The Impact of Bots in the (First) Impeachment of Donald Trump

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Abstract

We study manipulation of the social media discussion surrounding the first impeachment of U.S. President Donald Trump by automated accounts, known as bots. Our dataset includes 50 million social media posts on Twitter from 2.7 million users, plus their 57 million edge follower network. The data covers a 60 day period from the impeachment to the acquittal of Donald Trump. We identify 24,000 bots in our dataset using an algorithm we developed based on the Ising model from statistical physics. Analysis shows that the bots are 100 times more active than normal users and very prevalent among followers of the Qanon conspiracy theory. When looking at the quality of media shared by different uses, we find that bots share more disinformation than humans. The bot network structure is polarized along political lines, while the Qanon network possesses a hierarchical structure between bots and humans. We quantify the daily impact of the bots using a network centrality measure we developed known as generalized harmonic influence centrality. We find that pro-Trump bots outnumber the anti-Trump bots by 50%, and for the vast majority of days they have a larger impact than the anti-Trump bots. We also find that the Qanon bots have less impact per bot than the non-Qanon bots.

Bio: Tauhid is an Associate Professor of Operations Management at the Yale School of Management. He received his BS, MEng, and PhD degrees in electrical engineering and computer science from MIT. His research focuses on solving operational problems involving social network data using probabilistic models and machine learning. Some of the topics he studies in the social network space include combating online extremism, detecting bots, and persuasion techniques. His broader interests cover data driven approaches to investing in startup companies and algorithmic sports betting. His work has been featured in the Wall Street Journal, Wired, Mashable, the LA Times, and Time Magazine.