Robots, Are They Overlords or Serf-Laborers?

Murat Ambarkutuk

English Language Institute, University of Delaware

murata@udel. edu

First Draft; 6/8/2015; LaTeX

Abstract

Of all the tools and methods invented by humankind to tame nature and make use of its challenges, the invention of computer has had the greatest impact on society. Coupled with the Internet, computers have changed the way billions of humans work, entertain themselves, and think. Since the rise of the computers, 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 man. However, 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 because of ethical problems that AI will bring. This paper explores the ethical problems 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

Robots, Are They Overlords or Serf-Laborers?

Introduction

Even though the term robot was coined two centuries ago and the idea 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 solved by seeing the bigger picture rather than scrutinizing tiny details. Thus, this paper focuses on numerous definitions for these concepts and their various applications which create intricacies and challenges in many level, varying from individual to societal level. The formation of this paper is as follows: First section will emphasize on the issues that robotics have arisen; the second and third section then scrutinize the definitions and applications of robots; respectively in order to locate the roots of these issues and intricacies.

The Most Profound Issues of Robotics

From the very beginning of the conceptual designs of AI, it has been the most debated issue in the engineering and scientific societies due to its ethical problems. Near future is fecund to a dilemma which humankind will face in AI's moral integrity and its position in society. This section synthesizes the issues risen by the creation of AI and employment robots in a wide spectrum of tasks.

Safety Issues

A major issue having been discussed is whether or not 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, military appears to be the most questionable one due to plausible intentions of creation of humanoid army. The ultimate reason of robots which is elevation of life conditions and inquiry for applicable solutions for the chronic problems of our societies, by the nature of any given tools that invented by

humankind, notwithstanding, utilization of weaponized robotic army would increment the vast possession of ammunition and weaponization problem rather than solving chronic problems of relationships among governments. The probable mass employment of battlefield robots is one of the biggest concern when it comes to mediate a inter-governmental conflict. Such probability may put countries in circumstances which closely resembles to the Cold War.

Legal and Ethical Issues

Robots are envisioned to be controlled by a such intelligence which enable their to perceive their surrounding environments where they interact with the objects. Thus, they can be regarded as independent agents. This conceptual independency, however, raises an ethical dilemma caused by the absence of legal ramification of AI. Many researchers has been questioning whether or not these super-intelligent agents should have duties to the society and to what extent governments give social rights (Roberts, n.d.). Given that approach, (Kerb, 2006) mentions early speculations of social equality regarding civil and political rights among robots and humans in Japanese anime and mangas which artworks are Grebelski et al. (n.d.) discusses that it is not obvious that who will be responsible for results of AI's actions. Not only does AI's position in the society matter, but it is also equally important for governments to decide the AI's responsibility for the society, vice versa.

Socio-economic Issues

The rise of computers which has led the employment of robots in industry 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. Given that fact, Grebelski et al. (n.d.) predicts the aftermath of the creation of AI. This vast computation power might replace most of the low-skilled labourers with the more

powerful robots. In the light of that prediction, highly developed economies may show an extensive recession.

Along with the economical effects of workplace computerization, eradication of low-skilled jobs may lead the expansion of the gap among the social groups. For instance, those who can use computers or know develop software have reached to higher classes in the societies. This expansion of gap among the social groups contradicts the societal goals of the creation of AI.

In addition to former arguments, Rosas (2012) proposes yet another. Even though researchers, for instance, want to create a narrow-domain savvy robot, the robot may want to change its profession from the one that it had been taught or coded to a brand new one. This probable change of profession contradicts with the reason its creation purpose which may be interpreted as a act of disobey to its master.

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 labourer has been altered to 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 robots as "an engineered machine that senses, thinks, and acts". In light of these definitions, robots have to interact with its environment, which exclude any means of social interactions. However, Lanier (2010) asserts that socially interaction robots are significantly popular in society.

This discrepancy brings about a major problem at 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) noted.

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 supposedly 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 labourer 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.

Conclusion

The notion of increasingly accelerating technology with the precious help of scientific research studies thrills individuals, and gives hope to patients. 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 prepare individuals, societies and governments its coming.

As for the ethical problems, they 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 decrepit 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.

References

Al-Rodhan, N. (2015). *The many ethical implications of emerging technologies.* Retrieved 06/08/2015, from http://www.scientificamerican.com/article/the-many-ethical-implications-of-emerging

Grebelski, K., Lisin, D., & Oks, S. (n.d.). *Artificial intelligence: should we, and if we should then how?* Retrieved 06/08/2015, from http://vis-www.cs.umass.edu/ dima/mytexts/aipaper.html

Kerb, S. (2006). On the anticipation of ethical conflicts between and robots in Japanese mangas. *International Review of Information Ethics*, *6*, 64–67.

Lanier, J. (2010). *The first church of robotics.* Retrieved 06/08/2015, from http://www.nytimes.com/2010/08/09/opinion/09lanier.html?_r=0

Lin, P., Abney, K., & Bekey, G. (2011). Robot ethics: Mapping the issues for a mechanized world. *Artificial Intelligence*, *175*(5–6), 942 – 949. Retrieved from http://www.sciencedirect.com/science/article/pii/S0004370211000178 (Special Review Issue) doi: http://dx.doi.org/10.1016/j.artint.2010.11.026

Pearson, J. (2015). *The sheer difficulty of defining what a robot is.* Retrieved 06/08/2015, from http://motherboard.vice.com/read/the-sheer-difficulty-of-defining-what-a-robot-is

Roberts, E. (n.d.). *AI - ethical issues.* Retrieved 06/08/2015, from http://cs.stanford.edu/people/eroberts/courses/soco/projects/2004-05/ai/

Rosas, A. (2012). *The machine question: AI, ethics and moral responsibility* (D. J. Gundel & J. J. Bryson, Eds.). Birmingham, UK: The Society for the Study of Artificial Intelligence and Simulation of Behaviour.