

Twitter Bot Behavior: How Twitter Bots Interact With People

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ABSTRACT

Twitter bots are often cited as affecting the political process by manipulating the trending topics data; similar behavior is also cited on other social platforms, such as Facebook. We present our use of unsupervised machine learning, combined with Indiana University's *BotOrNot* service, to classify Twitter users as bots based on statistical analysis of their accounts, and then examine the ways in which they interact with other users.

1. INTRODUCTION

1.1 Background & Motivation

Social bots, also known as *sybil accounts*, are programs that automate interaction on social platforms. While some may simply be humorous or helpful accounts that don't attempt to hide their status as bots, others have more manipulative goals; they may flood a social network with spam, or attempt to more subtly influence the thoughts and behavior of the humans it interacts with. While social networks are extremely effective at causing social change and improving the quality of life of their users, they are also at risk of automated manipulation by bots.

Aral and Walker (2011) showed that social networks are highly effective at manipulating the public[1], and the automation of such behavior only increases this efficiency. In addition, Ratkiewicz (2011) showed that political bots actively manipulated the 2010 U.S. midterm elections[4].

1.2 Problem Statement

While there have been multiple approaches to bot detection[3][5][6], these have been restrained to simple detection. Very few have attempted to examine the ways that these fake accounts interact with real users. Our goal is to find a number of bot accounts and determine how they use social media to affect their target users.

1.3 Proposed Approach

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© 2016 ACM. ISBN 978-1-4503-2138-9.
DOI: 10.1145/1235

In this paper, we use data from a bot-detection service run by Indiana University to determine whether or not users are bots. We then pull their latest tweets, as well as user data, and use the collected data in an unsupervised machine learning algorithm to cluster the users into 50 groups.

As described by Bessi and Ferrara[2], we retrieve the most important descriptors of bots: whether they're using the default appearance, their retweet-to-tweet ratio, and others, in addition to the *BotOrNot* score.

We then take the data for each cluster and analyze common behavioral patterns.

1.4 Key Results

We found a general inverse trend between the *BotOrNot* score for a cluster and the number of retweets made by the cluster. In addition, a similar inverse trend exists for the number of links tweeted by users, and the number of mentions made by users.

2. RELATED WORK

Lorem ipsum

3. PROPOSED APPROACH

After discovering a number of inconsistencies

4. RESULTS & DISCUSSION

Lorem ipsum

5. CONCLUSION

Lorem ipsum

5.1 Further Work

[TODO: Talk about how we didn't get the expanded links from the tweets and how analysis might benefit, since media are naively represented as URLs in the raw tweet data]

6. REFERENCES

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