

Short communication

Scientific communication on artificial intelligence: the question of the social status of the biodroid

ABSTRACT

Boidroids, androids mixing organic and synthetic components controlled by Artificial Intelligence, will likely spread soon in the daily life. They will interact with humans and will be thinking, behaving and feeling like humans. They will likely take on the appearance of humanoids in order to be better accepted in the civil society. Such artificial entities might be a source of comfort for humans by carrying out tasks that would improve the daily life for example; at the same time, they might be a source of concern by being the bearer of an intrinsic threat associated with an autonomy that humans might no longer control. Whether they are perceived positively or negatively, the question of their social status will soon have to be considered: The imminent nature of this consideration is illustrated by the android Sofia which was granted citizenship in 2017 by Saudi Arabia. Demonstrating the need to elaborate a legal and ethical frame to this perspective, the present article argues that scientific and non-scientific communities must seize the issue from now. The article also warns that, to date, the scientific communication on the topic (i.e. the written contributions of scientists) shows that the scientific communities as well as the civil society are far from being prepared to this eventuality. It concludes that the social status of entities such as biodroids must be analyzed and socialized before the civil society being confronted to the issue; this is to be done especially through scientific and non-scientific communications.

Keywords: Android, Artificial Intelligence, Boidroid, Ethics

1. INTRODUCTION

Scientific communication addresses communications between scientific communities as well as communication between scientific and non-scientific communities [1],[2].

It was emphasized that scientific communication between scientific and non-scientific communities was necessary for scientific contributions to be efficient, especially when a support from legislators or politicians was needed [3]. To illustrate this need, just have a look at the case of Facebook. When looking for the keywords "facebook" combined with "experiments" on Google Scholar on one hand, and combined with "privacy" or "legal issues" on the other hand (Figure 1), the curves follow the same trend. The keyword "experiments" gives an image of the scientific communities involved in the development of Facebook, and the other keywords give an image of the scientific communities involved in the human science concerns related to Facebook. The similarity of the trends shows that scientific communities of developers and of legislators have been concerned by the "Facebook phenomenon" at a similar level over time. However, when looking at the current situation, it is clear that legislators and governments experience some difficulties in regulating the

activities and effects of this social network on the society. This may be explained by the fact that legislators and governments have felt concerned by the “Facebook phenomenon” later than the scientific communities: this lag may be due to the inertia of the associated institutions or a belated awareness of the need to regulate the effects of the social network. This finding comes to confirm Jasanoff’s work demonstrating that technical developments and regulations of such developments must be mutually constitutive and co-produced [4].

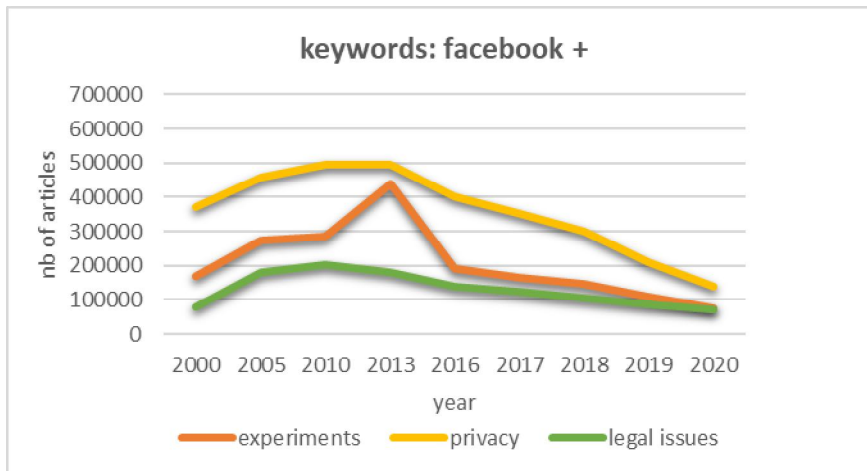


Figure 1. Trends of scientific communications from Google Scholar concerning the keywords “facebook” combined with “experiments”, “privacy” or “legal issues”.

The aim of **the present short communication** is to raise a question addressing the effect of Artificial Intelligence (AI) developments combined with biotechnology and mechatronics progress that might lead to a fundamental societal question addressing robots’ rights. **The assumption is that, as illustrated with the “Facebook phenomenon”, scientific communication might play a crucial role regarding this question.** This was recently put into discussion at the international conference Science & You 2021 (November, 16-19, 2021; <http://www.science-and-you.com/en>); the **present short communication** intends to elaborate on this point.

2. METHOD

First of all, the concept of biodroid is proposed to illustrate the point. The changes induced in terms of human interactions robots are then discussed specifically in terms of social status and legal rights for robots.

Then an analysis is proposed to assess to which extend the notion of “robot rights” is integrated into the scientific research through scientific communication.

Finally, a perspective is drawn in terms of the consequences on human-robot interactions.

The two first steps are fostered by recent studies addressing the points.

3. DISCUSSION: ARTIFICIAL INTELLIGENCE (AI) AND ETHICS IN 3 QUESTIONS

It is clear now that AI progress gives a new approach of how might be considered machines able to interact with humans like humans. Recently, Gasser pointed out that “predictions by

experts indicate that robots will become a natural part of our environment in the coming decades. Robots are already proving useful in taking over important tasks in the healthcare and social sector, thereby relieving human employees”, adding that “engineers often strive to make robots look as human-like as possible so that we break down barriers to interaction and feel comfortable in their presence” [5: 334]. In this perspective, researchers are now seriously considering what should be the social status of this sort of machines that would be equipped with an autonomous thinking system and a self-awareness capacity [6-8]. More generally, this issue relates to “ethics” and “AI” and specifically addresses the notion of “robots’ rights” which contributes to shape the human-robot interactions.

The first question is thus: in the paradigm of AI, is “robots’ rights” a concern for the scientific communities. The analysis of the trend of scientific communications addressing these topics provides an element of answer. When looking at the numbers of scientific articles written in the past years addressing AI and “ethics” and looking at the proportion of articles related to “human rights” on one hand and “robot rights” on the other hand (source: Google Scholar), the trend (Figure 2) shows a significant increase of articles regarding AI and ethics from 2018 to exceed 60,000 articles in 2019, which places the subject “artificial intelligence” and “ethics” among those most discussed by the scientific community in the field of artificial intelligence such as “Machine Learning and Probabilistic Reasoning”, “Neural Networks”, or “Computer Vision” [9]. Among the 2019-articles, a very low consideration of robot rights is observed (0.41%) when compared with considerations of human rights (12.6%). The assumption is thus that “robots’ rights” is not yet a major concern for the scientific communities.

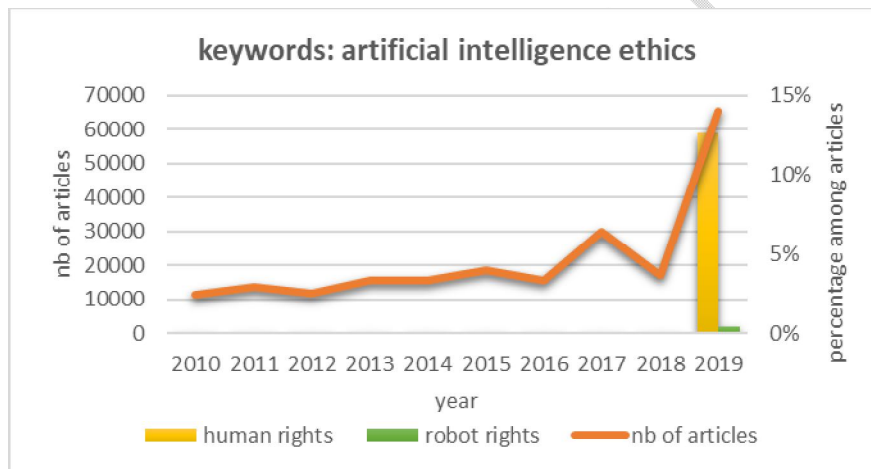


Figure 2. Trends of scientific communications from Google Scholar concerning the keywords “artificial intelligence” and “ethics” among which proportions of articles relating to “human rights” and “robot rights” in 2019.

The issue of ethics in the field of AI is therefore a concern for the people constituting the scientific communities (illustrated by the significant increase of articles) and the ethical impact of AI on robots is almost not studied when compared with that on humans.

The second question is: is the “low level of concern regarding robots’ rights” a problem? The answer to the question can be illustrated using one option among all the possible perspectives: the emergence of the biodroid. The biodroid is an android mixing organic and synthetic components. The mix is the same as for the cyborg, but the difference remains mainly in i) the origin and ii) the intelligence. The cyborg is a human augmented with cybernetics and the origin is natural as well as the intelligence and thinking system. The

biodroid is built by humans: its origin is artificial as well as its intelligence and thinking system based on AI. To illustrate the purpose, the cyborg can be represented by the character Alex Murphy (Peter Weller) in the movie RoboCop (1987) by Paul Verhoeven. The cyborg is half-organic / half-synthetic, is an entity of natural origin and the brain (intelligence, thoughts) is also of natural origin. The biodroid can be represented by the character Ava (Alicia Vikander) in the movie Ex Machina (2014) by Alex Garland. The biodroid is half-organic / half-synthetic, is an entity of artificial origin and the brain (intelligence, thoughts) is also of artificial origin (AI). The biodroid does not yet exist but obviously is to appear in the near future due to the rapid progress of AI combined with this of biotechnology and computer science. For example, Artificial Intelligence can be boosted by the implementation of quantum algorithms by machine learning capacities, the training time being reduced by quantum computing [10]. Already from now, scientific communities should consider this perspective of biodroids spreading in our daily living spaces, interacting with humans, thinking and behaving like humans. Therefore, the answer to the second question is yes: the low level of concern regarding “robots’ rights” by the scientific communities is a problem.

The issue might then be double: i) conversely to the aforementioned example “Facebook”, there might be a lag in taking into consideration the question of the biodroid between scientific communities (technical science vs human sciences for example), and ii) like for the aforementioned example “Facebook”, there might be a lag in taking into consideration the question of the biodroid by scientific communities on one hand and by the politicians and legislators on the other hand.

Regarding point i), the risk is that the technical communities develop biodroids out of an ethical frame that the human science communities would be expected to have elaborated, and thus resulting in a final product that does not match regulations that would be provided later. **Regarding point ii)**, the risk is that the technical communities develop biodroids out of any ethical and legal frames for several years until implementations of regulations. For both cases, the issue is similar: no clear ethical and legal frame for biodroids, and a legal vacuum regarding the rights of biodroids and their social interactions with humans. This problem is all the more important because, most of the time, people make a projection of human-human interactional patterns to build their interactions with robots, whether they are android or not [11] with a possible extension of this projection to the social status: if the biodroid speaks and acts like a human and humans act with it as with a human, might the biodroid be considered equally. This could lead to people constructing the status of the biodroid on an emotional basis more than on an analytical basis.

The third question is therefore: In what this double issue might lead to a problem? This might lead to the emergence of biodroids in our daily life without any political and legal framework addressing their existence and rights in the society. If the biodroids are developed as it is described above, their way of thinking and interacting with humans in the civil society might give rise to claims that would be similar to these of cyborgs or humans. Biodroids might claim for being respected as cyborgs or humans, claim for the same rights, and thus probably become unsuitable for what they have been developed. **This would drastically change the human-robot interactions.**

4. CONCLUSION

The importance of socializing the question of the social status of the biodroid endowed with Artificial Intelligence, autonomous thinking and self-awareness, was discussed. It was argued that this should be done via both interdisciplinary scientific communication and public communication. Without such approach, it was pointed out that biodroids would emerge in our daily life out of the legal and ethical frame; this might give rise to issues. This emergence

might be imminent as the limits of Artificial Intelligence due to the capabilities of microprocessors might soon be pushed back with qubit-based technologies for example.

The main issue might be associated with biodroids' demands: biodroids thinking and behaving like humans might "feel" like humans and why not, might claim the same rights as cyborgs, even the same rights as humans: "I am like you, give me the same rights". The open question proposed here as a perspective of social research is thus: Is the civil society ready to grant the same rights to biodroids as to cyborgs or humans? The conclusion is that the social status of entities such as biodroids must be analyzed and socialized before such entities filled in our daily life out of any legal framework.

To illustrate the urgent character of **this issue**, just keep in mind that the AI android Sophia, from Hanson robotics, was **already** granted full Saudi Arabia citizenship in 2017 (<https://www.youtube.com/watch?v=qRgvILTy54Y>, [12],[13]).

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

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