Tracing the 2024 U.S. Election Debate on Telegram with LLMs and Graph Analysis

Giordano Paoletti[1][0000−0002−1764−7666], Carlos H.G. Ferreira[2][0000−0001−9107−6884], Luca Vassio[1][0000−0002−2920−1856], Leonardo Rocha[3][0000−0002−4913−4902], and Jussara M. Almeida[4][0000−0001−9142−2919]

[1] Politecnico di Torino, Italy
{giordano.paoletti,luca.vassio}@polito.it
[2] Universidade Federal de Ouro Preto, MG, Brazil
chgferreira@ufop.edu.br
[3] Universidade Federal de São João del-Rei, MG, Brazil
lcrocha@ufsj.edu.br
[4] Universidade Federal de Minas Gerais, MG, Brazil
jussara@dcc.ufmg.br

Abstract. We examine conversations on Telegram during the 2024 U.S. elections to understand how political narratives emerge and cluster at scale. We propose a general-purpose pipeline that combines message-level topic modeling with co-forwarding graph analysis to filter thematically relevant chats. LLM-based daily summarization and encoding are then applied to detect topics and trace the dynamics of chat attention over time in large-scale conversational datasets. Applied to 486M messages, our method isolates politically engaged groups and detects 36 refined topics active during June–July 2024. We uncover cohesive thematic spheres—clusters of chats with synchronized attention and selective content sharing—that include ideologically extreme or conspiratorial niches. The framework generalizes beyond this case, providing a scalable tool for studying narrative alignment in messaging platforms and social networks.

Keywords: Telegram · US Election · LLMs · Graph Analysis