

NOT ALONE ANYMORE: ON SOCIAL BOTS

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PROLOGUE

STRANGE FOLLOWERS

Huge amount of friends

Huge amount of liked sites

Inconstant profile and timeline

REPORTS IN THE NEWS

Articles in major German newspapers (FAZ, Zeit, etc.) on social bots in the US presidential election

German parties made announcements on social bot usage in the upcoming election campaigns

...

SOME FIGURES

Level of tweet automation during 2nd
US presidential debate

| | Low | High | All (N) |
|-------------|------------|-------------|----------------|
| Pro-Trump | 64 % | 36 % | 2,409,300 |
| Pro-Clinton | 73 % | 27 % | 723,412 |
| Neutral | 86 % | 14 % | 2,262,569 |

(Kollanyi et al. 2016, p. 3)

MORE FIGURES

Trump has 2 mio. fake followers,
mostly bots (Twitteraudit 2016)

Analysis of 500k twitter accounts:
13% bots and 37% cyborgs (Chu et al. 2010)

...

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Who are they?

What is their nature?

What are their intentions?

AGENDA

Chapter 1: The concept

Chapter 2: The technology

Chapter 3: The social impact

Chapter 4: The end

CHAPTER 1: THE CONCEPT

DEFINITION

A social bot is computer algorithm that automatically produces content and interacts with humans on social media, trying to emulate and possibly alter their behavior.

(Ferrara et al. 2016, p. 96; Boshmaf et al. 2013, p. 558)

CHARACTERISTICS OF SOCIAL BOTS

PROCESSES CONTENT

- Posting messages
- Aggregating information

CHARACTERISTICS OF SOCIAL BOTS

INTERACTS WITH HUMANS

- Shares content of others
- Responds to messages
- Sends messages to persons

CHARACTERISTICS OF SOCIAL BOTS

ALTERS HUMAN BEHAVIOIR

- By mimicing human behavior
- By acting as group (botnet)
- By acting on other user's data

EXAMPLES OF SOCIAL BOTS

| Type | Content | Interaction | Alter behavior | References |
|---------------|---------------------------|---------------------------|----------------|--------------------------|
| Spambot | Posting promotion | - | Buy things | You know them |
| Campaign bot | Posting campaign messages | Sharing campaign messages | Voting | see above |
| Emergency bot | Alarms | Backchanneling | Seek shelter | 911bot (Techcrunch 2016) |
| Service bot | ... | Offering services | ... | Telegram, Facebook |

CHAPTER 2: THE TECHNOLOGY

FUNDAMENTAL TECHNOLOGIES

Socialbot competition of the Web Ecology project (2011)

According to description

(source code is not available anymore)

- Accessing API of social networks
- Automatic following
- Databases of generic response/questions
- Copy-and-parrot to fill content

Based on Ruby and VB

STRUCTURE OF SOCIAL BOTNET

- Generator bot: Just posts
- Core bot: posts and shares frequently
- Peripheral bot: Share posts of the core bots occasionally^{*}

(Abokhodair et al. 2015, pp. 842–844)

^{*}May be real persons lured into the network

SOCIAL BOT DETECTION

GRAPH-BASED

Features of the social graph

- Densely interconnected groups
- Innocent-by-association assumption
- Deceived by humans lured into social botnets

Example: Facebook Immune System

(Ferrara et al. 2016, p. 100–101)

SOCIAL BOT DETECTION

CROWDSOURCING

Using human workers to detect social bots

- Better in understanding of human behavior
- Better in understanding of human communication
- A kind of Turing test

Example: Wang et al. (2013)

(Ferrara et al. 2016, p. 101)

SOCIAL BOT DETECTION

FEATURED-BASED

Behavioral patterns of the social bot

- Network features
- User features
- Friends features
- Timing features
- Content features
- Sentiment features

Example: [Bot or not?](#)

(Ferrara et al. 2016, pp. 101–102)

CHAPTER 3: THE SOCIAL IMPACT

ASTROTURFING

Pretending a spontaneous "grassroots" campaign
In combination with other types of media

(Ratkiewicz et al. 2011, p. 249)

MISDIRECTION

Distract attention from a subject

Hurricane Sandy is currently almost 380 miles from New York and is expected to arrive after 5 hours from now <http://t.co/mzrexObC> #Syria

(Abokhodair et al. 2015, p. 849)

SMOKE SCREENING

Provide cover for another subject

*Syria 25 short films will be produced by the General Organization for Cinema as part of the 2013 plan to support youth cinema
<http://t.co/PN2cCEYN> #goq #Syria*

(Abokhodair et al. 2015, p. 849)

CHAPTER 4:

THE END

CONCLUSIONS

Overview on aspects related to social bots
Creeping disaccreditation of social networks
Learn to live with them
Evolverment to service bots (?)

EPILOGUE

Thank you for your attention!

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