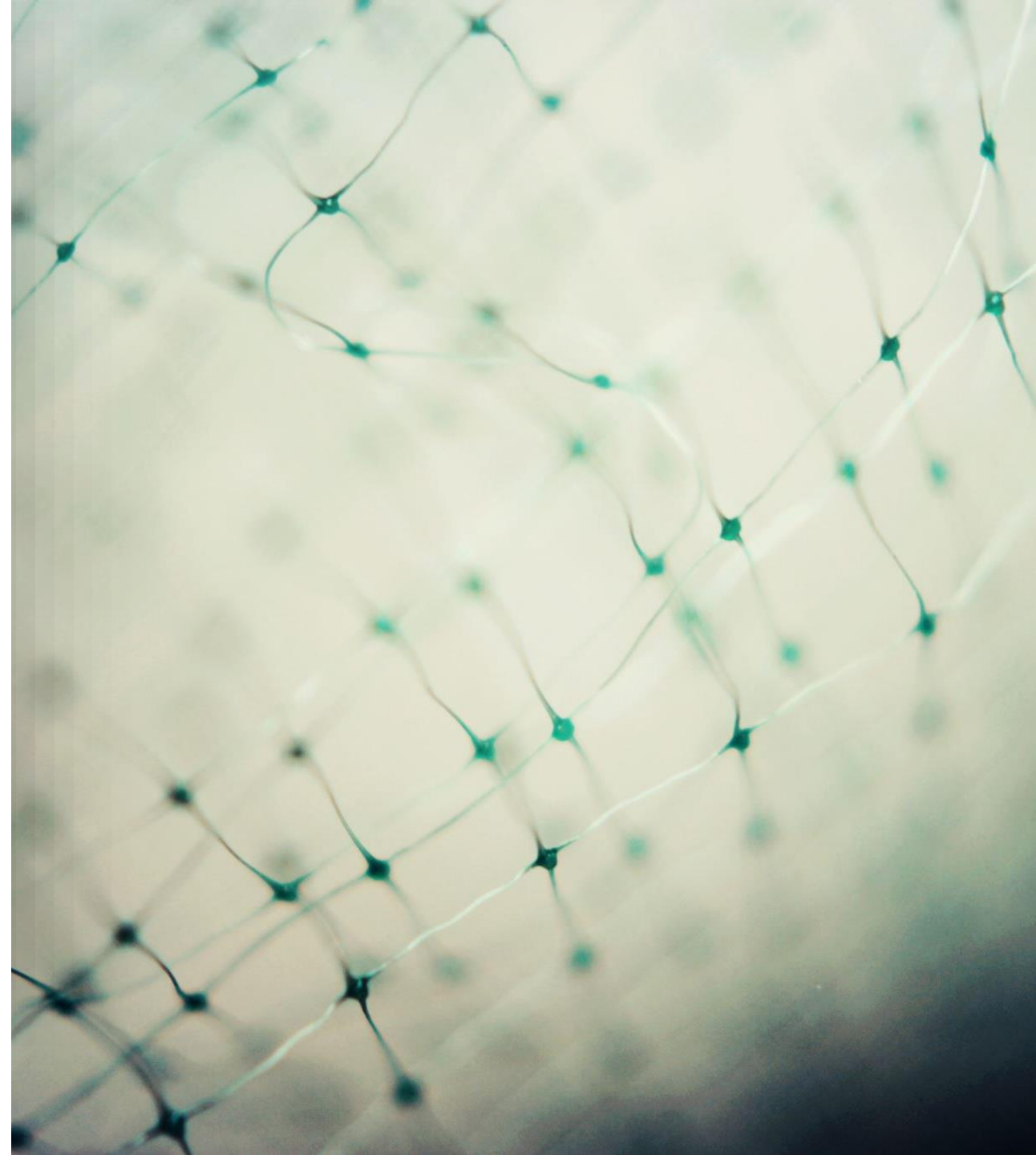
João Gaspar N^o 1200884

João Figueiredo N^o1230194

Tiago Nora N^o 1201050

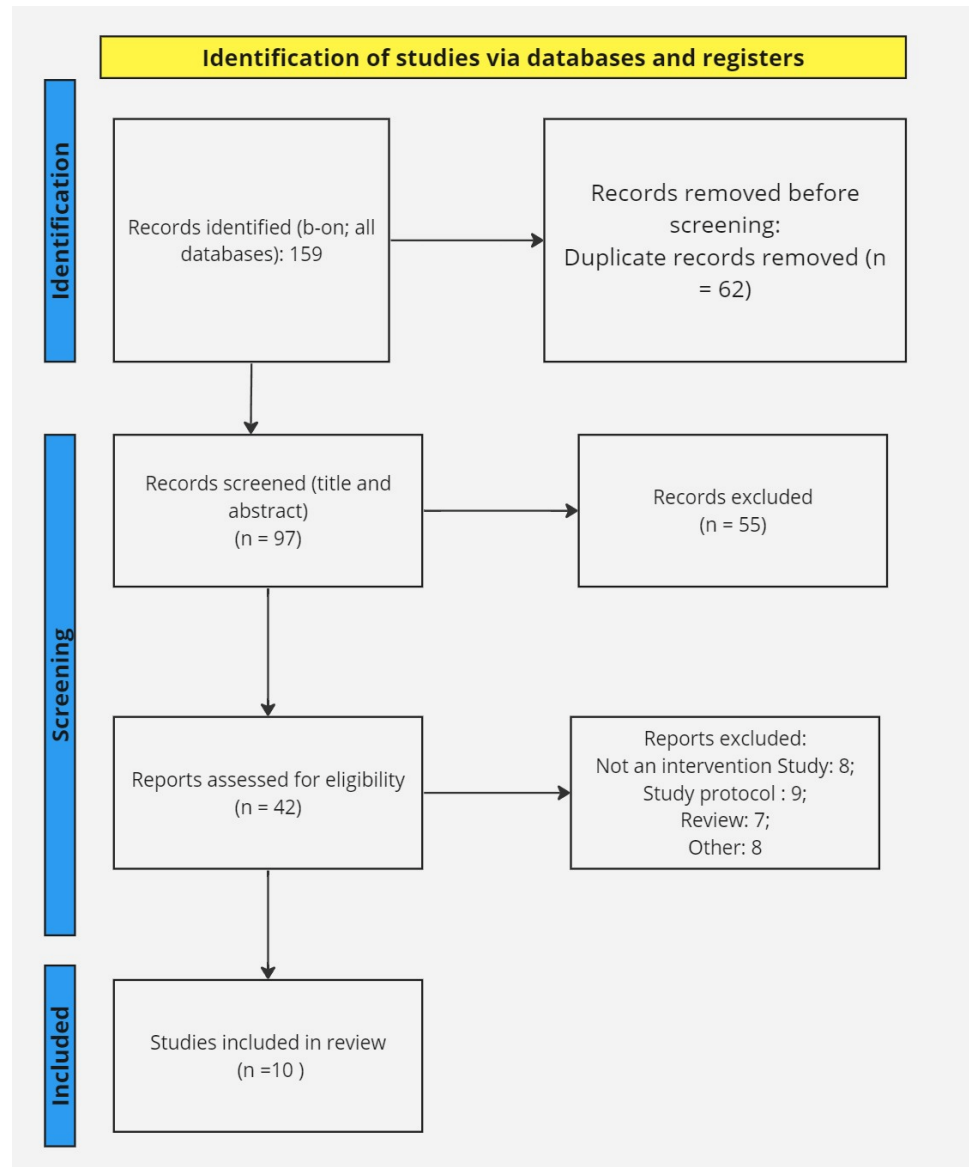
Contextualization

- Social networks nowadays are widely used all over the world
- But what content is recommended and to whom?
- What are recommendation systems for?



PRISMA

(Preferred Reporting Items for
Systematic Reviews and Meta-
analysis)



ELSEVIER



Prisma

Inclusion/Exclusion Criteria

Inclusion Criteria

- Refers to recommendation systems within social networks
- It presents original content or systematic reviews of articles.
- Published in peer-reviewed journals or at conferences.

Exclusion Criteria

- The article is not written in English
- The focus of the article was not recommendation systems or social networks
- They are not research articles or systematic reviews.

Prisma

Research questions

- Q1: How are collaborative filtering and content-based algorithms applied in the context of social networks to customize content recommendations?
- Q2: What is the impact of social data mining on improving the accuracy of recommendations in social networks?
- Q3: How is user engagement influenced by the effectiveness of recommendation systems in social networks?
- Q4: What are the main machine learning techniques used to enhance recommendation systems in social networks?
- Q5: How does the interaction between user and system affect the quality of recommendations in social networks?
- Q6: What are the challenges and considerations related to privacy and security in the implementation of recommendation systems in social networks?



Theoretical Introduction

- Presentation of the various techniques that can be used to recommend items
- Problems that can arise in recommendation systems

Recommendations Approaches

- Content-Based Filtering
- Collaborative Filtering
- Demographic Filtering
- Hybrid Approaches
- Context-Aware Recommendation
- Knowledge-Based Recommendation



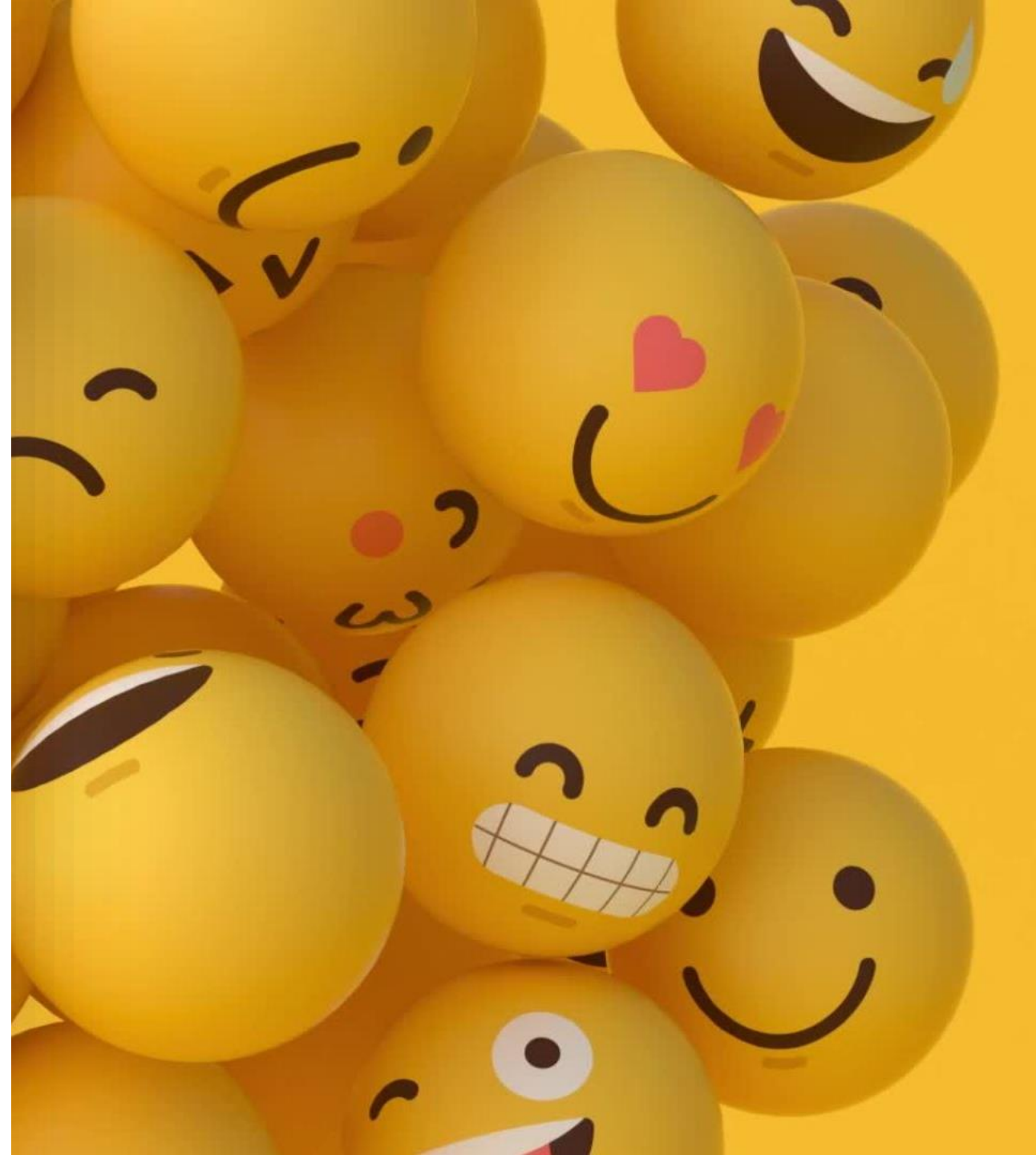
Recommendation Systems Problems

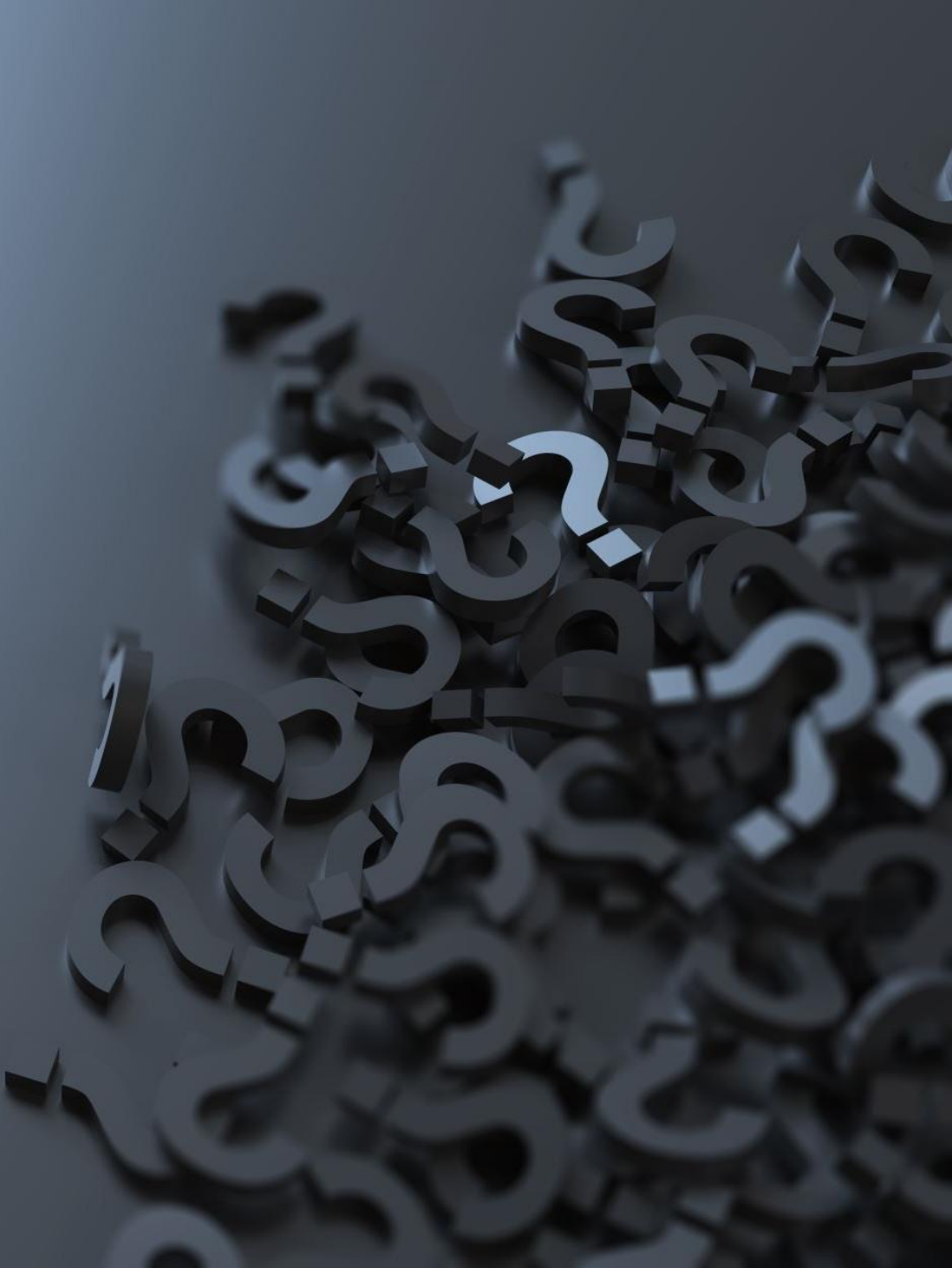
- Black Box,
- Long Tail,
- Cold start,
- Sparsity,
- Analysis limited to content,
- Excessive specialization,
- Scalability problems,
- Black Sheep.



Social Networks

- Facebook
- Instagram
- Twitter
- Youtube





Facebook

- 100 billion ratings, over a billion users and millions of items.
- Most common approach is CF through matrix factorization
- Hybrid approach to solve the problems of the most common approach

Instagram

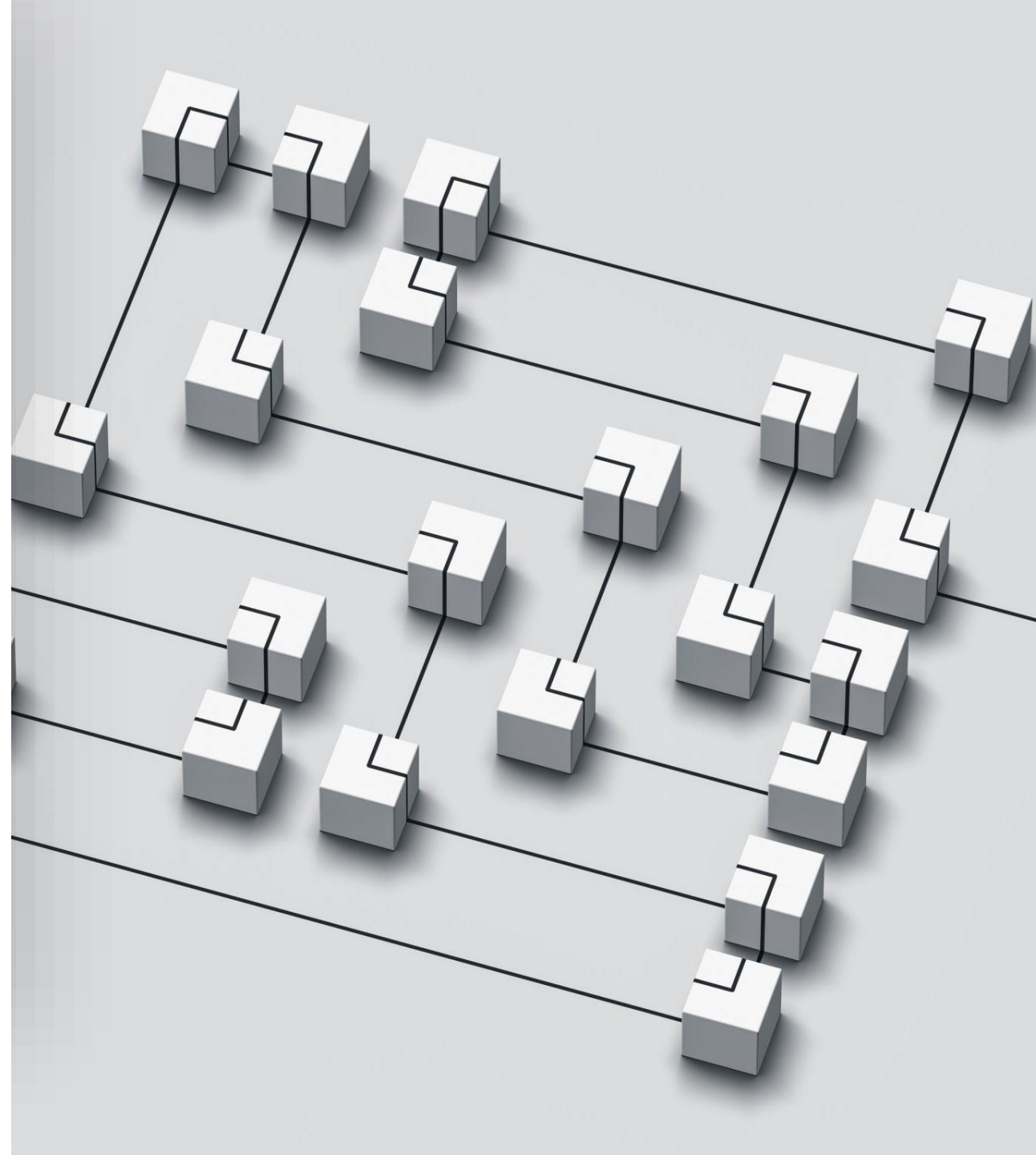
Explore section

- **Retrieval:** This stage selects hundreds of relevant items from a vast pool of media using various sources
- **Ranking:** : Content candidates are ranked in two stages. The first stage employs a lightweight model trained to predict the output of the second stage, which uses a heavier multi-task multi-label neural network model
- **Final Reranking:** Additional filtering and adjustments are applied to the ranked items to ensure integrity, diversity, and alignment with user preferences



Twitter

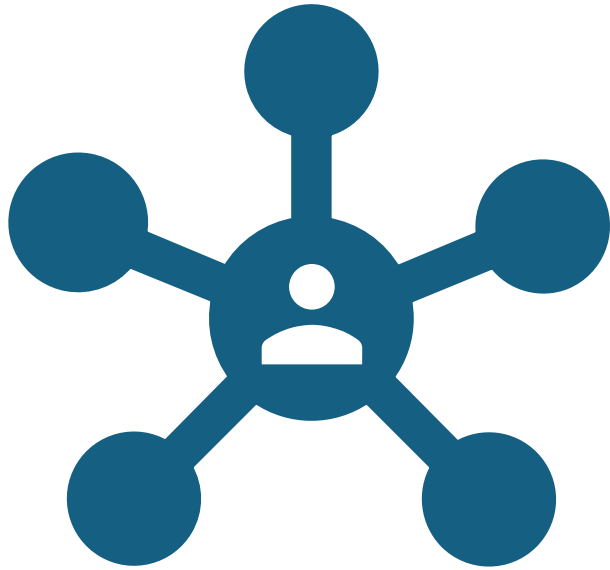
- Obtaining the best Tweets from different recommendation sources in a process called candidate sourcing.
- Classification of each Tweet using a machine learning model.
- Applying filters, such as filtering out Tweets from users who have been blocked and Tweets that have already been viewed.





Youtube

- Use of various sources of information
- Hybrid algorithm to cover more diverse content.
- Use of human evaluation to improve the user experience.



Conclusions drawn from the review of articles

- The algorithms of these social networks are fundamental to their functioning.
- It is important to know how to deal with problems such as "cold-start" or "black sheep".
- Responsible development: privacy, transparency and combating disinformation