Recommender Systems on the Online Entertainment Industry: From Metrics to Ethics

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ABSTRACT

This article examines the evolution and impact of recommender systems within the online entertainment industry. Recommender systems, which are algorithms designed to analyse user preferences and deliver personalised content, play a crucial role in helping users discover relevant media. The chapter traces technological advancements in these systems, from foundational collaborative filtering models to advanced deep neural networks, underscoring their contribution to user experience through tailored content recommendations. Additionally, it addresses pressing ethical challenges, including issues of privacy, transparency, bias, and the potential manipulation of user behaviour. Through a critical analysis, the chapter explores the complex balance between technological innovation and ethical responsibility, highlighting the growing need for regulatory frameworks and increased algorithmic literacy. Concluding with recommendations for future research, the article advocates for interdisciplinary approaches to better understand the societal implications of recommender systems.

INTRODUCTION

Amidst the rapid platformization of online entertainment, recommender systems (RSs) have emerged as essential tools, reshaping the distribution and accessibility of media formats such as movies, music, video games, social media, and immersive media (Herbert et al., 2020; Lotz, 2021; Wang et al., 2023). This evolution has been primarily driven by the rise of sophisticated algorithms, powered by Artificial Intelligence (AI), which help users navigate vast content landscapes by tailoring recommendations to individual preferences (Steck et al., 2021; Q. Zhang et al., 2021).

These systems act as selection agents, delivering recommendations that improve user satisfaction by aligning content with individual preferences and past behaviours. This targeted approach not only enhances user engagement but also reduces the overwhelming nature of extensive content libraries, effectively addressing the issue of information overload (Cheuque et al., 2019; Houari et al., 2022; Lubos et al., 2023; Ricci et al., 2011). Furthermore, advancements in algorithms – particularly deep neural

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networks and hybrid models – enable RSs to offer diverse and novel content suggestions, introducing users to media they may not have otherwise encountered (Cheuque et al., 2019; Deldjoo et al., 2021; Lubos et al., 2023). For companies, these personalised experiences translate to increased user engagement, higher content consumption rates, and stronger customer retention, as users are more likely to remain on platforms that consistently cater to their interests (Herbert et al., 2020; Sotero, José Manuel, 2022).

Despite these benefits, RSs pose several challenges that stem from the very mechanism that make them effective. The algorithms that drive personalised recommendations often introduce biases – such as popularity bias, incumbency bias, and homogeneity bias – that can shape user choices and limit market competition by amplifying certain types of content (Fletcher et al., 2022). Moreover, the extensive data collection required for personalised recommendations raises privacy concerns, as users may be uncomfortable with the level of information gathered and how it is used (Kulshrestha et al., 2017; Milano et al., 2020; Sanchez et al., 2012). Recommender systems also tend to rely heavily on historical data, which can restrict their ability to adapt to shifting user preferences and trends, and they often struggle with the 'col-start problem', where limited information on new users or items impedes the accuracy of recommendations (Cheuque et al., 2019; Gupta & Basit, 2022).

Beyond individual biases and technical challenges, RSs have broader social implications, particularly in their role in creating echo chambers. By tailoring content to match user preferences, these systems can limit exposure to diverse perspectives, narrowing cultural viewpoints and potentially overlooking the nuances of global communities (Areeb et al., 2023; Beer, 2009; Cheney-Lippold, 2011; Cotter & Reisdorf, 2020; Dahlgren, 2021). Additionally, recent studies highlight concerns over how RSs may contribute to addiction, encourage clickbait, and exacerbate societal polarisation and radicalisation (Sbaraini Fontes & Marques, 2023). In light of these pressing issues, public authorities worldwide are grappling with the rapid pace of technological change, working to establish regulations and guidelines to address the ethical challenges and societal impact of RSs (Treleaven et al., 2019). Later sections of this chapter will delve deeper into these ethical issues and the social dynamics shaped by RSs, offering a comprehensive analysis of their broader implications on user behaviour, regulatory needs, and societal well-being.

Recently, RSs have become focal points in discussions within technology and media studies, reflecting both their expanding influence and the controversies surrounding their use. Scholars debate the implications of RSs on cultural diversity, as these systems tend to reinforce popular content while sidelining niche offerings, sparking concerns about cultural homogenization. There is also ongoing discourse on how RSs affect user autonomy and agency, with critics arguing that these systems may manipulate user behaviour in ways that prioritise platforms' profitability over user well-being. Additionally, advancements in machine learning, such as deep neural networks, have led to more precise but also more opaque recommendation processes, raising concerns about transparency and the need for interpretability in algorithmic decision-making. Together, these developments underscore the critical role of RSs in shaping modern media consumption patterns, making them increasingly relevant in contemporary debates about technology's role in society.

In light of these complex dynamics, this chapter aims to provide a comprehensive overview of RSs practices and trends within the online entertainment industry, tracing their developments from early beginnings and examining the role of AI in enhancing system efficiency over time. Additionally, the chapter seeks to identify and explore the ethical issues and biases associated with RSs, highlighting their effects on social dynamics and user well-being. Accordingly, the chapter addresses two research questions: 1. How have RSs evolved within the online entertainment industry, and what is the current state-of-the-art in personalisation and user experience?; 2. What ethical challenges are associated with