Bias awareness via increased interaction with recommendations: Assisted self-reflection for Users of Video Sharing Platforms?

Interaction with recommendations for bias awareness on VSPs

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Videos are among social networks' most widely used forms of interaction. Due to the increasing amount of this form of content, Recommender Systems (RS) have become a crucial component of Video Sharing Platforms (VSPs) as a vital tool to avoid critical usability issues such as information overload or decision fatigue. However, while VSPs have democratized the generation of information and access to knowledge, there is considerable controversy surrounding their tremendous potential to influence users' decisions or even shape public opinion and political outcomes. Given Recommender Systems' increasing implementation and widespread use on VSPs, we would like to open a conversation about improving the quality of video recommendations on a VSP by supporting users' understanding of potential biases and increasing user interaction with the Recommender System on the critical points of the filtering process. To do so, we will review the collaborative filtering method and its potential biases, including the corresponding interaction that could mitigate these while providing relevant user feedback to the system. Additionally, we will propose different alternatives on how users could specify requirements and review classifier labels or category distribution. We will also discuss the role of visualization and explanation on bias awareness and how increased interaction can be incorporated into the recommendation process, including its potential impact on user satisfaction and filtering quality.

CCS CONCEPTS • Human-centered computing • Computing methodologies

Additional Keywords and Phrases: Recommender systems, video-sharing platforms; trust; misinformation, user interactions, filtering methods, collaborative filtering, filtering bias

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1 INTRODUCTION

Videos are among the most widely used form of interaction among social networks, with millions of video content shared on these platforms daily. Due to the increasing amount of

this form of content, Recommender Systems (RS) have become a crucial component of VSPs [2].

Recommender Systems (RS) are a family of algorithms that provide users with filtered, relevant information based on their profile and goals. They have been use a wide range of domains such as VSPs, or Social Media [2] [4] as assistive tools to provide content filtering and recommendation. The recommendation can be active, such as a response after the user query, or passive, meaning the recommender system will use prior knowledge and new source information to show the user the best selection of information.

In the realm of VSPs, RSs are a vital tool to avoid critical usability issues such as information overload or decision fatigue, and with the ideal pursuit of supporting users to reach their epistemic goals, increasing satisfaction, and enhancing experience in general.

However, while Video Sharing Platforms (VSPs) have democratized the generation of information and access to knowledge, there is considerable controversy surrounding their tremendous potential to influence users' decisions or even shape public opinion and political outcomes. Concerns around Video Sharing platforms' Recommender Systems range from amplifying user biases by providing discriminatory or exclusionary videos to increasing the risks of different types of unfairness [7].

Recognized unfair phenomena are Popularity Bias, where popular content is overly recommended over less popular but potentially more accurate items[1], and Filter Bubbles when filtering methods limit the variety of information an individual can access creating a distorted view of reality by reinforcing existing believes[7].

Given Recommender Systems' increasing implementation and widespread use on different digital content platforms, it is necessary to consider that the effectiveness and usability of these systems are founded heavily on filtration quality and user satisfaction. Thus, development and future research must focus on addressing the current filtration biases of RS by prioritizing transparency and fairness [8].

2 WORKSHOP TOPIC PROPOSAL

Research has shown that one way to improve the quality of recommendations and satisfaction with these systems is to increase user interactions during the recommendation process[8]. Additionally, RS incorporating mixed interaction interfaces has been indicated as a driver of increased efficiency and decision effectiveness[5].

For the workshop *Building Credibility, Trust, And Safety On Video-Sharing Platforms,* we would like to open a conversation about improving the quality of video recommendations on a VSP by supporting user's understanding of potential biases of an RS and increasing user interaction with the Recommendation System on the critical points of the filtering process.

First, we will present different filtering techniques used on RS and their applications for video recommendation. For the current session, we would like to focus on the collaborative filtering method and its potential biases. Due to its widespread use in VSPs, it can be an excellent illustration for applying user interaction alternatives.

Next, based on the work of different researchers[8][3], we will analyze the various types of user interactions supported by collaborative filtering and how these interactions can provide relevant feedback to the system.

Through examples of RS applications, we will propose different alternatives on how users could specify requirements and review classifier labels or category distribution. We will also discuss the role of visualization and explanation on bias awareness and how increased interaction can be incorporated into the recommendation process, including its potential impact on user satisfaction and filtering quality.

To conclude, we will examine the challenges and opportunities associated with incorporating interactive user feedback on VSPs, as well as the technical concerns that can arise with the integration of continuous user interaction and feedback into the filtering process.

Figure 1: Interactive visualization with a Recommender System proposed by S. Bostandjiev, J. O'Donovan, T. Höllerer [3]

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Authors Profile

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Vanesa Yepes-Serna is an HCI researcher focused on the study of technology usage's impact on user cognition. Currently, she is a researcher at the Department of Media Studies - Web Science at TU Berlin, implementing research on the topic of AI-Human Collaboration, particularly the usability and fairness of recommender systems.
Previous to her work at TU Berlin, her thesis on intercultural aspects of user interfaces earned her a Master's degree from the Bauhaus University of Weimar, Germany. Since 2017 she has worked on research projects that pursued a better understanding of cognition-based parameters to improve Human-Machine interactions in collaboration with the Bauhaus University of Weimar, ULM University, and Magdeburg-Stendal University. Additionally, she was a member of the Distributed Intelligence Lab, DAI-Labor, at The Technical University of Berlin, where she studied the potential of user interactions with Automated technologies and Human Machine Interfaces (HMI).

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Currently a researcher in AI and Optimization at (DAI-LABOR) TU-Berlin, Berlin, Germany. Prior to joining DAI-LABOR, He obtained his MSc in Autonomous Systems as part of the EIT Digital Double degree program (TU-Berlin and Eurecom). During his time as a Master's student, he worked as a student assistant for Prof Demir at the Remote Sensing Image Analysis Lab (RSiM) Group. There, he investigated how to apply deep learning methods for binary change detection in bi-temporal sets of images. In addition, under the supervision of Prod Marios Kountoris, he worked on developing novel multi-agent reinforcement algorithms for cloud computing load optimization. Furthermore, due to his extensive experience as an engineer in widely known institutions such as Amazon Robotics, and Deutsche Telekom, he has a wide knowledge of Software Engineering, Cloud computing, Robotics, Control Theory, and Machine Learning. More recently, at DAI-LAB, His research focus range from Autonomous systems, Robotics, and Human-computer interaction to Reinforcement Learning and Autonomous Decision Making.