

# Analyzing Key Network Structures of 2022 Malaysian General Elections from the Lens of Instagram

Sayantana Bhattacharya<sup>ORCID</sup>, Nitin Agarwal<sup>ORCID</sup>

COSMOS Research Center

University of Arkansas at Little Rock

Little Rock, Arkansas, USA

e-mail: (sbhattacharya, nxagarwal)@ualr.edu

**Abstract**—This study explores social media’s role in shaping political discourse during the 2022 Malaysian general election, focusing on Instagram as a key platform. Using an approach that combines Contextual Focal Structure Analysis (CFSA) and topic modeling, we analyze 53,116 Instagram posts from the election period. Our research aims to identify influential actors, map information flow patterns, and uncover dominant themes in online political conversations. The CFSA method reveals intricate networks of journalists, media houses, politicians, and political parties, highlighting the complex interplay between media and politics in the digital sphere. Our findings demonstrate social media’s significant impact on Malaysia’s political landscape, showing how digital platforms facilitate the convergence of traditional media, political actors, and public opinion. We observe distinct patterns of information flow and influence, with certain focal structures dominating the discourse. The study also uncovers key topics that resonated with the Malaysian electorate during the election. This research contributes to understanding digital democracy in Malaysia and offers insights into the evolving nature of political communication in the social media age. Our methodology provides an approach for analyzing complex digital interactions in political contexts, with potential applications beyond the Malaysian case study.

**Keywords**- *Social Network Analysis; Malaysia General Election; CFSA.*

## I. INTRODUCTION

The Malaysian political landscape has been characterized by instability in recent years, particularly during general election periods. This volatility stems from a complex interplay of political, societal, and economic factors, including the country’s rich racial and religious diversity [1]. Amidst this backdrop, social media has emerged as a powerful force in reshaping Malaysia’s political discourse and mobilizing public opinion.

This research paper aims to analyze Malaysian election politics through a novel approach combining contextual focal structure analysis and topic modeling. Our study seeks to identify key political figures in Malaysia and understand the primary topics they discuss, particularly in the context of election campaigns and their aftermath.

By employing contextual focal structure analysis [2], we aim to identify the most influential figures in Malaysian politics during election periods. This method allows us to map the network of political actors and their relationships, providing insights into the power dynamics at play. Subsequently, we will apply topic modeling techniques to analyze the discourse generated by these key figures, focusing on their primary talking points, policy positions, and rhetorical strategies.

Through this study, we aim to provide a comprehensive understanding of how Malaysian political figures utilize social media to shape public opinion and influence election outcomes. Our findings will contribute to the broader scholarly discussion on the intersection of social media, politics, and public discourse in diverse societies while offering insights that may be valuable for policymakers, journalists, and citizens seeking to navigate Malaysia’s complex political landscape.

The rest of the paper is organized as follows. The Related Work section provides a comprehensive background on the use of social media in election studies and the detecting of influential actors from social networks. In the Data Collection section, we provide our approach to data collection and processing. Next, we discuss our methodology, where we present our CFSA and Topic Modelling evaluation framework. The Results and Discussion section contains our analysis as we identify the key focal structure for the Malaysian Election. We conclude with the findings and future work in the Conclusions and Future Work section.

## II. RELATED WORK

This part of our study examines two critical areas: the role of social media in election studies and the analysis of influential structures in social networks. The first subsection explores how researchers use social media data to understand public opinion and electoral trends, while the second investigates methods for identifying influential actors in digital communities, particularly within the blogosphere. These areas provide insight into the intersection of digital platforms, public discourse, and political processes in contemporary society.

### A. Using Social Media for Election Study

The digital age has transformed electoral research, with social media emerging as a crucial instrument for studying political processes. These platforms provide researchers with an unprecedented wealth of real-time data, enabling in-depth analysis of public opinion, electoral trends, and political communication. Investigators have harnessed sophisticated computational methods, such as sentiment analysis, content mining, and advanced machine learning algorithms, to extract valuable insights from popular social media sites, including Twitter, Facebook, and Instagram, during election campaigns. This approach has revolutionized the way researchers assess voter sentiment, monitor the dissemination of political narratives, and

investigate the complex relationship between online political engagement and actual voting patterns. By leveraging these digital footprints, scholars can now paint a more comprehensive picture of the electoral landscape, offering nuanced perspectives on how public discourse in the virtual realm influences and reflects real-world political outcomes.

Recent studies have demonstrated the diverse applications of social media analysis in electoral research. For instance, Balakrishnan et al. [3] examined online communication patterns during Malaysia's 2018 General Election, utilizing sentiment and content analyses on tweets. Their study employed machine learning models such as Naive Bayes and Support Vector Machine, finding that Naive Bayes combined with Word2Vec vectorization was most effective for sentiment analysis. In a broader context, Rita, António, and Afonso investigated social media's influence on voting decisions during the 2019 UK General Elections, analyzing tweet sentiment related to major political parties and candidates. Their research cautioned against using social media sentiment as a reliable predictor of election outcomes [4]. Similarly, Belcastro et al. conducted an in-depth analysis of voter behavior on Twitter during the 2020 US presidential election campaign, applying topic discovery, opinion mining, and emotion analysis techniques to determine users' political orientations and the emotional underpinnings of their support [5]. These studies collectively highlight the potential of social media as a rich data source for understanding electoral dynamics and voter behavior while also underscoring the complexities and limitations of such analyses in predicting election results or fully capturing the nuances of public opinion.

### *B. Influential Structures in Social Networks*

In the field of social network analysis, several studies have been conducted. Agarwal et al. explain the impact of blogs and the blogosphere on online discourse and public opinion in the Web 2.0 era. It highlights how blogs have created virtual communities for sharing thoughts and debates, influencing various sectors, from business to politics. The research focuses on identifying influential bloggers in community blogs, drawing parallels with real-world "influentials" whose opinions are highly valued. Jiang, et. el. developed methods for quantifying blogger influence by analyzing community reactions to their posts, addressing challenges such as defining influence metrics and creating adaptable models where authors propose an algorithm (iFinder) to compute influence scores and develop a prototype tool for real-world blog analysis [6].

Another research from 2008 suggests that blogs have become a significant platform for information dissemination and social interaction in the digital age. This study expands on the previous research by examining the broader impact of blogs within the Web 2.0 ecosystem. It highlights how blogs, characterized by their reverse chronological order of entries and interactive comment sections, have lowered the barriers to publication and fostered global collaboration. The research emphasizes that blogs are not just isolated platforms but part of a larger shift in Internet culture, moving from the passive consumption model of Web 1.0 to the active contribution model of Web

2.0. This transformation has led to the emergence of collective wisdom and open-source intelligence as users collaborate and edit content on a mass scale. The study points out that this new paradigm of online interaction provides rich opportunities for research into the structural and temporal dynamics of blog communities and other social networking services [7].

Building upon the previous research, another study further explores the transformative impact of Web 2.0 and blogs on information dissemination and social interaction. It emphasizes how shifting from passive consumption to active content creation has fundamentally altered the digital landscape. The study focuses on the blogosphere as a key component of this new paradigm, highlighting its role in forming virtual communities and influencing various sectors, from business to politics. A significant contribution of this study is its exploration of methodologies for identifying influential bloggers within these digital communities. This aspect is particularly crucial as it addresses the growing need to understand and leverage online influence in an era where social media significantly shapes public opinion and consumer behavior [8].

Other social media researcher delves into the darker side of digital platforms, focusing on the spread of misinformation, particularly during the COVID-19 pandemic. Their study introduces a novel manual node-based design for filtering large datasets, addressing limitations in AI-based detection methods. By analyzing a curated dataset, including YouTube comments, the research provides insights into the themes and dynamics of COVID-19 misinformation. Their work helps examine how the anonymity and reach of social media facilitate deviant behaviors and the rapid dissemination of false information. That highlights the unique challenges posed by the COVID-19 'infodemic', where misinformation spreads faster than factual content, driven by various motives from monetization to political agendas [9].

### III. DATA COLLECTION

This study focuses on the 2022 Malaysian general election, a pivotal moment in recent political history. We chose this election due to its significance in Malaysia's democratic process and the heightened social media activity surrounding it. The 15th Malaysian general election, held on November 19, 2022, marked a crucial juncture in the nation's politics [10], coming after a period of political instability and amid ongoing economic challenges.

To capture the digital discourse around this election, we collected data from Instagram, one of the most popular social media platforms in Malaysia. Instagram was selected for its widespread use among Malaysian voters, particularly younger demographics, and its capacity for both visual and textual political communication. We identified and used the following hashtags to collect relevant data: #UndiHarapan, #KitaBoleh, #PH, #Election2022, #Malaysia, #AnwarIbrahim, #PakatanHarapan, #GE15, #KelasDemokrasi, #PRU15, and #MalaysiaMemilih.

These hashtags were chosen based on their popularity and relevance to the election, political parties, key figures, and general election-related discourse in Malaysia. For data

collection, we employed the APIFY scraper tool. Using APIFY, we gathered a comprehensive dataset of 53,116 Instagram posts that included these hashtags.

We focused on the 2022 general election and utilized this data collection method. Our research aims to provide insights into the most recent major political event in Malaysia, offering a timely and relevant analysis of the country's evolving political landscape as reflected through social media engagement.

#### IV. METHODOLOGY

In this section, we will explain the detailed methodology to analyze Instagram discourse during the 2022 Malaysian general election. First, we apply Contextual Focal Structure Analysis (CFSA) [11] to identify influential user groups within the mentioned network. This is followed by a detailed CFSA analysis of our Instagram dataset. Finally, we use topic modeling to understand the key themes discussed within these focal structures, providing a comprehensive view of the election's social media landscape.

##### A. Background of CFSA

The Contextual Focal Structure Analysis (CFSA) model represents an advancement in social network analysis, particularly for understanding complex online interactions. CFSA builds upon traditional network analysis methods by incorporating contextual information alongside user interactions, allowing for a more nuanced understanding of network dynamics. CFSA helps in detecting key sets of actors in a network that collectively exert the most influence over the network. In other words, such key actors are responsible for large-scale and complex social processes such as social movements, protests, coordinating information campaigns, etc. Unlike simpler models that focus solely on user-user connections, CFSA integrates multiple layers of information, such as shared topics or hashtags, to provide a richer representation of social interactions. This multi-layered approach enables researchers to uncover hidden connections, identify influential sets of users sharing similar contexts, and gain deeper insights into information flow within networks. CFSA further ranks the key sets of actors based on their influence over the network. The model's ability to handle complex, context-rich data makes it particularly valuable for analyzing intricate social and political landscapes where diverse narratives and interests intersect.

In the context of our research on the 2022 Malaysian general election, CFSA offers several key advantages that justify its application. Malaysia's political landscape is characterized by a complex interplay of ethnic, religious, and economic factors, which are reflected in online discourse. By employing CFSA, we aim to capture and analyze these diverse political narratives as they manifest on social media, particularly Instagram. The model's capability to identify contextual focal structures allows us to pinpoint not just individual influencers but groups of users who collectively shape political discourse. This is crucial for understanding the dynamics of Malaysia's coalition-based political system and how it translates into online engagement. Furthermore, given concerns about media

censorship in Malaysia, CFSA's ability to map information flow provides valuable insights into how political messages spread and gain traction on social platforms. Ultimately, by applying CFSA to our dataset of Instagram posts and user interactions, we aim to uncover the key drivers of political discourse during the election period, understand the formation of opinion clusters, and assess the impact of social media on political engagement in Malaysia's evolving democratic landscape.

##### B. CFSA Analysis

Building upon our data collection from Instagram posts related to the 2022 Malaysian general election, we proceeded to analyze the data using a modified CFSA approach. This method was adapted to focus solely on user mentions, creating a network based on how users interacted with each other in the context of election-related discussions [12].

Our analysis began with compiling a list of users linked to the election-related hashtags. We implemented queries to collect bulk user data, including profiles, number of posts, likes, followers, geographic information, usernames, mentions, web links, and biographies. This comprehensive dataset provided the foundation for constructing the user mentioned network essential to our research objectives [6].

Utilizing this collected data, we generated a co-occurrence users' network (Figure 1) based on mentions. This network represented the interconnections between users, forming the primary layer of our analysis. Users who mentioned each other in their posts were considered linked, creating a web of interactions that reflected the discourse around the Malaysian general election.

The next phase involved integrating this user-mentioned network into our modified CFSA model. This model accepted users and the links between them based on mentions, representing a coupling matrix. The outcome of this step included the smallest possible contextual focal structure sets, comprising influential users within different communities who were frequently mentioned or who mentioned others in election-related posts. Through manual analysis, we identified the Contextualized Focal Structure sets, focusing on attributes such as size, number of users, and number of edges in each set.

By adopting the CFSA methodology to focus exclusively on user mentions, we identified key influencers and interaction patterns that shaped the online conversation around the 2022 Malaysian general election. This approach allowed us to uncover the complex network of user interactions, providing valuable insights into the dynamics of political discourse on social media during this critical period in Malaysian politics.

##### C. Topic Analysis

In the final phase of our methodology, we conducted the topic analysis to uncover the primary themes discussed within the identified focal structures. We employed Latent Dirichlet Allocation (LDA), a widely-used topic modeling technique, to

extract and analyze the most frequent topics from the textual content associated with each focal structure [13].

LDA is a probabilistic model that assumes each document is a mixture of topics, and each topic is a mixture of words. This approach allows us to discover underlying themes in large collections of text data, making it ideal for analyzing the diverse discussions within our Instagram dataset.

To ensure the reliability and interpretability of our topic analysis, we performed a robustness check by calculating two key metrics: Perplexity Score and Coherence Score. We achieved a perplexity score of 8.07. Perplexity measures how well the model predicts a sample. A lower score indicates better generalization of the model to unseen data, suggesting our LDA model effectively captures the underlying topic structure of the texts. Our model yielded a coherence value of 0.59. Coherence measures the degree of semantic similarity between high-scoring words in each topic. A higher coherence value indicates more interpretable and semantically coherent topics, implying that our identified topics are meaningful and distinct.

These metrics demonstrate the quality and reliability of our topic modeling results, providing a solid foundation for interpreting the key themes and discussions within the focal structures of Malaysia's election-related Instagram discourse.

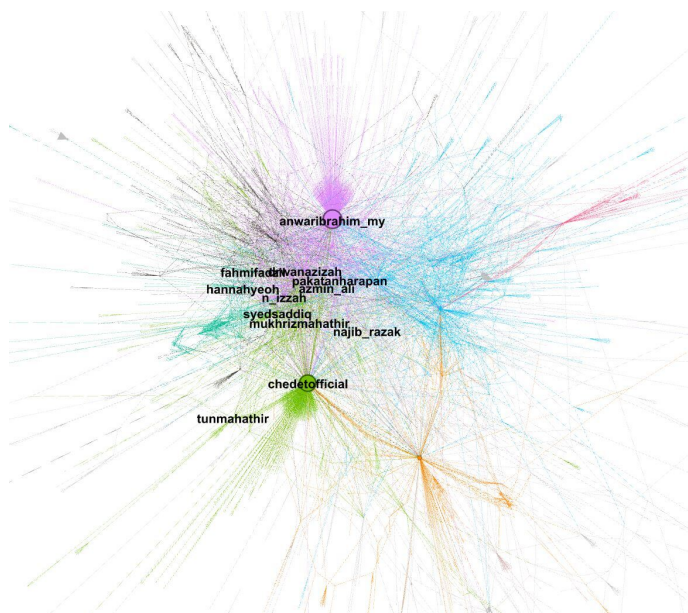


Figure 1. User Mention Network - Highlighting most mentioned user

## V. RESULTS & DISCUSSION

Among 11 focal structures, we pick CFSA 1 in Figure 2, as it is the most influential structure as suggested by the CFSA methodology. CFSA 1 unveils a network of interconnected individuals and entities that played significant roles in shaping the online discourse during the 2022 Malaysian general election. This network is primarily composed of two distinct yet interrelated groups: journalists/media houses and politicians/political parties. The media group includes

prominent figures such as Hilal Azmi, Kambahrin, Ashwad Ismail, Marlinamanaf, and Nisa Kasnoon, alongside media organizations like Astro AWANI and OnAirTalentManagement (OATMan). These entities were instrumental in covering and discussing the election. On the political front, the network features June Leow Hsiad Hui, Friends Of Harapan Selangor, and Yusmadi Yusoff, who represent key political actors and party-affiliated organizations.

The visualization of this network provides crucial insights into the flow of information and influence within this group during the election period. It highlights the intricate connections between media personalities and political figures, demonstrating the complex interplay between journalism and politics in shaping public opinion. This close interaction suggests that media played a significant role in crafting and disseminating political narratives throughout the election cycle.

By identifying these key actors and their relationships, the CFSA result offers a nuanced understanding of the Malaysian election discourse. It not only pinpoints the most influential personalities shaping online conversations but also reveals potential pathways of information dissemination. The frequent keywords associated with this network, such as "marlinamanaf," "luqmanhariz," "Malaysia chooses," "KamiAWANI," "MalaysiaMemilih," and "Anwar Ibrahim," provide valuable context about the dominant topics and figures in the discourse. The close interconnection between media professionals and politicians underscores a blurring of lines between these sectors, raising questions about media independence and the framing of political narratives. While the presence of diverse media entities such as Astro AWANI and OnAirTalentManagement suggests a varied media landscape offering multiple perspectives on the election, the political representation appears imbalanced. The explicit mention of "Friends Of Harapan Selangor" without strong representation from other political parties indicates a potential disparity in online presence or influence among different political factions during this crucial period. Our results revealed that media outlets and political parties generally employed distinct approaches to framing narratives. However, in some instances, we observed overlaps in their framing strategies. This network structure not only highlights the central role of media in shaping public opinion during elections but also points to potential challenges in maintaining a balanced and diverse political discourse in the Malaysian online sphere. The presence of both media and political entities in a single network underscores the cross-sector influence at play during the election. This amalgamation suggests a symbiotic relationship between media coverage and political messaging, likely influencing how the public perceives and engages with election-related information.

This dataset was collected with focused hashtags, and because of that, for every focal structure analysis, we obtained a result that was primarily related to Malaysian political entities or different media entities. In a few cases, we observed Chinese language newspapers like "Guang Ming Daily" and "China Press".

This comprehensive CFSA result enables a more sophisti-

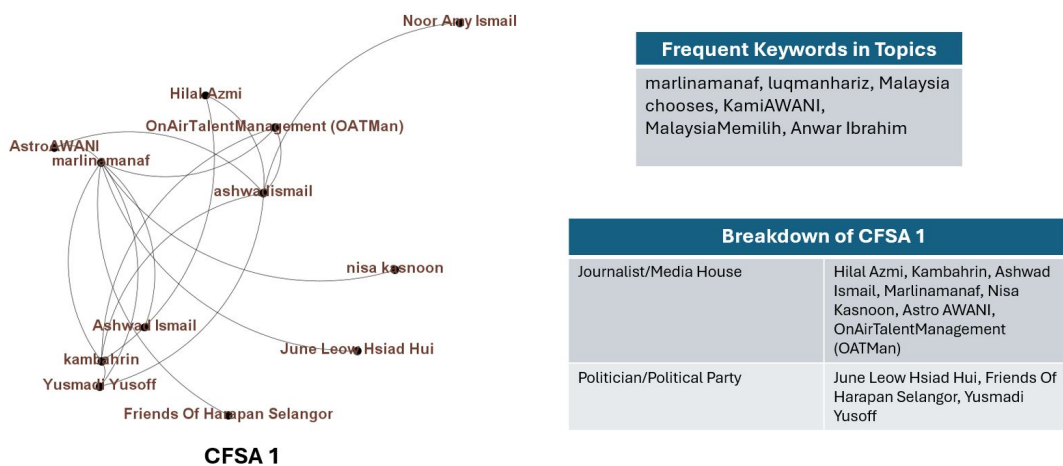


Figure 2. CFSA 1 set (among 11 focal structures) with breakdown and Frequent Keywords obtained by LDA

cated analysis of information dissemination, narrative formation, and influence distribution in the online discussions surrounding the Malaysian general election. Since CFSA is a combination of FSA analysis and contextual analysis, these insights are invaluable for understanding the dynamics of political communication and the formation of public opinion in the era of social media, especially during critical democratic processes. By mapping these key actors and their interconnections, we gain a deeper appreciation of how digital platforms shape political discourse and potentially influence electoral outcomes in contemporary Malaysia.

## VI. CONCLUSION AND FUTURE WORK

This research provides valuable insights into the dynamics of political discourse on social media during the 2022 Malaysian general election. By employing CFSA and topic modeling on a substantial dataset of Instagram posts, we have uncovered complex networks of influence and information flow that shaped public opinion and political narratives.

Our findings highlight the significant role of social media, particularly Instagram, in modern political communication. The identified focal structures reveal an intricate interplay between journalists, media houses, politicians, and political parties, demonstrating how digital platforms have become crucial for political engagement and information dissemination. The convergence of traditional media figures and political actors in these online spaces underscores the evolving nature of political discourse in the digital age.

The study also sheds light on the key topics and themes that resonated with Malaysian voters during the election period, providing a nuanced understanding of the issues that drove public engagement. This insight is crucial for comprehending the factors influencing voter behavior and political participation in contemporary Malaysia. Our methodology offers a robust approach to analyzing complex digital interactions in political contexts, contributing to the broader field of digital democracy studies. By combining network analysis with content analysis,

we have demonstrated an effective approach to decoding the multifaceted nature of online political communication.

Future research could expand on this study in several key directions. A cross-platform and multi-modal analysis incorporating data from platforms like TikTok and Instagram with images and videos would provide a more comprehensive view of Malaysia’s digital political landscape, allowing for comparisons of discourse patterns across different social media environments. To understand the political parties’ strategic use of multimodal platforms like Instagram and TikTok, we intend to expand our study as well. Additionally, investigating the correlation between social media engagement patterns and voting outcomes would offer valuable insights into the real-world impact of online political discussions. Such research could help quantify the influence of social media on electoral behavior and further our understanding of how digital platforms shape modern democratic processes.

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