The Role of Social Media Algorithms in Shaping Political Discourse
Democracy in the Age of Algorithms: The Sociotechnical Implications of Social Media on Political Discourse

A Thesis Prospectus

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By

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

General Research Problem: *The Influence of Social Media Algorithms on Political Discourse How can understanding and navigating the intricate workings of social media algorithms ensure a robust and democratic political discourse?*

In the 21st century, the digital realm has become a pivotal space for public discourse. Among its myriad platforms, social media stands out as a primary arena for political engagement, shaping opinions and driving conversations (Bossetta, 2018). Yet, lurking beneath this vibrant exchange is an often-overlooked player: the algorithms that curate our online experiences. As invisible gatekeepers, these algorithms determine the content millions are exposed to, making their role in political discourse both powerful and controversial.

The term 'black box' is frequently used to describe the obscurity surrounding these algorithms. Their precise functions and priorities remain hidden, yet their outcomes shape global narratives. Understanding the mechanics of these algorithms is not merely an exercise in technical comprehension; it's central to grasping their broader societal implications (Gillespie, 2014). After all, when algorithms prioritize sensationalism for user engagement, do they sideline rational discourse and marginalize important voices? This critical intersection of technology and society demands our attention.

Knowing about the problem is just the first step. To deal with it, we need to do two things. First, we need to understand the technical details of these algorithms. If we don't know how they really work, we can't make sure they are fair (Gillespie, 2014). Second, we have to look at the bigger picture – the social and political effects. We need to ask how these algorithms have changed the way people get involved in politics and what that means for democracy in the future (Guess, Malhotra, et al., 2023).

This paper is going to look at two things that are closely connected. First, it's going to try to figure out how social media algorithms really work, which is a bit of a mystery. Then, it's going to look at what happens in society because of the way these algorithms organize content. We'll explore how this affects political discussions nowadays.

We're at an important point right now, and it's our responsibility to make sure that as technology gets better, it strengthens our democracy instead of breaking it down.

Technical Project

Technical Research Problem

Title: Deciphering the Black Box: A Deep Dive into Social Media Algorithms

How can a systematic examination of social media algorithms help unveil their decision-making processes, thus allowing users a clearer understanding of content prioritization?

In the age of digital communication, social media platforms have rapidly evolved into society's primary information channels. The algorithms that power these platforms decide which content reaches which users, a significant responsibility given the profound influence these

platforms wield over public sentiment and discourse. While the allure of these platforms is undeniable, so is the mystery surrounding their internal mechanisms, often dubbed 'black boxes.'

Evolution of Social Media Algorithms: When social media first started, the algorithms that decided what you saw were pretty simple and mostly just showed posts in the order they were made. But as social media grew, the people making these platforms found out that to keep users interested, they needed to show them things they'd like more. So, they started using algorithms that focus on what users do on the platform, what they're interested in, and how much they interact with posts. These algorithms have gotten more complicated over time, and now they're kept secret, so most users and the public don't really know how they work (WedaTips, 2023).

This lack of transparency is concerning for various reasons. Firstly, there's the potential for echo chambers, where users are only exposed to information that aligns with their existing beliefs, thereby amplifying polarization. Secondly, these algorithms can inadvertently (or intentionally) suppress or prioritize certain voices, themes, or narratives. Given the immense societal impact, especially in the realm of political discourse, understanding these algorithms is paramount (Stieglitz & Dang-Xuan, 2013).

Although we're learning more and more, it's still hard to understand how big tech companies work because they keep a lot of secrets. Some social media platforms give us a little bit of information about how they decide what content to show people, but they don't share the specific details. This lack of openness leads to a lot of discussions about digital ethics, the rights of people who use these platforms, and whether these big companies are being responsible.

Proposed Solution: To make headway into this vast unknown, I aim to construct an open-source simulation tool that approximates the decision-making processes of major social media algorithms. Data Collection: My research understands that social media algorithms are different for each person, so I won't try to copy exactly what each user sees in their feed. Instead, I'll use tools called APIs, which social media platforms provide. These let me look at lots of data while still respecting user privacy and the platforms' rules. I'll also use web scraping, but only where it's allowed. With these methods, I'll gather information about how often people interact with posts, anonymized details about these interactions, and trends among different groups of users. This approach allows for the examination of overarching patterns and systemic biases in algorithmic content delivery without infringing on user privacy. This data will serve as the foundation for our simulations. Algorithm Simulation: Based on what's already known and some stories people have shared, I'm going to try to figure out how some parts of these social media algorithms work. This means I'll make models and keep improving them by comparing what actually happens with what my models predict will happen. As for the tool I'm making, the main aim is to make things clearer. It will be easy for anyone to use. People can put in their posts and see how likely they are to show up high on different social media platforms. This tool will help people understand how the length of their post, the way people respond to it, and the use of certain words might change its visibility. It's also very important to identify any biases in the way

posts are ranked. My tool will have special features to check for any unfair treatment in how content is organized, like biases based on politics, the users' backgrounds, and anything similar.

In terms of methodology, I will rely heavily on machine learning frameworks such as TensorFlow and PyTorch. Natural language processing (NLP) tools will aid in content analysis, while Python-based frameworks like Django or Flask will underpin the tool's development.

While the scope of the project is ambitious, it's imperative to acknowledge its constraints. Real-world algorithms are proprietary and continuously evolving, meaning our simulations can only ever be approximations. However, my commitment to open-source principles means that as more knowledge becomes available, our tool can adapt and evolve.

I envision a functional, user-friendly tool that demystifies the realm of social media algorithms for the average user. By educating the public on the potential biases and mechanisms of content prioritization, the goal is to foster a more informed, discerning user base. Furthermore, the tool could serve as a benchmark, prompting social media giants to be more transparent and accountable.

In the grand scheme, this project isn't just about understanding algorithms—it's about safeguarding the integrity of our digital public squares.

STS Research Project

STS Research Problem: Democracy in the Age of Algorithms: The Sociotechnical Implications of Social Media on Political Discourse

How are algorithms within major social media platforms, particularly in regions such as the US and European Union, molding and potentially jeopardizing political conversations, and thereby influencing democratic processes?

The rise of digital communication platforms, primarily social media, signifies a pivotal moment in human history. These platforms, celebrated for democratizing information, have grown into essential tools for political discourse. However, underneath the user-friendly interface, algorithms dictate content delivery, leading to questions about their influence on democratic principles, especially when comparing diverse regions like the US and the European Union (Bradshaw & Howard, 2018).

There's already some research that helps us understand how algorithms influence political conversations. But, there's still a lot we don't know about how different rules and laws in various places affect these algorithms. Most of the time, studies don't look much into how the wider social and political environment plays a role in how these algorithms work.Studies like those by Nahon (2015) and Papakyriakopoulos et al. (2020) have highlighted phenomena such as 'echo chambers' and the spread of misinformation. However, these studies frequently do not account for the ways in which the legislative frameworks of the US and EU might influence the manifestation of these issues in their respective domains. This project seeks to fill this gap by conducting a cross-regional analysis that considers the interplay between social media algorithms and the sociopolitical environments in which they function.

Following this acknowledgment of the literature and the research gap, we venture into the historical evolution of political discourse. Pre-digital eras had their debates shaped by newspapers, radio, and TV. Then came social media, promising uninhibited dialogues and global interaction.

Political discourse has undergone considerable transformation through history. Pre-digital eras had their debates shaped by newspapers, radio, and TV. Then came social media, promising uninhibited dialogues and global interaction. But with such vast outreach came unintended consequences. The US, with its emphasis on free speech and a laissez-faire approach to technology companies, witnessed a different trajectory compared to the European Union (Reisach, 2021), which leaned more towards stringent data protection laws and platform accountability.

The effects of algorithms on political discourse have been extensively studied:
The concept of 'echo chambers' has become an alarming phenomenon (Nahon, 2015). These chambers, forged by algorithmic preferences, reinforce an individual's existing beliefs by filtering out contrasting views. This results in polarization and hinders open dialogue.

Misinformation, or the 'fake news' syndrome, is another major challenge. Many studies suggest that algorithms might be inadvertently promoting false narratives due to their virality, thereby clouding the truth (Papakyriakopoulos, Serrano, & Hegelich, S. 2020).

The US vs. EU perspective provides an intriguing contrast. The US's First Amendment advocates for unrestricted speech, which, when combined with platforms' algorithms, has led to unique challenges. The EU, with its General Data Protection Regulation (GDPR), presents a more regulated digital landscape, aiming to reduce such challenges.

When we talk about how technology changes over time, we have to remember that it's a two-way street. Social media algorithms change based on what users do and what's considered normal in society. These changes in the algorithms then affect what users think and how they act. At the same time, the way users react to and use social media influences how these platforms change their algorithms. This back-and-forth process keeps the online world constantly evolving. Also, the different rules and social attitudes in the US and EU make this process even more complex, as they both shape how technology adapts in these regions.

The mutual shaping of technology and society is a foundational concept in Science and Technology Studies (STS). This research employs Actor-Network Theory (ANT) to examine the networked interactions among users, content, algorithms, and regulatory frameworks. ANT provides a lens through which the intricate relationships and power dynamics within the digital ecosystem are elucidated, acknowledging the non-neutrality of algorithms.

In order to comprehensively address the question of social media algorithms' impact on political discourse and democratic processes, this study will adapt its approach to evidence collection, acknowledging the challenges in directly accessing operational data of proprietary algorithms. Instead, it will utilize publicly available data, existing research, and case studies to infer the workings and impacts of these algorithms. Expert opinions from various fields, including digital media, data science, and political analysis, will be sought to provide insights

into these complex systems. Comparative analysis across different social media platforms will also be employed to understand varying algorithmic influences. User surveys and studies will help gauge public perception and interaction with political content, complementing the in-depth examination of US and EU regulatory frameworks. This multifaceted approach aims to capture a holistic picture of the sociotechnical dynamics at play, encompassing not only the technological and regulatory aspects but also the cultural and ethical dimensions shaping and shaped by social media algorithms in political discourse.

The methodology of this study will be adapted to align with the constraints of a half-semester project, focusing on a more attainable and realistic approach to understanding the impact of social media algorithms on political discourse. Instead of seeking direct partnerships with technology companies, the study will utilize publicly available data, including user engagement trends and case studies, to infer the influence of algorithms. Comparative studies across different social media platforms will be conducted to highlight variations in user behavior and content dissemination. The analysis of legislative and policy documents from the US and EU will provide insights into the regulatory environment influencing algorithmic governance. This scaled-down yet comprehensive approach ensures a realistic and manageable investigation into the role of algorithms in shaping political discourse, while still adhering to the principles of interdisciplinary research and democratic values."

In this study, I'll mainly use Actor-Network Theory (ANT) to guide my research. ANT shows us that algorithms on social media are important players, just like people and the rules of the platforms. I'll look at how these algorithms work with users, the content they see, and the platform's rules to influence political discussions. ANT helps us see all the different ways these parts connect and affect each other. This way, I can really understand how algorithms change the world of social media and politics.

Algorithmic Dissection: A collaboration with technology experts will allow me to interpret how algorithms operate. By breaking down the functionality of major platforms, especially focusing on differences in content delivery in the US and EU, I aim to shed light on inherent biases and influences.

Distinct socio political landscapes in the US and EU have led to varying interactions with algorithms. While the US champions free expression and limited intervention, it also faces the repercussions of unchecked information flow. The EU, meanwhile, through initiatives like GDPR, attempts to curtail the uninhibited might of algorithms, aiming for a balanced online discourse.

In wrapping up, this research seeks to untangle the intricate web of technology, policy, and democracy. The US-EU comparative lens will not only provide valuable insights into the global implications of algorithms on political discourse but also lay a robust foundation for future academic endeavors, policy interventions, and technological innovations. The aspiration is to ensure that as society progresses, our digital tools serve to bolster, not hinder, the sanctity of democracy.

Conclusion

In today's digital world, we face many new challenges that involve both technology and society. My research focuses on how social media algorithms affect political discussions. I will look at how technology, people using social media, and democracy all interact with each other. I want to understand how these algorithms influence, or even control, what people think about politics. My goal is to find out things that can help those who create social media platforms and those who make policies. I hope this will make sure that social media helps democracy rather than getting in its way (Pond & Lewis, 2019).

For the technical part of my research, I'll focus on getting to know how social media algorithms work. I'll look closely at how they operate and what their effects are. My goal is to figure out ways to make these algorithms fair, open, and unbiased. By combining what I learn from this with the insights from my other research, I want to make a big contribution to the conversation about democracy in today's digital world. The main thing I want to do is highlight how technology can be both good and bad, especially when it comes to important ideas like democracy.

Since technology is always changing, my research could be a starting point for more studies in the future. We might need to look into new social media platforms or see how the current ones change. It's also important to understand how people's interactions with these platforms evolve and to think about the worldwide effects as more people around the world use digital platforms. By looking into these issues now, I hope to help create a future where technology and democracy work well together, each making the other better.

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