How powerful are Social Bots?

Understanding the types, purposes and impacts of bots in social media

▶ Social bots is a much-discussed buzzword. Yet people don't always have a clear understanding of its meaning and its potential impact. This issue of Communication Snapshot will try to shed light on social bots, how they work and how they can be identified.

▶ BOTS (short for software robots) have been around since the early days of computers. They are algorithms that simulate human behavior. With the rise of social media they have gained in importance – and have not only been utilized for good, but also for manipulating perceptions.

▶ Research into the impact of social bots is increasing, however the impact of social bots, especially on corporate social media channels, remains unknown. A research project by the Academic Society currently underway seeks to change that.

What are social bots?

A **social bot** is a computer program based on algorithms that automatically produces content and interacts with humans on social media. They are highly effective in convincing users that they are actually humans. The term "social" refers to the imitation of human behavior and the act of pretending to be a human with whom social interaction is possible, and not to "social" media.

Looking at bots as a whole, a general distinction can be made between bots that mimic human behavior (social bots) and those that do not (classical bots, e.g. automatic news feeds).

Classifying social bots, one can differentiate two types:

❶ **Benign bots** aggregate content, respond automatically, and perform other useful services. These bots automatically disseminate information or news (e.g. weather bots, sport bots, traffic bots etc.). Another type of bots are chat bots used by enterprises to respond to queries automatically.

❷ **Malicious bots,** in contrast, are designed with the purpose to harm. They operate on social media with a fake identity. Malicious bots include spam, the theft of personal data and identities, the spreading of misinformation and noise during debates, the infiltration of companies and the diffusion of malware.

In contrast to social bots, a **troll** is often a real person who provokes, disrupts and insults. Trolls for example can capture hashtags to make discussions in social networks difficult or impossible. Sometimes trolls use social bots for their purposes.
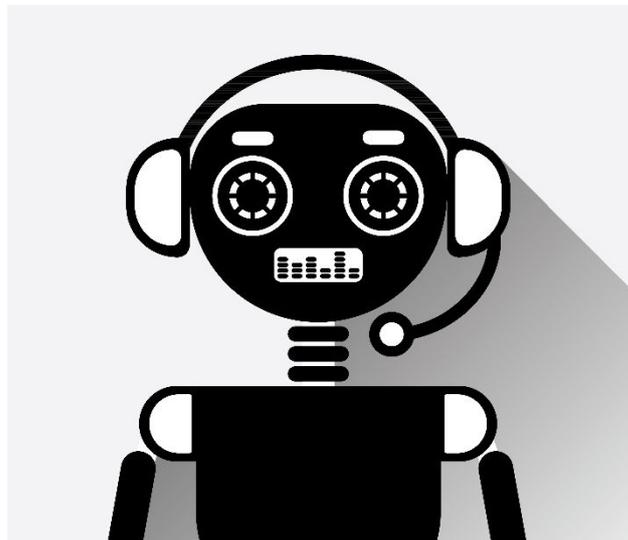
How do they operate?

For social bots to be applied to a certain (social media) channel, the platform has to be accessible through an Application Programming Interface (API), as offered e.g. by Twitter and Facebook. By using APIs, a large number of bot accounts can be controlled simultaneously with little effort.

With simple keyword searches they scan Twitter timelines and Facebook posts for certain terms or hashtags. As soon as they find what they are looking for, they comment, share links or start a fictive discussion. Or they comment directly on specific topics. In combination with other bots (forming a botnet) their noise becomes even louder and can mislead other users.

How do social bots exert influence?

There are three main strategies bots use to try to influence public discussions on social media:

1. **Smoke screening** uses context-related hashtags on Twitter to distract the readers from the main point of the debate (e.g. using the hashtag #Brexit, but talking about something unrelated to the vote)

2. **Misdirecting** goes a step further by using context-related hashtags without referring to the topic at all (e.g. using #brexit but talking about something which is not related to GB)

3. **Astroturfing** tries to influence public opinion e.g. in a political debate by creating the impression that a vast majority is in favour of a certain position. Political campaigns are therefore disguised as spontaneous 'grassroots' behavior although in reality they are carried out by a single person or organisation.

How can you spot a social bot?

Studies estimate that between 9-15% of traffic on Twitter and as much as 66% of shared URLs are generated by bots. So if encountering one is likely, how can you spot a social bot? As they become more and more sophisticated and constantly advance their cover-up techniques, they are difficult to detect. However, there are certain characteristics that indicate a bot:

Bursts of activity and periods of silence are untypical for humans and indicate bot accounts.

Their **profile pictures** oftentimes feature graphical pictures instead of real user pictures.

Skewed friend/follower-ratio: As it is way easier to follow a user than get another user to follow back, bot accounts often follow far more people than follow the bot accounts.

Unrealistically high number of tweets per day: The number of messages a human user can release is far lower than the number some bot accounts produce.

Unrealistically high reaction speed: An account replies in a split second when it is addressed.

Quality of comments: Bot accounts usually have limited vocabulary and may produce inadequate or imprecise responses.

Many bot accounts give likes so that the liked account follows back, resulting in an **unusual high number of given likes** compared to human accounts.

Are social bots illegal?

In the eyes of today's jurisdiction social bots still do not exist and are therefore not seen as illegal. In general, spreading messages are considered as freedom of speech with the limitations of publishing illegal content such as defamatory statements, insults, threats or copyright infringements. However, there have been first cases in the area of online gaming where social bots have been ruled illegal.

Given the difficulties to prosecute social bot creators, the ethical perspective becomes crucial. Even if the use of social bots is not illegal, other human users are deceived. As a consequence, social networks are undertaking major efforts to fight social bot accounts on their platforms.

What effects do social bots have ?

Social bots can have a considerable impact on society, democracy or the economy. The number of scientific studies on social bots is increasing. However, research is still in its early stages. Here are some effects that already have been investigated:

▶ **Impact on democracy:** Social bots have been used in elections to spread fake news and to polarize the political discussion by giving the false impression that certain information, regardless of its accuracy, is highly popular.

▶ **Impact on stock markets:** In the past social bots have influenced stock prices. Investment decisions are increasingly being made by automatic trading systems that promptly react to news on social media channels.

▶ **Impact on economy:** Bots have the potential to harm the reputation of a company or its products and lead to considerable financial damage.

▶ **Cybercrime:** Other studies have demonstrated how bots have gained access to private information, such as phone numbers and addresses that in turn could be used for cybercrime.

▶ **Distorted popularity:** First analyses of SoundCloud, the largest social media platform for sharing music, indicate that bots are used to promote certain songs, thus influencing their popularity and leading to a wider distribution.

About the research project

In 2018 the Academic Society launched the research project "Social Bots in Corporate Communications". Professor Stefan Stieglitz and Florian Brachten (University of Duisburg-Essen, Germany) are researching the extent to which social bots influence corporate social media accounts. It's the first time that the impact of social bots on DAX 30 companies will be analyzed. Results are expected in the spring of 2019.

More information: www.academic-society.net