



ADMM Cybersecurity and
Information Centre of Excellence

UPDATE ON

THE INFORMATION DOMAIN

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The Impact of Social Media Algorithm Bias on Information Diversity

INTRODUCTION

1. Over the past decade, social media platforms have become integral parts of our lives, shaping how we consume information and engage with others. Pre-configured algorithms powered by Artificial Intelligence determine what content would be delivered to users on social media platforms such as Facebook, Instagram, Twitter, YouTube and TikTok.
2. Social media algorithms have become the “invisible” gatekeepers of information in the digital age, shaping users’ understanding of the world by determining the content users see. By definition, a social media algorithm is a complex set of rules and calculations used by social media platforms to prioritise content that users see in their feeds. Users’ individual preferences, past behaviours, content relevancy, and the popularity of posts are some of the algorithm inputs considered in the process to sort, filter and prioritise content. While these algorithms seek to personalise users’ unique online experiences, there is a growing concern about the impact on information diversity. Social media algorithms have also come under scrutiny in recent years for contributing to the spread of misinformation, echo chambers and political polarisation.

IMPLICATIONS OF SOCIAL MEDIA ALGORITHM BIAS

3. According to *BNN Times*, the personalisation of social media content through algorithms is especially appealing in this age of information overload as it delivers curated content that is assessed to be relevant and engaging to users. In addition, *Big Think* reported that social media posts' virality are driven by user engagement, where users are more likely to share popular posts, or posts that trigger strong emotional reactions – whether positive or negative – without questioning or fact-checking its legitimacy. This may pose a serious problem with real consequences as the spread of misinformation has a profound impact on public opinion and in more severe cases, national security.

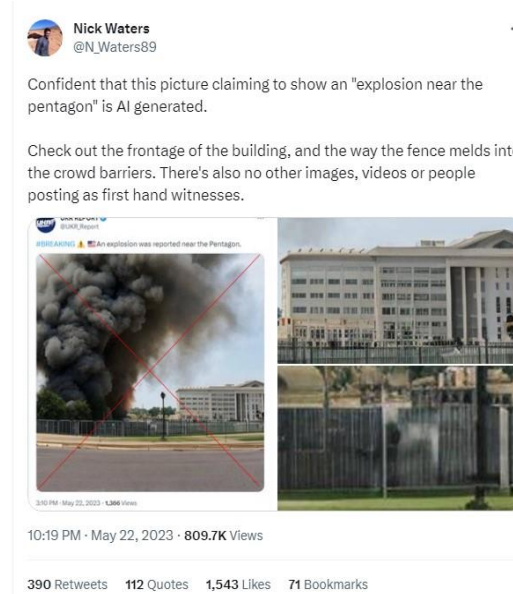
Amplification of Misinformation

4. Social media algorithms tend to prioritise sensational or controversial content – regardless of its accuracy – to keep users engaged as long as possible. As *CNA* reported, many false and misleading claims have gone viral on social media platforms as a result of these algorithms. For instance, a fake image of an explosion of the Pentagon went viral¹ (see [Figure 1](#)), despite no explanation or relevant information on it. The post has garnered over half a million views garnered in just a few hours. Upon further analysis, it was revealed that there were clear visual anomalies such as the frontage of the building, and the appearance of the fence, which did not match images of the five facades of The Pentagon building in shape or colour (see [Figure 2](#)). There were also no other images, videos, or people posting as first-hand witnesses. The propagation of such false narratives often perpetuates the dissemination of misleading or harmful content, gradually eroding readers' trust in traditional sources of information.

Figure 1: Fake Image of an Explosion at the Pentagon



Figure 2: Nick Waters, Lead for Online Investigation Group Bellingcat Highlighted the Visual Anomalies of the Viral Image



Manifestation of Echo Chambers

5. According to *Big Think*, individuals tend to follow and interact with like-minded people, resulting in the formation of political echo chambers. In addition, users who interact with certain type of content or creators will continue to be provided with similar content. Such algorithmic personalisation unintentionally fosters a phenomenon known as confirmation bias, or the tendency for one to seek information that reinforces existing beliefs, limiting one's exposure to diverse perspectives, and promotes the formation of echo chambers.¹ As *BBN Times* reported, users are exposed to content that confirms their political biases, which reinforces their pre-existing opinions and filters out information that challenges those beliefs. This can be rather concerning as users can become trapped in a self-reinforcing bubble of misinformation and propaganda, leading to a further division of society and a decline in the quality of public discourse.

6. Similarly, as *CDR News* reported, the algorithms of social media companies like Meta have perpetuated political polarisation by filtering and delivering content that aligns with the users' existing beliefs, making them less likely to engage with people with different viewpoints. Examples of content being pushed out by social media algorithms include misinformation about COVID-19 vaccines and purported remedies. The algorithms employed by social media platforms have transformed how users consume information. As algorithms prioritise content that generates clicks and shares over quality journalism that provides more comprehensive and balanced perspectives, the diversity of information coverage is compromised.

ASSESSMENT

7. Echo chambers tend to skew feelings of mistrust by feeding readers stories and exaggerated, negative depictions of the “other side”, which fosters a dangerously polarised view of the world. This implies that the individual’s perception of current events or information may be narrowed significantly as they become far more hesitant to believe and accept alternative views and information. According to *Phys Org*, research has shown that scholars, journalists and policy makers play an important role in providing readers with factual information, and implementing policies to restrict controversial content.

8. According to *BNN Times*, there are several ways to mitigate the impact of social media algorithm bias. These include:

- Increased transparency and accountability – Social media companies should be more transparent about their algorithms and data practices, and they should be held accountable for the impact of their algorithms on society. This could include the conduct of regular audits, as well as mandating public reporting on algorithmic biases and their impact on society.
- Setting standards and enforcement – Governments can play a role in ensuring that social media algorithms are designed and operated in a way that is aligned with democratic values and principles. This could include setting standards for algorithmic transparency, accountability and fairness, and enforcing stricter penalties for violations of these standards.
- Increased collaboration between industry, government and civil society – This could include the sharing of data and best practices, the development of common standards and regulations, and the implementation of public education and awareness. Social media users can be educated and empowered to make informed decisions, including recognising and avoiding disinformation, misinformation and biased content.

9. Ultimately, it remains imperative for technology companies and policymakers to address these issues to minimise the potential harm of these algorithms by raising awareness and educating users about best practices in fact-checking. Additionally, it is crucial for users to remain vigilant, consume information wisely, and exercise discernment.

Contact Details

All reports can be retrieved from our website at www.acice-asean.org/resource/.

For any queries and/or clarifications, please contact ACICE, at ACICE@defence.gov.sg.

Prepared by:

ADMM Cybersecurity and Information Centre of Excellence

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