

Robots, Are They Overlords or Serf-Laborers?

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Abstract

Artificial Intelligence (AI) has been one of the most debated issues in the field of engineering. Robots are also subject to these debates because that tangible spin-off technology that will be run by such an AI that will have superior cognitive and perceptive abilities than that of humankind. Many researchers argue that the creation of AI will deeply elevate society and it will help humankind to solve major societal problems, while others refute the arguments for that conceptual invention. This paper explores these issues that the creation of AI will raise, and it attributes these problems to widely varying definitions and the applications of these technologies.

Keywords: artificial intelligence, robotics, ethics, society

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Introduction

Even though the term robot was coined two centuries ago and preliminary contemplation of Artificial Intelligence (AI) emerged decades ago, some of the problems that have been raised by these two terms are yet to be solved. Sometimes, solutions for any arbitrary problem can be addressed by seeing the bigger picture rather than scrutinizing tiny details. Thus, this paper explores problems related to legal, ethical frameworks and then analyzes the numerous definitions and applications of these technologies which pose challenges on varying levels, from individual to societal. The formation of this paper is as follows: The second and third sections then scrutinize the definitions and the applications of robots, respectively, to attribute the reasons for these issues, and the third section categorizes the issues that robotics have arisen.

The Bigger Picture

What is a Robot?

By literary definition the term robot is derived from the Czech word "roboti" meaning serf-labor. However, this definition closely referring to slave-like laborer has become something brand new as technology advances. In his article entitled "The Sheer Difficulty of Defining What a Robot Is", Pearson (2015) discusses two distinctive definitions of robotics that are posed by the prominent experts in the field of robotics. These two definitions emphasize different aspects of robotics creating important distinctions among them. The first definition puts emphasis on the successful combination of a rigid body responsible for interacting with its environment and a central reasoning unit responsible for reasoning tasks based perception and cognition. Without a software and hardware collaboration, as Pearson (2015) cites in his article, accomplishing its tasks for a robot cannot be possible. The second definition, however, takes autonomy into account. A robot,

Pearson (2015) quotes in his article, must have an detailed idea of any action formed by a tedious plan, accurate reasoning and precise action to interact with its physical environment, which closely aligns with the definition provided by (Lin, Abney, & Bekey, 2011). Lin et al. (2011, p. 943) define a robot as "an engineered machine that senses, thinks, and acts". In light of these definitions, robots have to interact with its environment. However, such definitions exclude any means of social interactions, even though Lanier (2010) asserts that socially interactive robots are significantly popular in society. This discrepancy brings about a major problem on the individual and societal levels. One example of this fact is that individuals have started to get strong advice from AI applications, a software crunching numbers faster than a man can do, rather than a close friend who might know better about the individual seeking advice, such as the taste in music or book. Even though this issue seems to have a minor flipside, once it is aggregated Lanier (2010) claims, it will create true alienation from society and confusion regarding personhood. In other words, roboticists have not been able to reach a consensus on the definition of robots the embodiment of AI, Lin et al. (2011) note.

What (should) does a Robot do?

In order to make its obfuscated definition clear, the tasks of AI should be addressed. On the one hand, Lin et al. (2011, p. 943) note that robots are employed in such tasks called "three D's" referring "dull, dirty, or dangerous" tasks. From that instruction, a robot should replace human where the task contains either mundane chores, or risks of contamination, or threatening factors for human lives.

On the other hand, Lanier (2010) and Lin et al. (2011) list many different real life robotic applications, from laborer robots to medical purpose robots and to personal care and companion robots, which contradicts with given instruction. While Pearson (2015) also excludes any means of social interaction in the definitions of robotics proposed in this article, Al-Rodhan (2015) elaborates this issue by indicating an emerging application of

robotics, a molecular level robot which identifies cancerous cells and attack them by releasing antibodies, thereby eliminating cancerous cells. Even though experts have not been able to solve dilemmas within the field of robotics, this continuum of sophistication within robotics add more complex issues to the pile.

The Most Profound Issues of Robotics

From its very early contemplations of AI, it has been the most controversial issue within the engineering and scientific societies due to its ethical problems. Near future is fecund to many dilemmas which humankind, soon or later, will face regarding AI's moral integrity and its position in society. This section synthesizes the issues of employment of AI and robots in a wide spectrum of tasks.

Safety Issues

Akin to the nature of any given invention, the ultimate reason for the invention of robots is the elevation of life conditions and inquiry about applicable solutions for societal problems. However, a major issue having been discussed is whether or not the military, one of the biggest supporter of robotics, is being sincere with its funding purposes (Grebelski, Lisin, & Oks, n.d.). Of the many supporters of such research studies, the military appears to be the most questionable one due to plausible intentions of creation of humanoid army. This utilization of a weaponized robotic army would boost the vast possession of ammunition problem instead of mediating inter-governmental conflicts. This contentious utilization of battlefield robots is one of the biggest concerns when it comes to mediate inter-governmental conflicts. Such probability may put countries in circumstances resembling strongly to the Cold War.

Legal and Ethical Issues

Furthering concerns about their military applications, robots are envisioned to be controlled by a such intelligence which enable their to perceive their surrounding

environments where they interact with the objects by themselves. Thus, robots can be regarded as independent agents. This conceptual freedom, however, raises an ethical dilemma caused by the absence of legal ramifications of AI. Grebelski et al. (n.d.) examine that ambiguity by posing a controversial question: "Who will be responsible for results of AI's actions and failure?" Since the contemplation of AI and robots indicates that robots will supposedly make their own choices to take actions according to these choices, another interesting question arises: "Would robots be prosecuted -maybe executed- because of the fails they commit?" Similar to the questions above, there are many questions that governments need to address by creating regulations and laws under which robots will be positioned.

Furthermore, many researchers have been questioning whether or not these super-intelligent agents should have duties, such as taxing, to society; if so, to what extent governments should give social rights to robots. Roberts (n.d.) addresses this issue by underlining basic rights and duties of citizens such as taxing and voting. In other words, not only does AI's legal ramification matter, but it is also equally important for governments to decide the AI's responsibility for the society, vice versa. To address this issue, Kerb (2006) analyzes Japanese artworks showing futuristic plots based upon robots cohabitating and interacting with humans. These artworks depicts the very early speculations of social equality between man and machine regarding civil and political rights among. Kerb's evaluation of these artworks concludes that robots, depicted and envisioned in the artworks, are neither overlords nor serf-laborers.

Psychological Challenges and Socio-economic Issues

Social interaction is what differentiates humans from machines. However, as the research studies toward creation of AI have gone deeper, robots have become more socially interactive within society. For instance, before GPS became publicly available, route planning was based upon map-reading and asking directions of the locals. In light of this

example, AI has become route planning assistant and has decreased the interrelation among individuals. According to Lanier (2010), reformation of our perception towards AI poses misconceptions regarding personhood and promotes loneliness. This issue truly matters due to the fact that alienation from the society relies on that misconception. Another matter that deeply affects human psychology is that innovative superiority of robots seems to increase profitability and efficiency in workplaces, albeit undermining the true value of failures. Given that failures are one of most essential component of human learning process, superiority of AI tend to discourage individuals to commit any form of actions due to fear of failures. This fear impedes the same body of individuals to learn, hindering them completely to trust human judgment . Depression and other similar psychological challenges are the most profound indicators of the aftermaths of inaccurate definition of AI.

Furthermore, the rise of computers has led to lessen the human employment starting from late 70's. Because of the downsizing tendency of corporations which resulted from this replacement, millions of low-skilled workers lost their jobs. Robots and AI supposedly represent the maxima of accuracy and repeatability, which promotes reliance on AI thanks to their cognitive and learning abilities that outperform human abilities. Given that historic fact, Grebelski et al. (n.d.) predict that this reliance might cause an inevitable replacement of low-skilled laborers with the more powerful robots, akin to the aftermaths of the computerization era. In light of that prediction, highly developed economies may show a strong recession due to the significant loss in human work power and if this aggressive expansion continues, other occupations and professions will be under the same risk of mechanization.

Along with the economical effects of workplace computerization, eradication of low-skilled jobs may lead to the expansion of the gap among the social groups (Grebelski et al., n.d.). For instance, as the first paragraph of this section indicates, those who can use computers or know how to develop software have reached to higher classes in societies, while others could not seize the same momentum. This computerization instructs young

individual belong to lower layers of society to believe that there is no way to elevate in society. This expansion in the gap with in society and among the social groups clearly contradicts to the societal goals of robotics.

Conclusion

The notion of increasingly accelerating technology with the precious help of scientific research studies thrills individuals. Yet, it is crucially important to decide whether or not robots are simply functional machines that are utilitarian in their responsibilities and nothing more. If so, it is irrelevant to discuss the ethical problems arisen by its creation because the problems will become a question of accuracy of the source code that runs robots and forms AI. In that case, the matter should be discussed would be how to mitigate, even eradicate, human errors taking place when roboticists develop robots and AI.

As for the ethical problems, robots will highly likely to be no more prone to erroneousness than any other human invention. If evolutionary and development psychology is taken into account, the first members of fully autonomous social robots will also evolve rapidly to their excellence. As the expansion and the accessibility to AI and robotics increase, the prediction of the aftermath has become obsolete due to the late response of individuals and their wisdom toward these technologies. Thus, robotics and AI should be scrutinized to understand and formulate its definitions and functions, otherwise yet another issue will jump into debate topics before formers could be solved.

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