Black Hole instead of Black Box? - The Double Opaqueness of Recommender Systems on Gaming Platforms and its Legal Implications

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"New: the interactive Steam Recommendation Guide!"
This is how the online gaming platform STEAM advertised its new recommendation system in March 2020. Compared to other platforms (e.g. shopping platforms), the gaming platform has a special feature: It includes a marketplace for games, users can network with friends or follow the gameplay as a stream. STEAM's recommendation system takes into account, among other things, game genres, what friends are playing and which streams are being watched - this is also reflected in the recommendation add-ons. The combination of shopping, streaming, and social media platforms raises even more questions about the explainability of the AI-driven system than one-dimensional recommendation systems - while increasing the challenges associated with the other interfaces and specific information. The recommendation algorithm of a shopping platform (such as amazon.com) uses the method of collaborative filtering, examining groups of customers who buy or have rated similar items as the user; and uses simple filtering methods to generate recommendations that might also be of interest to the user. Streaming or video platforms, in contrast, use content-based filtering methods instead and provide recommendations in two steps: First, user behavior is analyzed and a pool of videos or streaming content is generated, which is further specified by prioritization in a second step. To a certain extent, the recommendation systems of social media platforms combine both methods in the form of a hybrid filtering method.

The problem inherent in all AI systems is opaqueness. It is difficult to understand what motivates the actions of the computer system. Here, the severity of opaqueness additionally depends on what algorithms are built into an AI system. While rule-based systems are mostly transparent, this is less the case when deep neural networks are used. On the other hand, the latter work much more precisely and accurately than rule-based systems. The dichotomy between the explainability of AI and its accuracy is difficult to solve. The opaqueness of the decision (i.e., the black box) is even more opaque in the case of the online gaming platform, which combines three one-dimensional platforms, than in the case of the shopping platforms, because it is complemented by the recommendation algorithm of the video/streaming platform and the social media platform, respectively, and thus becomes multidimensional. Which algorithm is preferred in the recommendation decision and which data and results are "swallowed" at the expense of others remains more unclear than ever - so that, according to our designation, we can speak of a "black hole" rather than a "black box" phenomenon. With the increasing merging of many areas of daily life, this "black hole" phenomenon will also become apparent in similar factual situations and should therefore already be given a legal classification.

In order to be able to regulate or certificate recommender systems in the future, sufficient transparency about the information retrieved from these platforms needs to be established first. In a second step, a value-oriented overall assessment has to be made in order to prioritize the appropriate regulatory instruments. Despite the platforms' interest in keeping the recommendation algorithms and decision filters secret (e.g., trade secrecy, risk of abuse), transparency has been given a high priority in European legislation. According to the EU legislator, recommender systems have a significant impact on the ability of recipients to access and interact with information online; they also play an important role in amplifying certain messages, spreading information virally, and stimulating online behavior (see recital 26 of the Digital Services Act). For this reason, transparency is included in two recent legislative acts proposed by the EU: the Digital Services Act (COM 2020/825 final) and the Artificial Intelligence Act

(COM(2021) 206 final). There are several ways to establish a mutually acceptable level of transparency. It is possible to disclose the algorithm to individual users so that they can control the preferences themselves (by entering other values). It would also be possible to establish government oversight to independently monitor such systems. Recent European standards express the idea of setting up an independent body to act as an intermediary. Each of these options offers advantages and disadvantages with respect to the phenomenon of "black holes" in gaming platforms. We will contextualize these ideas and offer possible solutions to at least begin to address the transparency problem - although it is essential, of course, also in the interest of trust in technology, that a balance be struck between users, government, and researchers to effectively establish the transparency required by the EU and the type of regulation that will follow.