

Twitter Bots Across Elections

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In the past few years, major national elections around the world have seen external actors seeking to influence the course of campaigning online. Their alleged goal was to disrupt political deliberation and decrease public trust in democratic institutions. This comparative analysis investigates orchestrated intervention across the two political contexts.











Our data consist of tweets collected during the 2016 U.S. Presidential Election and the 2017 German Federal election using Twitter's timeline API. To ensure validity of our comparison, we generated two stratified samples consisting of 100 retweet events (see below) from each of the two election campaigns. We then used Botometer (1), a feature-based system that assigns scores to individual Twitter accounts indicating the probability that the account is automated. Next, we ran two OLS regression models on each sample to test the impact of different factors on retweet event size, in order to assess the influence of orchestrated political intervention on information diffusion in both election campaings.

Model 2. Patterns of information diffusion, U.S. and Germany



Research Questions

- 1. What were the patterns of amplification of candidates' messages in election campaigns in the United States and Germany?
- 2. Did political bots have an effect on candidates' followership on Twitter in either national election?



Regression Analysis

Model 1. Patterns of information amplification in the U.S. and Germany

DV: ln(RTE size)	U.S.		Germany		
IVs:	Coef.	Std. error	Coef.	Std. error	
Intercept	12.48***	1.61	6.80***	0.35	
mean bot score	-9.58**	3.41	-0.17	1.33	
Protected account ratio	40.52***	8.81	1.28*	0.51	
Deleted account ratio	-33.47***	7.05	0.17	0.76	
alpha	-1.52***	0.42	-0.90***	0.13	
Multiple R-squared	0.55		0.52	0.52	
Adjusted R-squared	0,54		0.50		
F-statistic	29.29 on 4 and 94 DF		34.05 on 3 an	34.05 on 3 and 95 DF	
Significance codes: 0 '***' C	0.001 '**' 0.01 '*'	0.05 '.' 0.1			



Method: Information event signatures

Peak

RTE signatures show the changing rates of users retweeting a message over time. The shape of the signature reflects both how fast the message spreads, and the extent to which the information flow is "socially driven".

yt = rate of tweets at time t

Estimated shape parameter (alpha) of fitted power law: 1/t

> volume under curve is total size of event

Peak time

Ramp-up

phase

Decay phase

References:

3. Twitter birds image credit: https://www.designcontest.com/twitter-all-stars

DV: Change in followers	U.S.		Germany	
IVs:	Coef.	Std. error	Coef.	Std. error
Intercept	-2403240	3620061	25,117***	7921
mean bot score	19480395*	7725267	7,103	31,074
Protected account ratio	98614848***	18592255	-38,001**	11,645
Deleted account ratio	-75994596***	15837664	-74,694***	17,573
Multiple R-squared	0.52		0.36	
Adjusted R-squared	0.50		0.35	
F-statistic	34.05 on 3 and 95 DF		18.03 on 3 and 94 DF	
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Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Findings and Future Work

Although we find evidence of orchestrated amplification in both elections, detecting bot activity in real time is often challenging. Usually, it becomes visible months later, after the election is over and the actors are trying to eliminate traces of their orchestrated activity. Focusing on two main aspects of information flows, *amplification* and *diffusion*, we find that poltiical bots only amplify, but do not diffuse, candidates' messages. This questions the ability of automated accounts 1. Davis, C.A., Varol, O., Ferrara, E., Flammini, A., & Menczer, F. (2016). BotOrNot: A system to evaluate social bots. 1. Davis, C.A., Varol, O., Ferrara, E., Flammini, A., & Menczer, F. (2016). BotOrNot: A system to evaluate social bots. political discourse by creating and reinforcing echo chambers.

Iluminating 2016

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