Andrea Kovács

A Regulatory Framework for Social Media Bot Accounts

Thesis

Supervisor:

Dr. Gergely Gosztonyi Professor

Eötvös Loránd Tudományegyetem

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1. Subject of the doctoral dissertation

Social media became the public sphere of modern life with the rise of Facebook. Billions of users share their thoughts, upload family photos or engage in political discourse on these platforms. According to 2025 reports, the number of monthly average users in the European Union for Facebook reached 261.6 million, for Instagram 272 million and for X/Twitter 106 million, including logged in users and site visitors without authentication. Countless attempts have been made to regulate them, but undisputedly, it is a complex phenomenon whose regulation lies in the hands of multiple stakeholders, i.e. the regulation of its users is also done by multiple actors.

At the same time, however, online spaces are inhabited not only by people but by software, algorithms and automated systems as well, that carry out their pre-programmed activities invisibly (data collectors), visibly but not transparently (ranking and recommendation algorithms), or in plain sight via user accounts, maybe without the recognition of other users.

It is difficult to draw analogies with physical phenomena. Robot technology is still in its initial phase, robot agents that resemble humans, behave like humans and largely independent of human influence only exist in the world of science fiction and thought experiments. However, contrary to the physical world, in online spaces – and especially on social media platforms – you can already experience this world: non-human actors are capable of the same things as humans and you cannot distinguish them from humans. Despite their negative effects, bot accounts can also serve positive purposes, such as facilitating communication during disasters and making important news more visible. Therefore, a comprehensive regulatory framework is needed that provides guidelines for positive use cases, while prescribing and enabling an effective defense system against their negative use (e.g. influencing elections).

2. Research Questions and Methodology

To achieve the goals of this dissertation, the following research questions are examined and answered:

1. What are the rules governing social media with regards to freedom of expression and liability?
    a. What is social media according to the U.S. case law? – Taking into account the nature of the legal system, the focus is on the analysis of judicial practice and legal literature.
    b. What is social media according to the law of the E.U.? – The focus is ont he eCommerce directive and the related case law of the Eurpean Court of Human Rights, the eCommerce law of Hungary, the amendment to the AVMS Directive, and then new categories introduced by the DSA.
2. What is the bot account phenomenon?
    a. What constitutes a bot account? – A comparative analysis of the concept of bot accounts in literature.
    b. How can bot accounts be identified? – The phenomenon is described through primary researches found in literature and through secondary studies summarizing the state of the art.
    c. Is it possible to categorize bot accounts? – A literature review of primary and secondary research, which use different categorization of bot accounts based on their features or behavior.
3. How can social media bots be regulated?

a. Does freedom of expression protect the activity of these accounts? – Using a four-part test, a literature review is conducted on whose freedom of expression is protected when protecting the activity of these accounts, with regard to issues surrounding artificial intelligence.
b. What laws and legislative proposals exist regarding social media bots? – An analysis of legislative acts in the United States and the European Union, with a focus on accounts operated by artificial intelligence.
c. How do the platforms regulate bot accounts themselves? – Analysis of the community guidelines and developer guidelines of the selected platforms as tools of private regulation. The technical documentation of these platforms are also scrutinized in order to define the regulatory and technical framework for bot accounts.

4. How should social media bot accounts be regulated? – Defining regulatory guidelines by synthetizing best practices and placing them to the appropriate regulatory level.

3. Structure of the doctoral dissertation

The dissertation addresses the research questions in five main chapters.

The first part discusses the general regulatory framework of social media from the perspective of freedom of expression and service provider liability. It first examines how social media is defined in literature and establishes a definition. American and European literature and legal materials concerning these platforms are examined in order to define social media from a legal perspective as well. In case of the American framework, the public forum doctrine, the common carrier analogy and a potential hybrid model are in the focus, while in the European

context, the answers are sought in the eCommerce Directive and the related case law, in the eCommerce Act and the currently applicable DSA.

The second part addresses the phenomenon of social media bot accounts. Following the definition of such accounts, the significance and nature of bots are examined with the secondary analysis of methods for their identification. The second half of this section provides a detailed overview of the classifications of bots found in the literature, then analyzes them to determine whether classification can be used as the basis for regulation.

The third part examines the implications of bot account for freedom of expression. To decide whether these accounts have freedom of expression as their own right, following Tim Wu's work,[1] a four-part test is used, which examines the following four aspects of this freedom: personhood, speech, the government's motivation for regulation and abridgement. In the personhood section, the dissertation extensively deals with artificial intelligence as the most autonomous, least predictable and increasingly popular subset of bot accounts.

The fourth part discusses specific legal acts and the self-regulation of platforms. In this context, the Californian bot law[2] and a federal draft[3] of bot regulation are examined from the U.S alongside some state-level artificial intelligence laws. For the European Union, the relevant provisions of the DSA[4] and the AI Act[5] are highlighted. With regard to private regulation, three

[1] Wu, T. (2013). Machine Speech. University of Pennsylvania Law Review, 161(6), 1495–1533.
[2] California Business and Professional Code §17941.
[3] S. 2125 Bot Disclosure and Accountability Act of 2019.
[4] Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market For Digital Services and amending Directive 2000/31/EC (Digital Services Act), PE/30/2022/REV/1, HL L 277., 2022.10.27., 1–102.
[5] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act), PE/24/2024/REV/1, HL L, 2024/1689, 2024.7.12.

major platform providers' (Meta, X/Twitter, TikTok) reports, community guidelines and developer guidelines are examined as well as the technical documentation for the APIs enabled by them.

The final section proposes a more transparent bot regulation by synthetizing existing legislation, community and developer guidelines, best practices, which would make the operation of bot accounts on various social media platforms more visible and transparent to the users deploying them or encountering them.

4. Key Findings of the Dissertation

a. Under U.S. law, social media does not have a clear legal classification, whereas in Europe, the DSA has resolved this issue

The first section of the dissertation, following the definition of social media, examines how the phenomenon of social media should be handled from a legal perspective. With regard to the U.S. legal system, it is found that there is no clear position. The discourse follows the Supreme Court's case law, and it is divided between the application of the public forum doctrine or classifying social medis as a common carrier.

The European assessment of social media was dominated by the applicability of the eCommerce Directive, i.e. applying the liability rules of hosting providers – as did the European Court of Human Rights in several comment sections' and blog platform cases. However, the situation was complicated due to the regulation's directive nature that allowed for variations, as happened in the case of the Hungarian eCommerce Act. The DSA put an end to the uncertainty by classifying these sites as online platforms, defined as a subcategory of hosting providers. In its decision, the European Commission also declared that the three examined platforms qualify as very large online platforms.

b. Social media bots represent a complex phenomenon with extensive literature, but their findings rest on shaky grounds

Following the definition of bot accounts, their significance and detection methods are examined. The dissertation concludes that bot usage is quite widespread, particularly during significant events and events with high social importance. However, due to the methodological diversity of detection, these findings are questionable. The literature describes numerous detection methods which are limited by sampling issues, the diversity of analyzable features, limitations of the manual and automated data processing, the continuous iteration of existing tools and the development of newer ones in addition to using various thresholds with probability-based classification. Currently, it is almost impossible to fully distinguish between accounts operated by bots and humans. Furthermore, these methods originate from researchers. The actual methods used by platforms remain hidden, with the exception of high-level overviews of how fake accounts are detected. Moreover, literature covers numerous classification of bots, many of which are not sufficiently defined or overlaps between groups can be found. All these factors lead to the conclusion that the regulation of bot accounts and the enforcement of such regulation is a difficult task.

c. Bot accounts do not have freedom of speech

By literature review, the dissertation examines whose freedom of expression comes into play in the case of bot accounts. The analysis concludes that if the bot's activity becomes so detached from its user that it can no longer be attributed to the user, the message conveyed may still be considered protected speech from the audience's perspective, as a manifestation of the right to access information. The bot account itself does not enjoy freedom of expression, even if it is controlled by artificial intelligence, as it lacks legal personhood. In connection with this statement,

the issue of liability must also be resolved. Even though it has not yet been addressed satisfactorily, the responsibility is divided among the various parties involved in operating the bot account.

d. With a few exceptions, there is currently no separate regulation for bot accounts

With the exception of Californa's S.B. 1001. legislators do not treat social media bot accounts as a separate issue. Although the European Parliament addressed bot accounts in the preamble of the DSA, the regulation does not contain any provisions specifically applicable to them. Instad, it treats them in the same manner as other accounts. With the exception of X/Twitter, platforms do not have a separate community guideline for automation and automated accounts. The platform address their activities in policies concerning authenticity and integrity, with some rules found among guidelines governing risky or high-impact phenomena. Further guidance is provided in the developer guidelines, and the actual limits are specified in the technical documentation, that defines the types of actions that can be performed and the number of actions within a timeframe. It is thus established that platforms may exercise full control over automation and may prohibit automation outside the authorized channels, as they currently do.

e. Proposal for a comprehensive regulation of bot accounts

The dissertation proposes comprehensive bot regulation, which would be implemented on two levels: the legislative level and the platform regulation level. At the legislative level, it is necessary to establish the framework for the use of bots by state and political actors, define liability frameworks and outline the obligation of platforms. Such platform obligations include: (i) establishing separate automation policies, (ii) detecting and labeling bot accounts, (iii) providing the possibility to appeal their labeling, (iv) defining the permissible extent of manipulation, and (v) raising awareness. Regarding platform policies, the main expectations are that they define the

framework for automation, including the ban of the not platform provided means, and defining the extent and limits of means provided. In terms of implementation, the platform may provide tagging tools, link automated accounts to human accounts, limit the number of automated accounts linked to a human one, introduce multi-factor authentication, restrict automation and take action against violations in a proportionate manner. A significant portion of these regulations and tools already exist sporadically in separate laws or guidelines, but they need to be melted into one framework to make it transparent for the users.

5. Sources for this document

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