

Network and Sentiment Analysis of U.S. Congressional Tweets

Authors : Chaitanya Kanakamedala, Hansa Pradhan, Carter Gilbert

Abstract : Social media platforms, such as Twitter, are excellent datasets for understanding human interactions and sentiments. This report explores social dynamics among US Congressional members through a network analysis applied to a dataset of tweets spanning 2008 to 2017 from the 'US Congressional Tweets Dataset'. In this report, we perform network analysis where connections between users (edges) are established based on a similarity threshold: two tweets are connected if the tweets they post are similar. By utilizing the Natural Language Toolkit (NLTK) and NetworkX, we quantified tweet similarity and constructed a graph comprising various interconnected components. Each component represents a cluster of users with closely aligned content. We then perform sentiment analysis on each cluster to explore the prevalent emotions and opinions within these groups. Our findings reveal that despite the initial expectation of distinct ideological divisions typically aligning with party lines, the analysis exposed a high degree of topical convergence across tweets from different political affiliations. The analysis performed in this report not only highlights the potential of social media as a tool for political communication but also suggests a complex layer of interaction that transcends traditional partisan boundaries, reflecting a complicated landscape of politics in the digital age.

Keywords : natural language processing, sentiment analysis, centrality analysis, topic modeling

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