# DETECTING OPINION LEADERS IN A TELEGRAM NETWORK OF FORWARDED MESSAGES

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## Introduction

Opinion leaders shape public discourse, by influencing attitudes and guiding information diffusion within social networks (Katz, 1957). In the classical two-step flow, they operate in everyday circles distinct from journalists who produce news (Katz, 1957); in today's social media environment, however, these boundaries have become porous. (Castells, 2009).

While platforms like Twitter and Facebook have been extensively studied regarding opinion leadership, Telegram remains relatively underexplored despite its growing importance as a political communication tool (Rogers, 2020; Urman & Katz, 2022).

Telegram is a hybrid platform that combines the architecture of messaging apps with social media dynamics (Baumgartner et al., 2020; Tucci, 2023). It enables one-to-many communication through broadcasting channels while also supporting interactive discussions in groups. This structure differs from platforms like Twitter, where content circulates through algorithmic feeds. Instead, Telegram relies on forwarding mechanisms, where users and administrators share content across channels and groups, creating distinct information flows.

The platform has been identified as a key space for far-right mobilization, conspiracy theories, and misinformation circulation (Walther & McCoy, 2021). Telegram allows high-reach influencers to maintain large audiences through its broadcasting affordances (Rogers, 2020). Understanding how influence operates in this environment is critical for both academic research and policy interventions.

Our case focuses on publics aligned with Bolsonaro during the 2022 Brazilian presidential election, and situates Telegram as a key arena for far-right mobilization and conspiracy circulation noted in prior work.

This study adapts a methodology developed for identifying opinion leaders on Twitter (Rehman et al., 2020) and applies it to Telegram, using forwarded-message networks to trace influence.We ask:

(1) How can the roles of different opinion leaders within Telegram be mapped using an adaptation of a model developed for Twitter?
(2) How does Telegram's specific affordance of traceability of forwarded messages shape information flow and influence within Telegram networks?

We address these questions by building a directed network of forwards and computing in-/out-degree and betweenness to derive role assignments from joint metric patterns.

**Methodology: Adapting Opinion Leadership Detection to Telegram**

On Twitter, retweets serve as a mechanism for message amplification and endorsement (Draucker & Collister, 2015). When a user retweets content, the resulting direct network links the retweeter to the original tweet's author, pointing from the retweeter to the tweet's creator (Figure 1). Scholars have identified opinion leaders through retweet networks, considering in-degree (retweets received), out-degree (retweets posted), and betweenness centrality (Guo et al., 2020; Rehman et al., 2020). This study repurposes these metrics for Telegram's forwarding network (see Figure 1).

**Twitter**

Retweeted user (target)                    Retweeter (source)

tweet

**Telegram**

Forwarded channel/ user (source)           Receptor channel/ group (target)
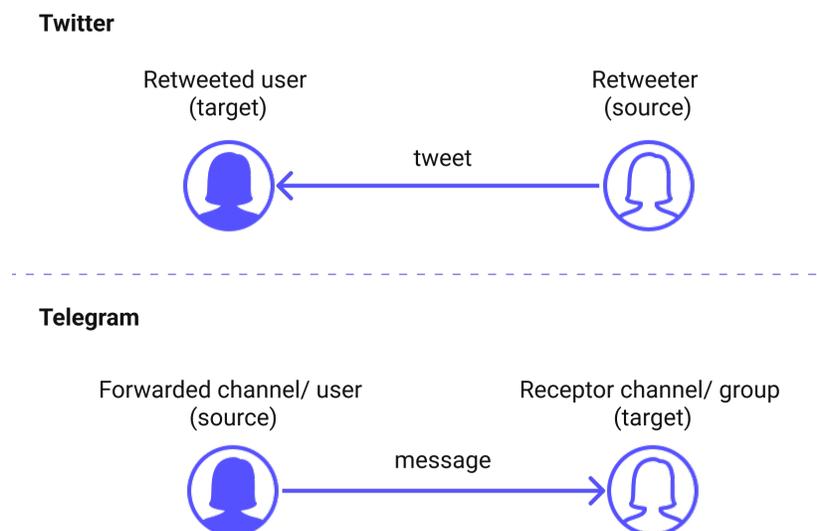
message

*Figure 1: Schematic representation of messages links between key users in a Telegram forwarded messages network*

A message forwarded to a group or channel connects the forwarding user, the message's author (source), and the receiving channel/group (destination). We examine author-recipient relationship: out-degree indicates how widely a node's content

propagates; in-degree indicates how much a node receives. Because Telegram preserves source attribution in forwards, influence is 'traceable', which is central to our approach.

**Empirical Analysis: Dataset and Network Construction**

We use a seed of 25 public pro-Bolsonaro groups collected in August 2022, extracting messages and metadata with 4CAT (Peeters & Hagen, 2022). From this seed, we identify sources of forwarded messages and expand to the channels that most frequently appear as origins. The resulting dataset includes 80,508 forwarded messages and yields a directed network with 2,517 nodes and 9,198 edges.[1] These numbers provide the basic scale of the corpus analyzed and ground the subsequent role mapping.

**Operational Roles (Analytic, Network-Based)**

We characterize roles using joint patterns of the three network metrics:

- **Conversation starters**: high out-degree, low in-degree; primary sources whose content travels widely.
- **Influencers**: high in- and out-degree; hubs that both originate widely forwarded content and engage with others. Here, 'influencer' is an analytic role specific to this network study, not a generic social-media label.
- **Active engagers**:  higher in-degree, lower out-degree; recipients/participants that originate less-propagating content.

Additionally, we identify **network creators** (nodes linking two or more influencers) and **information bridges** (brokers connecting active engagers to influencers). While conversation starters, influencers e active engagers can be approximated in retweet networks, Telegram's preserved source attribution makes network creators and information bridges particularly visible.

Figure 2 presents a diagram showing the association links between key users figuring in a Telegram forwarded messages network. It is important to notice that messages forwarded to individual users are private and non-extractable, so they are not deemed potential opinion leaders.

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[1] The network graph can be visualized at
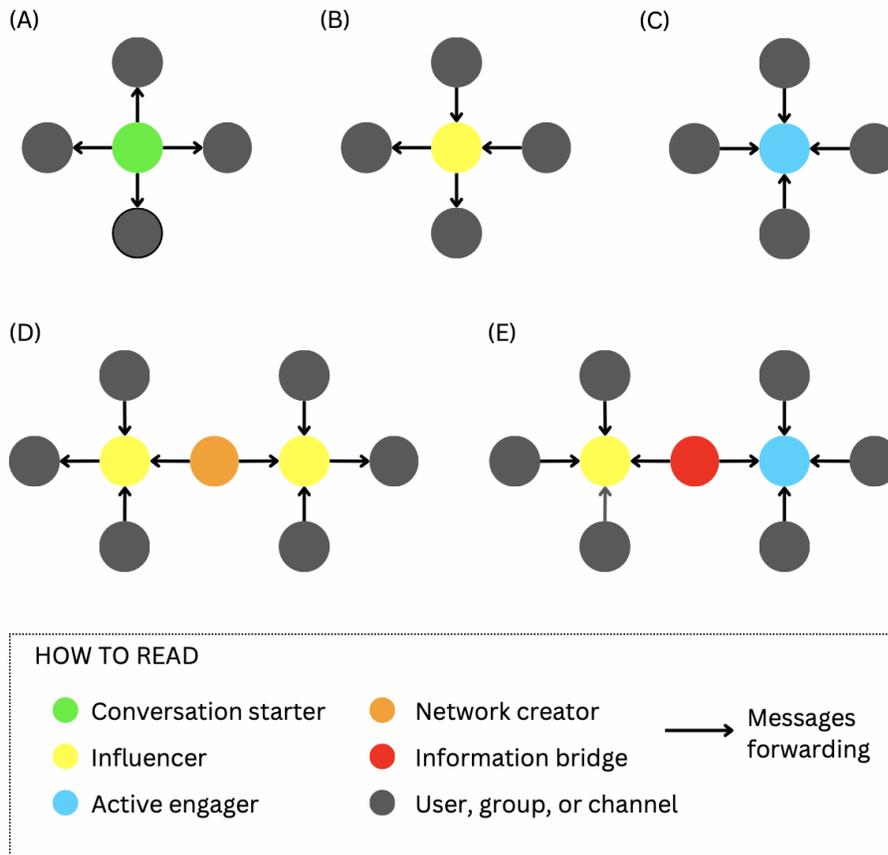https://drive.google.com/file/d/1TNhm7xIuqnce8gcMTP2N78bgV0t7oEtg/view

*Figure 2: Schematic representation of messages links between key users in a Telegram forwarded messages network*

## Findings

Within the pro-Bolsonaro network, conversation starters and influencers dominate the initiation and spread of content, with agenda-setting concentrated in a relatively small set of origination nodes. Brokerage roles stitch otherwise separate clusters, connecting diverse recipient publics. As expected, official and aligned channels surface among the most prominent conversation starters (as indicated by the primary metrics employed here), with messages forwarded across heterogeneous groups.

## Discussion and Contribution

This work introduces a framework to identify opinion leaders within a Telegram network of forwarded messages (Figure 3) and clarifies how platform-specific traceability enables role detection. By emphasizing roles derived from joint metric patterns, the study renders influence legible in an administrator-curated environment where forwarding rather than algorithmic feed ranking governs visibility.

The contribution is twofold: adapting retweet-based detection to Telegram's forwards, and surfacing Telegram-specific roles (network creators, information bridges) that leverage traceable source attribution.
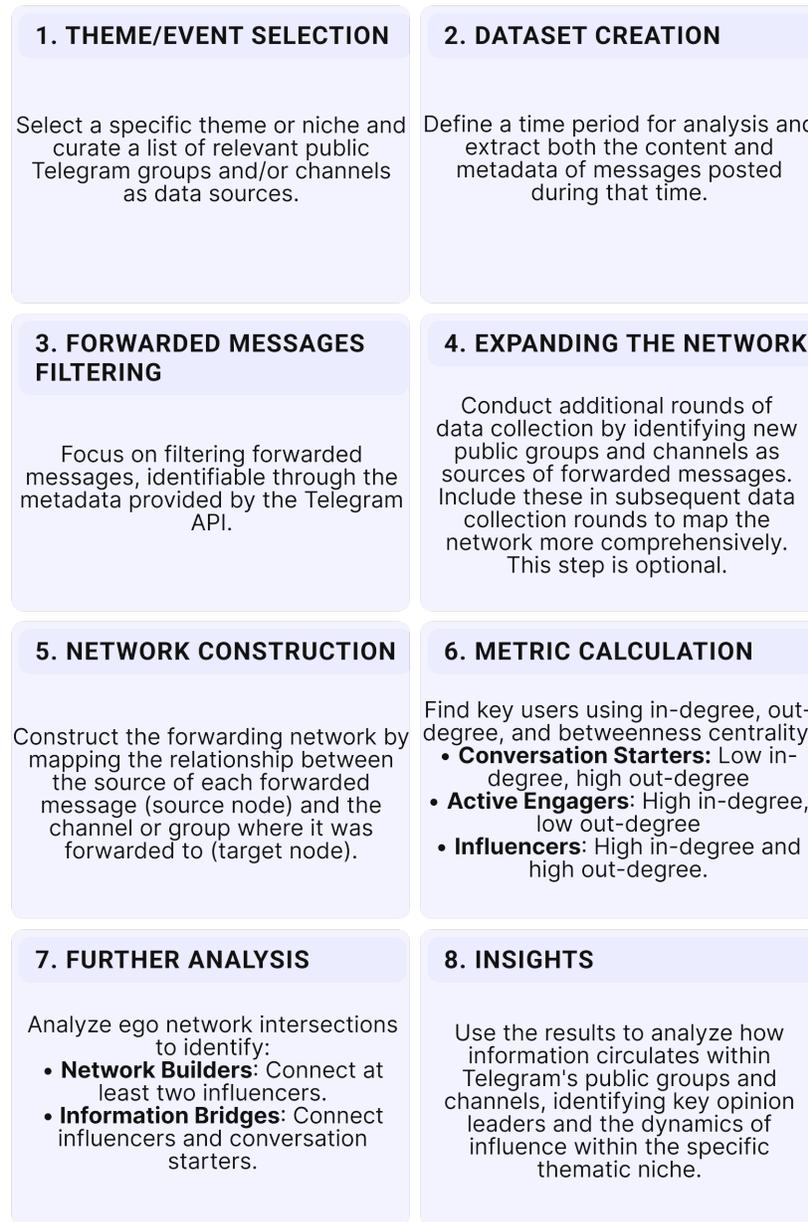
**1. THEME/EVENT SELECTION**

Select a specific theme or niche and curate a list of relevant public Telegram groups and/or channels as data sources.

**2. DATASET CREATION**

Define a time period for analysis and extract both the content and metadata of messages posted during that time.

**3. FORWARDED MESSAGES FILTERING**

Focus on filtering forwarded messages, identifiable through the metadata provided by the Telegram API.

**4. EXPANDING THE NETWORK**

Conduct additional rounds of data collection by identifying new public groups and channels as sources of forwarded messages. Include these in subsequent data collection rounds to map the network more comprehensively. This step is optional.

**5. NETWORK CONSTRUCTION**

Construct the forwarding network by mapping the relationship between the source of each forwarded message (source node) and the channel or group where it was forwarded to (target node).

**6. METRIC CALCULATION**

Find key users using in-degree, out-degree, and betweenness centrality.
- **Conversation Starters**: Low in-degree, high out-degree
- **Active Engagers**: High in-degree, low out-degree
- **Influencers**: High in-degree and high out-degree.

**7. FURTHER ANALYSIS**

Analyze ego network intersections to identify:
- **Network Builders**: Connect at least two influencers.
- **Information Bridges**: Connect influencers and conversation starters.

**8. INSIGHTS**

Use the results to analyze how information circulates within Telegram's public groups and channels, identifying key opinion leaders and the dynamics of influence within the specific thematic niche.

*Figure 3: Steps to detect opinion leaders on a Telegram forwarded messages network*

**Conclusion**

We show how opinion leadership manifests on Telegram when influence is made traceable via forwards and mapped with familiar network measures. Given the platform's role in political discourse, future research should explore the long-term influence of Telegram opinion leaders, particularly in relation to misinformation

dissemination. Additionally, comparative analyses across platforms could further illuminate how influence strategies adapt to different digital environments.

As Telegram continues to grow, studying its impact on political communication and public opinion will be increasingly relevant. This study provides a foundation for further research into how digital influence manifests beyond mainstream social media, shedding light on the evolving landscape of online political discourse.

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