

Is Algorithm Killing News? Controversies and Breakout Strategies in Algorithmic News

Xuechun Yang¹, Jiawei Liu²

¹*School of Journalism and Communication, Lanzhou University, Lanzhou 730000, China*

²*Department of Media and Communication, City University of Hong Kong, Hong Kong 999077, China*

Abstract

Traditional journalism is undergoing an algorithmic transformation. Nowadays, algorithmic news can be widely used as one of the main ways of information dissemination, but the controversy it brings is also increasingly prominent. In this article, the essence and formation mechanism of the controversy in algorithmic news are discussed in more detail by combing the related literature and analyzing the data of practical cases. It is found that the controversy of algorithmic news mainly originates from the issues of information filtering, recommendation bias and algorithm opacity. In addition, the controversy also relates to users' concerns about authority, credibility and diversity. Aiming at a series of issues arising from algorithmic controversy, this article proposes a tripartite solution strategy for platforms, users and media, which is of reference value for alleviating algorithmic news controversy, enhancing users' trust and satisfaction of algorithmic news.

Keywords

Algorithmic News, Controversies, Algorithmic recommendation, Users, Resolution Strategies

1. Introduction

The advent of the digital era has profoundly changed the way information flows and the access of users to it. However, the transformation has also been accompanied by a series of issues which have provoked widespread controversy. While the personalized recommendations of algorithmic news have brought users a more accurate presentation of information, concerns have also been raised, including the creation of information cocoons, lack of transparency, and threats to privacy. These issues cover a wide range of dimensions, including diversity of information, social fairness, and individual rights, and have triggered insightful thinking about the news industry and digital technology. The rise of algorithmic journalism poses core questions about the public information ecosystem and the value. Most of the past researches only focus on describing the definition and characteristics of algorithmic news, but lack a comprehensive exploration of the exact causes and solution paths of its controversies. In this article, by conducting sentiment analysis and word cloud analysis on representative cases, we excavate the causes that trigger algorithmic news controversies, offer a systematic analysis of the causes of algorithmic news controversies, and propose some solution strategies based on them, seeking to strike a balance between technology and ethics, and providing a few useful references and ideologies for the resolution of algorithmic news controversies.

2. Concepts and characteristics of algorithmic news

2.1 The concept of algorithmic news

Algorithmic news is the method that uses intelligent algorithmic tools to support news production and commercialization, which includes the automated implementation of operations such as information gathering, storing, editing, presenting, data analyzing and marketing (Sim & Shin, 2016). Scholar Constantin Dore defines algorithmic news as the final text that selects electronic data from private or public databases, assigns relevance to pre-selected or unselected data, generates semantic structure through natural language and publishes it in a specific range of online or offline platforms (Dörr, 2016). With the advancement of digital tech, traditional news production and dissemination are being subverted, and algorithmic news, as an emerging form, is gradually coming into its own. It is unlike traditional news editing and manual selection, but relies on computer programs to analyze, collate and deliver information.

2.2 Algorithmic Recommendation

Algorithmic recommendation is an essential part that permeates algorithmic news. Based on the user's historical browsing actions, interests and preferences, the algorithm is automatically able to filter and recommend relevant news content to users.

Above all, from the perspective of production, algorithmic recommendation has achieved accurate news production. In the news feeding stage, algorithmic recommendation technology could seize the elements that users concerned about with the collection and production of relevant content. As an example, Xinhua News Agency used "Media Brain" to produce MGC video news for the two sessions by quickly scanning billions of webpages and comprehensively calculating and analyzing public opinion, which has attracted a significant amount of attention.

Secondly, from the distribution point of view, algorithmic recommendation achieves personalized and customized news distribution mainly by capturing users' reading preferences and distributing news content accordingly. From a delivery perspective, algorithmic recommendation achieves all-round and three-dimensional news scene-adapted delivery. In addition to meeting users' individualized and routine needs, algorithmic recommendation can also be used for news scene recommendation to meet users' random needs. CNN's news client Breaking News+ makes use of the new mindset of temporal and spatial interconnectivity, searching for the user's geographic location through a positioning system to increase the proximity of the audience to the news and to deliver relevant news. These types of algorithmic recommendations are applied to the entire news process. From the user's point of view, compared with the traditional media era, algorithmic recommendation technology provides users with more personalized information, shortening the time for users to retrieve information.

2.3 Algorithmic news features

2.3.1 Precision, automation

By analyzing users' historical behavior, interests and preferences, algorithms are able to accurately recommend content suitable for individual users. This personalized recommendation improves user engagement and makes it more likely for users to interact and share with the content, which in turn increases the influence and sustainability of the news media. On the one hand, the algorithmic mechanism enables the audience's personalized needs to be met, increasing the audience's "user stickiness" to news websites and platforms; on the other hand, the algorithmic recommendation transforms the "crowded" into a single, precise "individual", which makes the starting point of domestic news production more profit-oriented and purposeful. Compared with traditional editorial decision-making, algorithms are able to automatically screen and recommend news content to meet users' personalized needs by analyzing a large amount of user behavior data. This means that each user may witness different reports when browsing news, making algorithmic news more flexible and diverse.

2.3.2 Subtraction Logic

As a "high-dimensional medium", the Internet has greatly stimulated the production capacity of personal information, but the huge amount of complex information has made the traditional unified news distribution seem inadequate. Algorithmic news not only has efficient writing ability, also has a unique edge in the distribution stage (Ding & Wang, 2019). Algorithmic news uses computer algorithms and automation

technology to generate a large number of news reports within a short time, as well as real-time tracking and information updating. This efficiency and real-time brings the user with more comprehensive news information, which enhances the competitiveness of news media in information dissemination. The technological intermediary between news and audience is the algorithmic mechanism, which is capable of indexing a large amount of news information and matching it according to individual user profiles. Distribution technology has dealt with the problem of news distribution methods and channels in the era of information explosion, realized the news distribution with subtraction logic.

2.3.3 High industrialization

Under the operation of technology, algorithmic recommendation has great superiority in the news distribution field. The news industry has been transformed from the traditional content editor-led manual distribution mode to an industrialized distribution process led by "artificial intelligence". In the coupling of big data technology and algorithmic software, algorithmic news production and operation of the efficiency highlights the advantage, in the timeliness of production, real-time publication, and data analysis to achieve the accuracy of the operation. The breakthrough of low cost and even zero cost has been realized. In a nutshell, in the operation system of algorithmic news, the algorithmic procedure is the core, the data resource is the foundation, and the intelligent operation is the key. Algorithmic news saves human labor and reduces the cost of news production, thus improving production efficiency, which means that the news industry has shifted from a "labor-intensive" industry to an "industrialized assembly line distribution"

3. Controversial Analysis of Algorithmic Journalism

The emergence of algorithms has subverted the production mode and organizational structure in traditional news industry. Collecting data, generating text, distributing and delivering can all be given to computers, which has greatly improved the production efficiency of news industry, changed the way of news distribution, and further satisfied the audience's "timely" and "personalized" information needs(Yin & Liang, 2021). It is worth noting that the algorithm in the production of news really brought efficiency and convenience, but triggered a series of controversies as well.

3.1 The controversial issues of algorithmic news

3.1.1 User privacy data leakage triggers data security concerns

For algorithmic news to achieve accurate push, it needs to be constantly fed by huge amounts of data. The delivery of algorithmic news may involve sharing user data with third-party partners, which can lead to the unauthorized flow of user data to other organizations and increase the risk of data leakage. Each user contributes data and exposes his or her personal information when using network instruments. The scene is like the circular prison described by Bianqin, in which everyone is exposed to the pattern of data capture: all behaviors, psychology, habits, and preferences can be glimpsed without any reservation (Dong & He, 2019). Now, with the widespread use of technology in the big data era, the invasion of individual privacy is becoming prevalent, and the "circular prison" is gradually taking shape, with data owners standing on the high ground of information and scrutinizing each user. Algorithmic news accurately grasps every user's online information, which provides raw materials for algorithmic news recommendation, but at the same time hides the great risk of violating citizens'personal privacy.

3.1.2 Content entertainment is flooding, news value guidance is missing

The recommendation mechanism of algorithmic news makes the news content more relaxed, entertaining and high click rate, while overlooking the in-depth analysis and seriousness. The lack of penetration of mainstream values in the algorithm makes news reports superficial and gradually tends to be fast-food entertainment. Important topics are ignored by algorithms and replaced by templated news, while truly valuable news is drowned in the information flow of entertaining content. Here is an illustration of MicroBlog topic #algorithm is murdering news#, where most of the algorithmic news discussed under the topic is extremely low-resolution, with a strong color of cyber-wrap and a very uniform format, with slogans hanging from a yellow background with black characters and skeletonized red letters on the cover, just like small ads on a wall paintbrush. The content, most of them are short and hollow, or meaningless, as well as

nutritious, and some of them are even time and space dislocated, upside down and black-and-white, so that you can't make sense of it. We extracted the comment content of the MicroBlog, and performed sentiment scoring and word cloud analysis respectively. Through scoring, we classified the sentiment of the comment content into three categories: positive sentiment, neutral sentiment and negative sentiment, and plotted the results into arose diagram of the sentiment distribution as shown in Figure I. After removing the deactivated words from the comment content, we draw a word cloud by word frequency as shown in Figure II. Figure 1 shows that 78.69% of the comments are negative, 9.84% are neutral, and 11.47% are positive, which shows that most people have negative attitudes towards the algorithmic news discussed in MicroBlog topics. In the word cloud shown in Figure 2, short videos and fast-food news are high-frequency words, and there are many negative words, including "spam", "murder news", "tacky", "title party", "headline party", and so on. There are also a lot of negative words including "spam", "murder news", "tacky", "headline party", etc., which shows that users are disgusted and resistant to this kind of algorithmic news content.

Figure 1: Algorithms are murdering news comment content sentiment distribution rose diagram

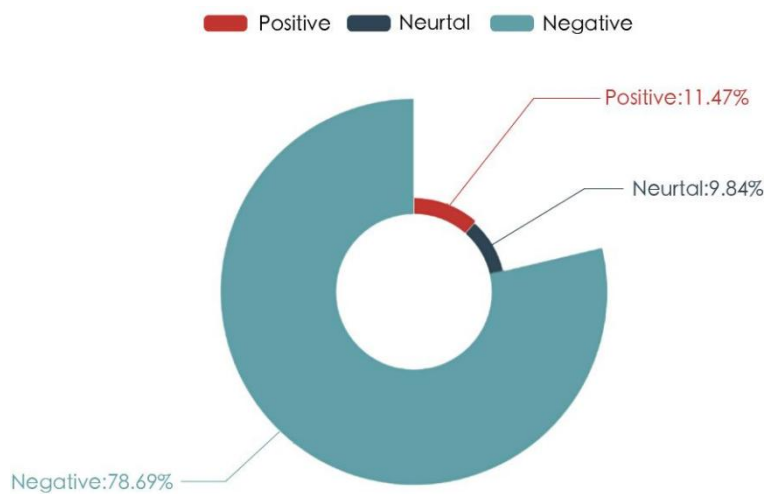


Figure 2: Algorithms are murdering news commentary content word cloud map



3.1.3 Algorithm blackbox is masking, Subject power is shifting

The opacity of algorithms and the unclear responsibility of the organizations they belong to are the present stage of ethical loopholes in algorithmic technology (Dong & He, 2019). It was initially believed that the emergence of algorithmic news would contribute to the preservation of journalistic professionalism because its data collection and analytical calculations are executed by algorithms and are not affected by the subjective bias of journalists. However, over time more and more scholars have begun to dispute the "blackbox" nature of algorithms, which could lead to greater problems than the subjectivity of journalists. Algorithmic black boxes leave the decision-making process of news algorithms non-transparent and hard to explain and understand. News consumers and audiences are unable to know exactly why they were presented with a particular piece of news content, which undermines their sense of control over the source of information and trust, and the absence of transparency can lead to bias and misjudgment in the algorithms' selection of news content.

In the traditional news era, news gatekeepers were undertaken by professional media editors, whereas in the smart media age, news checking relies on machine systems. As a result, algorithmic programs have taken the place of traditional news gatekeepers, whose real system is motivated by commercial considerations. Such a commercial standard of gatekeeping has also led to the creation of the "new yellow journalism". In the field of sociology, Lefebvre, an expert in spatial criticism theory, suggested that space is produced by human behavior. At the same time, Foucault has further elaborated on the "space of power", referring to space as the specific place where intellectual discourse and power operate. Nowadays, the symptom of the times has shifted from temporal anxiety to spatial anxiety, and behind the space lies the complicity between knowledge and power. Algorithmic recommendations are formed by what appears to be news tailored to the needs of the user, but the rules and technologies are in the hands of economic organizations represented by new media, a "false consciousness" according to the critical school. For example, Facebook's "bias-gate incident" in the 2016 U.S. election hides the ideology of the subject of the algorithm, which, if maintained, will have a great negative impact on the relationship between the media and the user's sense of trust.

3.1.4 Users' thinking is solidifying, the information cocoon phenomenon is intensifying

In the context of personalized recommendation, algorithms deliver content consistent with users' values based on their online behavior, such as likes and comments. Under the mechanism of algorithmic recommendation, news producers may neglect issues such as journalistic ethics and journalistic professionalism in order to gain audience concerns and profit. Algorithmic recommendation also undermines the value standard of traditional news selection to a certain extent, which forms an audience-oriented news content production mode, overemphasizes the enjoyment of news, and pursues the "entertainment" rather than "responsibility" among the masses. Information of genuine social value is ignored because it is not audience-oriented. This mindset of pursuing interests and catering to the interests of the audience makes the news gradually lose its importance. At the same time, as the information received by the audience is restricted to the content set by their user profiles, it leads to a serious problem of information homogenization, which puts the audience in the dilemma of an information cocoon. The wide application of intelligent algorithms limits the audience's comprehensive knowledge of the real society, and in the long run, users may fall into the information cocoon and find it difficult to free themselves from it, lacking attention to core public issues, and thus social integration as well as consensus is difficult to reach.

3.2 Analysis of the causes of algorithmic news resistance behavior

3.2.1 Algorithm application and its coding rules are not transparent and visible.

Contemporary media are actively embracing digital information, and the widespread application of algorithms in the news field has become a fact that cannot be disregarded. In the "news workshop" represented by social media, the production and distribution of most news can hardly be separated from algorithms. However, in the modern news industry, which seems to be efficient and process-oriented, the algorithmic application and coding rules behind are often shrouded in an opaque fog. This non-visualized algorithmic mechanism makes the flow of information mysterious and enigmatic, and challenges the openness, fairness and credibility of information dissemination in current society (Ziewitz, 2016).

As for the internal logic of algorithms, such as data processing, coding rules, and model computation, it is even an obscure and closed canvas for users. Algorithms are difficult to reveal, and users do not know what

content and media platforms they are being exposed to, nor do they know exactly how the information delivered to them was filtered, sorted, and customized. Users can't help but wonder about the "hidden secrets" of mysterious algorithms, which in turn raises concerns about "how information is selected and presented" and "the user's right to know"(Swart, 2021) . Such concerns may erode users' trust in information sources and influence their decision-making in media consumption.

3.2.2 "Filtering algorithms" break the balance of individual dialectical thinking

Traditional news media carries the function of delivering information to users, setting the agenda of common concern, and providing a place for discussion of topics, and at the same time assumes the responsibility of monitoring power and scrutinizing public opinion. With the participation of algorithms, traditional media follow the transformation of social media, these functions are gradually homogenized and centralized, i.e. more users are in the circle of their own attention. In recent years, personalized algorithmic recommendations have re-emphasized this "individuality" and "limited scope".

Personalized push is the main method of algorithmic news distribution. This kind of catering to user preferences, "private custom" push mechanism can better meet the specific information needs of users, in order to obtain a better user experience. However, when users focus only on their own concerns, only exposed to a certain type of information or a specific point of view, may lead to "algorithmic filtering bubble"(Spyridou et al, 2014), that is, the information presented around the user's established views more and more in line with the user's viewpoints, resulting in information limitations and singularity. The filter bubble phenomenon may cause an ecological bias in information, whereby users become certain of their own beliefs and perceptions, forming an external information gap and prejudice. Individuals' perceptions are restricted to the "information cocoon", which affects their dialectical thinking and problem-solving abilities. When this influence continues to expand until the user realizes that the algorithm exists, the algorithm maybe traced back, blamed, or even resisted.

3.2.3 Digital Intermediaries Concentrate Algorithmic Power

In today's highly digital era, digital platforms play a key role in transferring information from producers to consumers. Digital intermediaries, widely present in social media, e-commerce, search engines, etc., efficiently connect information, products and services. The wide application of algorithms in the field of news and information dissemination further confirms that digital intermediary platforms are gradually becoming the center of information distribution, thus strengthening the influence of algorithms in the production and push of news content and forming an effective closed loop. Particularly, big social media, such as Facebook and MicroBlog, are continuously using algorithms to deploy information distribution methods, and it is difficult to delegate the right to access diversified information to consumer groups, especially weakly active users in social media. As a result, this trend of centralizing algorithmic power may cause widespread concern and worry: some digital intermediaries are relying on their own large userbases so that they can easily influence users' perceptions and attitudes by pushing specific types of information and intensify homogenization and limitation. It is worth noting that this centralization of algorithmic power is linked to the economic interests of digital intermediaries (Dijck et al, 2018), which deconstruct and reconfigure the original digital platform society. Does relying on "algorithms" for profit have negative benefits for users? Are there boundaries of such rights that need to be monitored and scrutinized? These issues require the attention and discussion of the government and media consumers.

3.2.4 Audience is trapped in the shackles of blindly chasing information experience

With the continuous evolution of sci-tech, all kinds of new media forms keep satisfying people's desire for information, and the Internet has brought together the features of previous media to meet people's pursuit of information in a panoramic way. However, as human's thirst for information has gradually increased and even surpassed the concern for information itself, this blind tendency has gradually emerged in two core areas.

Firstly, the timeliness of information has been dramatically affected. The boom in natural language technology has accelerated the efficiency of news creation, yet the rise of big data has also reduced the in-depth investigation and recording process by journalists. This has simultaneously led to the fading of journalistic expertise, diminishing the significance of professional journalists within the industry. In

addition, it has become increasingly difficult to secure the source, quality, newsworthiness and authenticity of data, which consequently has a negative impact on news credibility.

Secondly, in terms of the information presentation, the audience's demand for personalization and customization is driving intelligent recommendation algorithms to become one of the mainstream technologies of current Internet products. Such personalized recommendations do provide users with information that is more in line with their interests and preferences. However, the rise of this trend is also accompanied by the uncontrolled collection and use of users' private data. In the pursuit of personalized experience, users' personal data may be misused or leaked, raising concerns about data security and privacy protection. This mindless pursuit may result in users enjoying customized content while paying a price for their privacy.

4. The rational coping strategy of algorithmic news controversy

4.1 Platform rationality: transferring rights to prevent algorithmic abuse

As an essential part of the algorithmic news ecosystem, digital platforms should seek rational adjustment and continuous optimization in power operation, information diversity and user rights. The news industry needs to realize that algorithmic technology is not unique to itself, and that appropriate open-source will facilitate a fairer and more transparent algorithmic ecosystem; information technology is only an aid to the production and dissemination of news, it is not desirable to indulge in algorithmic manipulation of the news, and the news industry should always abide by the truthfulness and objectivity of the news itself. Social media-based platforms need to realize that there are indeed profound personality differences among the large group of today's media consumers, sousing algorithms to optimize the recommendation branch is indeed beneficial. However, while holding the power to distribute information, platforms need to consider giving some of their rights to users, such as user-initiated customization of algorithmic rules and making algorithmic recommendations controllable and reversible. The platform should encourage diversified views, emphasize algorithmic awareness, and guide users to strengthen the supervision and improvement of the platform's own algorithmic rules.

4.2 User rationality: a dialectical view of algorithmic manipulation

Faced with the gradual downward penetration of the algorithmic news ecosystem, users urgently require a dialectical attitude towards algorithmic manipulation. The integration of algorithms and news media aims to provide more accurate information matching and personalized user experience. Yet, this personalization often tends to narrow the scope of information, leading to social isolation. While browsing algorithmic content, users need to examine the value proposition of algorithms and reflect on and agree with their limitations.

When accepting personalized content, users need to be cautious of falling into the trap of information closure due to their own preferences. Multiple sources of information can help users to more fully understand perspectives and positions that differ from their own. Seeking diversity and actively crossing information boundaries could enhance cognitive diversity.

In addition, it is all very well for users to retain the right to make information choices and consciously turn off personalization options in social media. Still, it is worth noting that extreme algorithmic confrontation is not advisable, and over-narrowing the information circle may possibly lead to stagnation. Users should not only enjoy the convenience provided by information personalization, but also maintain "technical rationality", seek a balance between sci-tech and values, maintain rational thinking, participate in diversified discussions, and enhance media literacy, so as to stay open and independent in the complex ocean of information nowadays.

4.3 Rationality of media workers: returning to the basics to guide news value

Nowadays, the network environment is characterized by particulate and fragmentation, and people's attention is dispersed into various fragmented information and social circles. It leads to the disintegration of the social community, making it increasingly difficult for people to form consensus and cooperation. Especially under the trend of personalized information distribution, algorithmic

recommendations are based on individual interests and preferences, making the information people are exposed to more and more individualized. Under the effect of algorithmic news, due to the lack of human participation, people indulge in their own "comfort zone" for a long time will easily produce self-consolidation of the "island effect"(Wang, 2019).The creation of such information islands makes communication and understanding between different groups more difficult.

However, the recommendation technology behind algorithmic news does not have the ability to shape social consensus, as it focuses more on individual preferences than on overall social values and common interests. In this context, the mainstream media should resume its principal role as the gatekeeper of information, embrace the technology actively, screen media information effectively with the help of algorithmic recommendation, and expand the dissemination and influence of public information. By means of algorithmic recommendation technology, the media can simultaneously play the role of integrator in the particulate network environment, screen and push information with social value, provide more abundant, diverse and in-depth content, and at the same time guide the values of news readers towards the better and the beautiful, so that the truly valuable news returns to life, and achieves the good trend of good money driving out the bad, thus creating the conditions for the formation of the community and the achievement of consensus.

5. Conclusion

Algorithmic news brings personalized information to people, but also brings privacy crisis, information cocoon, content pan-entertainment fast-food, and ethical issues under the blackbox of algorithms in a subtle way. Therefore, the controversy triggered by algorithmic news requires users, platforms and media workers to return to rationality and make concerted efforts to solve the problem. However, it is undeniable that technology is unstoppable, and in this era of "everything is a medium", it is bound to come, and how to intelligently construct and lead the momentum of "technology for the good" with humanistic feelings will become a topic that we have to think seriously about in the future.

Neil Bozeman, in his book "Technopoly: The Surrender of Culture to Technology", used the case of "The judgement of Pharaoh Tammuz" to point out that each technology is a burden as well as a gift, and that it is not an either/or situation, but rather a piece of fertile ground for mixed feelings. Algorithmic news is a double-edged sword, the growth of algorithmic news not only opens up a new realm of news creation, also abandoned the original colors of traditional news values. Algorithmic news in the user's preferences clever capture at the same time lost the real news firm. Nonetheless, algorithm is not a cold machine, it can be combined with warm news content, complementary and mutually reinforcing. Only when both are closely integrated can they shine more brightly in the new media era.

References

- Ding, X. W. & Wang, X. Y. (2019). The Penetration and Integration of Science and Technology: A Review of the Application of Big Data and Artificial Intelligence in Journalism and Publishing. *Journal of Southwest University for Nationalities: Humanities and Social Sciences Edition*, vol. 40, pp. 150-156.
- Dong, T. Z. & He, X. (2019). Ethical examination of algorithmic news. *The press*.
- Dörr, K. N. (2016). Mapping the field of algorithmic journalism. *Digital journalism*, vol. 4, pp. 700-722.
- Gillespie, T. (2010). The politics of 'platforms'. *New media & society*, vol. 12, pp. 347-364.
- Sim, D. H., & Shin, S. J. (2016). Implementation of algorithm to write articles by stock robot. *International journal of advanced smart convergence*, vol. 5, pp. 40-47.
- Spyridou, P., Djouvas, C., & Milioni, D. (2022). Modeling and validating a news recommender algorithm in a mainstream medium-sized news organization: an experimental approach. *Future Internet*, vol. 14, p. 284.
- Swart, J. (2021). Experiencing algorithms: How young people understand, feel about, and engage with algorithmic news selection on social media. *Social media+ society*, vol. 7(No.2)
- Van Dijck, J., Poell, T., & De Waal, M. (2018). *The platform society: Public values in a connective world*. Oxford university press.

- Wang, S. Y. (2019). The technological innovation and ethical dilemma of algorithmic recommendation news: a review. *Chongqing Social Sciences*, vol. 9, p. 1.
- Yin, K. M. & Liang, Y. (2021). Ethical controversy and examination of algorithmic news. *Modern Communication*, vol. 043, pp. 64-68
- Ziewitz, M. (2016). Governing algorithms: Myth, mess, and methods. *Science, Technology, & Human Values*, vol. 41, pp. 3-16.

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