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Trails of automated social bots

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TRAILS OF AUTOMATED SOCIAL BOTS

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ABSTRACT

The proliferation of online social networks (e.g., Facebook, Twitter, etc.) has created significant challenges for modern societies. One of them is the easiness of implementing automated accounts (hereafter bots) who could pedal certain type of content through the network without regard to the veracity of this content. Bots on Twitter, Facebook and YouTube have been explicitly linked to disinformation campaigns during the run-up to 2016 US presidential elections [1], as well as in other digitally intensive political processes outside the United States. The fact that they contribute to a larger problem of spread of fake news, low-credibility and inflammatory content is without a doubt [2, 3, 4]. The scale of inflicted damage of such activities could reach devastating proportions even for established democracies [5].

Yet, not much is known about who interacts with bots and how (if at all) this interaction alters their behavior on social networks themselves. Do these people increase their engagement on the platform (i.e., social network) because of interaction? Is this increase long-lasting? Are they able to generate more engaging content? In this paper attempt to answer these questions by using an extensive data set of Twitter users who have interacted with a recognized bot. A list of 2,752 malicious bots that were shut down by the platform was forwarded to the United States congress and made public in November 2017. We have identified the 50 most influential bots from this list. We have further identified a large portion of Twitter users who have interacted with these bots. In this paper we study the subset of Twitter users who have interacted at least once with one of these 50 most influential bots. This constitutes a selection of ~54k US-based accounts. The same number of accounts with similar characteristics who have not interacted with any explicitly identified bots constitutes the bases for calculating counter-factual behavior.

Our results indicate significant changes in human Twitter users' behavior. Around the time when user interacts with a bot, we see a strong take off in frequency of posting. In addition, we see statistically and economically significant qualitative changes that accompany this quantitative break. We see users writing longer posts, we also see them engaging closer with the community by a heavier use of @s, hashtags, images, and URLs. Interestingly, our results indicate that these changes start significantly before the first official interaction with the identified bot. Further analysis (currently under way, but that will be finalized by the conference date) scrutinizes the content shared by investigated accounts. We study the breaks in tweet subjectivity and polarity as a result of interacting with bots. The preliminary analysis seems to support the hypotheses of increase in both measures among accounts interacting with bots.

Keywords

Human-computer interactions, automation, social networks

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