

Analysis of Social Media Algorithm Recommendation System

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Abstract

Once, the Internet was considered an important force to promote social public welfare activities and spread social justice. Today, the driving force of the Internet on the spread of negative social information and polarisation also exists. Social media platforms use this kind of method to customise personalised content distribution schemes by mining and analysing individual historical behaviour data based on algorithms. This behaviour of the platform brings about efficient and accurate information matching. At the same time, the content recommended by the algorithm is also controversial due to the risk of privacy violations and other issues. This article will analyse the advantages and disadvantages of social media platform algorithms and recommendation systems for citizens.

Keywords: algorithm, recommendation system, social media, data security, extremism

1. Introduction

With the advent of the Web2.0 era, the speed of media development has been beyond people's imagination. Based on LBS technology and algorithm, media has penetrated every corner of life from the field of news distribution. People in reality and virtual boundaries in quietly eliminate. In 1996, Nicholas Negroponte wrote in his book "Being Digital" about an alienated way of life in which people are exposed to the Internet to get the information they need. The Internet as a tool is indeed extraordinarily helpful in helping people to access information. Over time, however, people are increasingly exposed to the vast amount of data available to them. Coupled with the popularity of smartphones and social media, the negative impact of such technology on people has begun to emerge. This paper will take Weibo as an example to analyze the advantages and disadvantages of big data algorithms to users.

2. Datafication and Social Media

The history of media and communication has generally gone through four medialization waves, Mechanization, electrification, digitalization, and Datafication (Andersen, 2018). In the stage of Datafication, when people are faced with hundreds of millions of daily generated contents (including user-generated content, professionally generated content, and algorithm-generated content), the limitations of the manual gatekeeping mode become increasingly prominent. In this context, the algorithm mode is applied and gradually becomes a mainstream form. As Chuma (2014) mentioned, the introduction of new media forms brought by new technologies, such as newspapers and social media platforms, will bring people's interest in this technology research. As a super-platform of Chinese social media, Weibo meets users' needs for communication, information sharing, and news and current affairs. With the gradual increase of users, the popularity of algorithmic recommendation systems has become the best way for Weibo to deal with the enormous amount of information.

3. Algorithm and News Feeding

Goffey (2018) mentioned that when people input a set of instructions into a machine to solve the current problem, this process or means is called an algorithm. In the past, people's understanding of algorithms was limited to

product recommendations and personalized distribution of short videos, and information was taken for granted as a supplement. In the traditional concept, the core of social and political thought is communication (Mowlana 2014). However, the development of intelligence media relies on optimization and updates time and time again and is based on user feedback. As the pace of life is getting faster and faster, people's demand for information is getting bigger and bigger. The seemingly humanized algorithm recommendation is constantly updated, but it has a more convenient and comprehensive channel to collect user information after each update. It also creates a paradoxical picture of life for users; that is, the information received by users is more like "feeding" than active acquisition (Liang, 2021).

In 2014, the bell of Weibo in NASDAQ announced the arrival of a new era of Weibo. According to Alexa's statistics in March 2020, Weibo ranks 16th in the world in terms of visitors and 10th in China. The proportion of netizens obtaining news through Weibo reaches 35.6%, higher than obtaining news through news applications (CNNIC, 2017). As a social network platform with weak ties as the hub, Weibo builds communities essentially the public sphere proposed by Habermas (1974). As a social media, the injection of algorithms gradually increases the time and energy spent by users on Weibo and then gradually makes users fall into the digital spiral constituted by algorithms. Therefore, the concept of "digital survival" is entirely appropriate to describe the dependence of Weibo users on the status quo. From an information platform with the selling point of watching current social events at the beginning, Weibo has gradually become an interwoven field of search, information, hot spots, mainstream culture, and subculture. This situation, and it is behind the commercial operation and algorithm mechanism, has a great relationship. The transmission of information is a process through which people jointly create things in society and are changed they create with their own hands. Based on this premise, while the discussion of algorithms in the industry focuses on short videos and information aggregation platforms, Weibo has quietly alienated the public sphere with the help of algorithms and constantly encroaching on users' private space (Wang Yuqian, 2020).

As Giddens (2003) said, as people live in a globalized world, interpersonal relationships and characteristics in daily life have undergone fundamental changes. The Internet and social media bring users changes in space and time; they can receive news and information from all over the world anytime and anywhere. At present, the hot search list (hashtag) of Weibo mainly focuses on entertainment and life. According to the real-time search volume of users, the hot search list is updated. Under normal circumstances, the information recommendation mechanism of Weibo is not strictly by order of time but distributed and recommended according to the number of online users within the release period. The more users discuss, the more likely the related topic will enter the hot search list. An obvious disadvantage of this model is that many comments from fake accounts are poured into moderate comments, pushing the topic to the hot search list and gaining tremendous attention. Such fake accounts are operated by particular companies and sold on e-commerce sites like Taobao. These companies promote subscribers (fake accounts), the number of comments, retweets of posts, and guide and change public opinion.

As Thuseethan (2015) said, most users rely on social media to obtain news articles and suggest the classification of news categories, and social media plays a vital role in promoting the development of digital news. Weibo recommendation system is based on comments, and the number of comments is more like feeding information to users. Moreover, some people with ulterior motives will use this mechanism for their profit. For example, Figure 1 shows the popularity ranking of Weibo on May 31, 2021. There are six pieces of entertainment news here, and they are the majority. Severe news and current affairs issues, however, get less attention. To some extent, Weibo's algorithmically constructed information recommendation limits users' ability to discuss social events. In addition, the hot search list of Weibo has been dominated by entertainment news for a long time, which makes Weibo, a platform in the public sphere, gradually become entertainment-oriented.



Figure 1. The ranking of hashtags in Weibo Hot Search List (May 31st) (Weibo screenshots)

4. The Echo Chamber and Information Cocoons

In his book *Infotopia*, Keith Sunstein (2008, P113) mentioned that it mainly refers to the fact that network media puts users in a relatively closed information space by spreading homogeneous content. Information Cocoons refer to the phenomenon that the Information fields that people care about are habitually guided by users' interests, thus confining people's lives in Cocoons. While the Weibo algorithm enables users to communicate more efficiently, the communication between communities is not necessarily smoother and more effective than in the era of information shortage. In Fraser (2007)'s reconsideration of the digital public sphere, he mentioned that his views on the status of citizens in society and class inequality would influence public opinion to a certain extent. Fraser (2007) also believes that social equality is the essential condition of political democracy. The Echo Chamber effect and Information Cocoons brought by the algorithm affect the information attributes received by users to a certain extent and affect users' ideas and public opinion.

At present, recommendation methods of Weibo algorithms mainly include a content-based recommendation, a recommendation based on collaborative filtering, and a recommendation based on hybrid methods. This recommendation mechanism can ensure that every user can see their favorite content to the maximum extent. However, in recent years, Weibo's plan to support Vertical Field IP gradually stripped the rationality of this algorithm recommendation method and replaced it with a fast growth method at the cost of users' freedom of informed choice. All kinds of strange account recommendations appear on the user's home page, and the hot search list is filled with empty topics of pan-entertainment. The algorithm of Weibo recommends seemingly diversified information acquisition (Wang Qian, 2020). However, it weaves an entirely alienated digital living space for the audience, which inwardly deprives the audience of their independent choice of information and pushes the trend of public opinion in the field of Weibo to another extreme. Under this kind of regulation, the audience's autonomy is curtailed and carried out imperceptibly.

The Echo Chamber Effect is generated because the algorithm recommendation system only makes recommendations according to users' interests and hobbies. Sunstein (2008, P76) believes that active users post opinions to attract the attention of homogenous people, and due to group pressure, these groups only care about the topics they are interested in, only believe the truth they think, only uphold the correct views they think, and severely reject different views and attitudes. In the end, The Spiral Of Silence will be formed in a collective way to eliminate differentiated voices and amplify their voices. Therefore, in the conflict between the desire for expression and the power of regulation, biased interpretation is born and deconstructs the positive social value function of the public sphere.

5. Public Opinion and Extremism

Due to Super Topic and Hot Research List on Weibo, some variety shows and entertainment news occupy the List. Because these entertainment companies need to make money, they need to create some artificial topics to keep users interested in the programs and celebrities created by these companies. With this series of requirements, Fandom Community emerged. The positive effects of Fandom Community are mainly reflected in the convenience of interacting with celebrities and the efficiency of organizing related activities. However, the

disadvantages are mainly reflected in the negative influence of public opinion caused by fans and companies' excessive pursuit of attention (Zheng, 2020).

Loader (2015) believes that it is common for entertainment celebrities to use social media to communicate with fans. Moreover, it is the most direct way celebrities can pose general questions to their fans. Members of the Fandom Community need to increase the popularity of the stars they support by artificially creating topics and using multiple accounts to support clicks. For example, according to Tencent News, one of Mengniu's yogurt bottles has a QR code carved into the lid that helps fans vote for their favorite celebrities. As a result of this mechanism, fans in the Fandom Community buy many yogurts but only use the caps and dump the yogurt. This kind of bad social influence caused by the cooperation between the algorithm mechanism and the enterprise resulted in the government banning the way that buying yogurt can help vote. According to the star ranking table in Figure 2, fans need to create attention and exposure for stars and then use various means to create topics and comments. Media is a means of conveying information to the public and a place where political views and risks are defined and contested (Howard 2012). For example, the screenshot of Weibo in Figure 3 is the Post for fans to maintain stars. This phenomenon has resulted in fanatical fans occupying resources in the public sphere and many extreme opinions. That is, they will go to any lengths to protect the interests of the stars. In Republic.Com, Keith Sunstein (2003, P44) mentioned that group polarization is a bias in group opinions. After discussion, group members continue to move along the line of bias and finally form extreme views. In addition, as the fans of Fandom Community are young (most of them are minors), extreme remarks have a certain degree of negative impact on the thoughts, ideologies, and values of young users. Mustapha (2012) notes that the quality of a society's functioning is determined by the level of internal communication and rationality within a group of citizens, especially in the face of social, political, and economic problems. However, the Weibo community created by the recommendation system cannot meet the operation of rational Public Sphere to some extent.

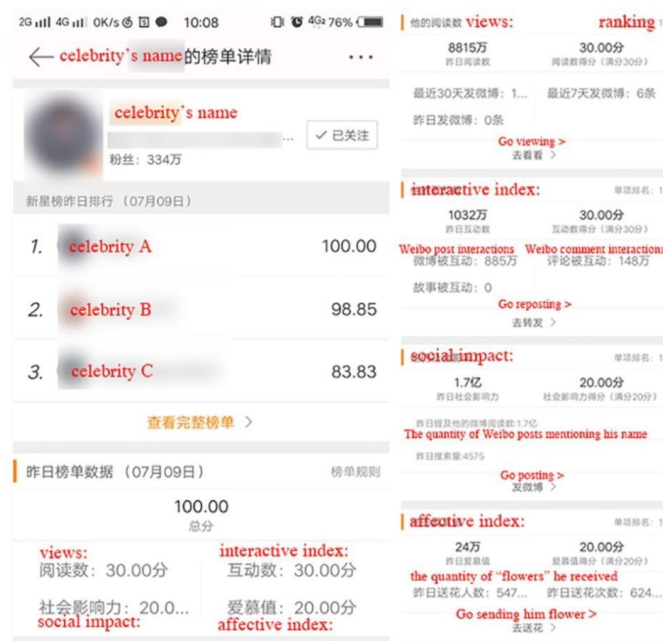


Figure 2. The data indicators on Weibo (from Yin, Y 2020)



Figure 3. Fan practice regulated by the trending topic algorithm (from Yin, Y 2020)

6. Electronic Commerce and Data Security

Nixon's (2016) understanding of digital consumption is that digital media exists as a labor tool, while digital culture is the object of labor of users. Taking the e-commerce field of Weibo as an example, users' preferences are summarized based on their searched information and viewing records. And then cooperate with e-commerce platforms like Taobao and Amazon to recommend product advertisements to users.

In Weibo, the barrier between ordinary people and public figures is broken down, and people with different positions can express their views on the same issue and have interactive discussions. The establishment of a super-topic option creates a more private and cohesive space for users with different interests. However, Weibo is constantly strengthening the protection of user information, such as the reminder of the risk of remote login and the reminder of abnormal accounts. However, these measures only superficially cut off access to data leakage. Nevertheless, fundamentally, users' personal information, such as a home address, location, and address book, is still exposed to risk. According to a report by Southern Weekend, Dark Web users posted a transaction for \$1,388, saying "538 million Weibo users are bound to their mobile phone numbers, and 172 million of them have basic account information." The bound mobile phone data includes the user ID and mobile phone number, and the primary account information includes the username, profile picture, number of fans, and location. Later, Weibo officials admitted that there were loopholes in the management of users' personal information. Users' data leakage is easy to be used by criminals. As Couldry(2016) mentioned in his article, unless users make considerable efforts to deliberately change their behaviors to prevent a particular behavior from leaving traces and information on the Internet, the information can become searchable by anyone, anywhere, for any purpose. In the digital existence of users, data should be a passport to move between different nodes, rather than a bargaining chip to trade for so-called "freedom." In the virtual world of dense numbers, how to prevent users' privacy from becoming commodities under the manipulation of algorithms is a matter worthy of vigilance and consideration.

7. Conclusion

From the perspective of critical algorithm research, this paper analyzes the advantages and disadvantages brought by the algorithmic recommendation system of Weibo. The algorithm value elements of Weibo mainly include novelty, popularity, interactivity, and correct orientation. Algorithms are not created for neutral purposes but to create value and profit, nudge behavior or construct preferences in some way, or identify, rank, and categorize people. It is worth noting that mass media have accepted the legitimacy of Weibo's Hot Search List and Super Topics to a certain extent. When super platforms (such as Weibo and Facebook) increasingly dominate

news distribution, the “content is king” mindset needs to change. Search engine optimization (SEO), social media optimization (SMO), and automated recommendation systems all put forward new requirements for the organization and presentation of content. Journalists need to understand platform media’s recommendation rules and algorithm logic to cope with the booming wave of intelligent media. In the continuous updating and iteration of the algorithm, the drawbacks such as extremism, data security, and information cocoon would be solved. With the development of science and technology and people’s awareness, these disadvantages would eventually be solved.

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