The Advantages and Disadvantages of using robots in society

Word Count – 1,225

# Introduction

Robots in present day can represent an anthropomorphizable computer, distinguishable from humans [4], but capable of performing complex tasks up to human levels [1], with an ability to learn, adapt, and perform without direct programming [2,5] - comprehending the world as humans do [3].

As acting Computing Practitioner, a request is submitted to research benefits and drawbacks of robots in society. Therefore, this report delves into various arenas which robots have impact on present or future scenarios. Due to limitations, a sample of areas will be covered. Finally, discussing the possibility of robot sentience.

# Robots in Society - benefits and drawbacks

## Industry

The increased use and complexity in robotics are arguably a current, emerging, and future technology that will drive further technological advancements. One example is found within industry; where robots work faster and continuously, performing tasks with precision and consistency in a timely manner compared to their human counterparts [6]. However, this implementation may cause job losses for humans, as well as scenarios where lack of human judgement is necessary to assess situations [6-7]. Although several sources [7-10] state that robots have been able to not only collaborate with humans in getting the task done, but replaced jobs deemed unsafe or dangerous for human conduct. With future technologies where robots get utilised further in employment, what happens to their human counterparts should there be no jobs to perform; how society functions in terms of the economy, or expectations of humans should employment no longer be necessary.

## Home

Robot technology can provide humans with many benefits, such as helping with domestic chores like a vacuum robot as an aid to daily life [11-12]. However, there are potential downsides such as invasion of privacy, surveillance or abuse of data collected from such robots. An example of this is an Internet of Things (IOT) enabled robot– with internet connectivity to interact with other things or services [13-15] - could collect data about a human without their knowledge or consent, potentially breaching applicable legislation such as GDPR and Computer Misuse Act [17-19]. Additionally, having this form of robot in the home can leave the human exposed to other issues unless mitigated, like a hacker gaining access to the robot for malicious purposes [20]. A concern that may arise from future innovation in this area, is whether humans – over time - lose the ability to perform certain tasks within the home, or the impact on the over-reliance of robotics should anything happen that suddenly removes their presence.

## Education

Another case to represent using robots in society, is their interactions with children and education. Several studies [21-23,28] state that while more research should be considered, robots can be an aid in education for children in particular topics. Additionally, several sources [23] speculated an improvement with engagement of children diagnosed with Autism Spectrum Disorder (ASD) – a neurodevelopmental disorder effecting social communication, restricted interests, and abnormal behaviour [24-25] - such as improved attention, communication, and social skills [26-27]. However, a case could be made as to how using robots in education could impair children in other ways, including not showing a catered approach to each student as well as lacking creativity to deliver content, sticking to course material as it is programmed [23,28].Undoubtedly, robots are present in education with the potential to expand in use going forward, but arguments could be made that robots would still be steered by human supervision to deliver content for students and children to learn with. An apprehension that could arise with future advancements is how robots – if replacing the human in the classroom - would deal with the softer skills when it comes to education, such as interpersonal skills with children of social behavioural issues, running the day-to-day dysfunctions in a classroom that comes natural to a human to understand at least.

## Healthcare

Now delving into the realm of robots used within healthcare. One study [29] Describes a nurse’s view on robots within paediatric care as observed. The implications derived from this study concludes robots reduced workload of healthcare providers– particularly in repetitive tasks and precision treatment as an aid. However, also described shortcomings in terms of impacting employment opportunities in this sector as well as factoring in human emotions; including how the integration of robotics would be accepted from both staff and patients in further development. Another study from Huda, Yu, and Chang [30] - from the viewpoint of robots in minimally invasive diagnosis and intervention, declares robots used in this way have aided in these procedures to be safer, reduce patient pain and increase recovery times, but their use is still in infancy and challenges to tackle in cost of implementation. Conversely, Wells [31] suggest robots have prevented patient death in treatments that would not be possible without them, though may impact the cost associated across different regions of healthcare dependant on the use and environment used within. With the information presented above, whilst a possibility that further incorporation may be welcomed in certain areas, a concern is raised on how patient will be affected in future as further technologies develop, especially in terms of personal interpersonal communication and addressing a patients needs based on the situation they are finding themselves outside the scope of diagnosis and treatment.

# Robots in Society – Sentience

Now that this report examined the benefits and drawbacks of robots within society from multiple perspectives at present or potential further development, this section looks to explore a potential challenge that could arise - sentience.

Sentience can be described in a few definitions, such as the ability to feel [32], the awareness of self [33], or the opportunity to achieve qualia – subjective or phenomenal properties of experience [34]. The justification in bringing up such a topic, is the potential ramifications impacted on society should robots gain this trait. Whilst such a notion may currently appear mainly in works of science fiction, the reality is ever reaching closer to this concept. If technological advancements reach to a point where robots are synonymous with humans, there are factors that need examination.

One factor would be how legislation against robots is implemented if defined contrarily with humans or animals. For instance, would robots gain equal rights to that of an animal, protected under the Animal Welfare (Sentience) Bill [35] – allowing protection for animals experiencing thought and emotion. Alternatively, whether robots are protected from exploitation by The Human Rights Act 1988 [36] as “synthetic humans”, such as the right to life or freedom in belief. Conversely, due to their non-biological nature, if their rights - if any – would be introduced into an amended version of The Computer Misuse Act 1990 [37] to protect from misuse or impairment. This scenario indicates legal, environmental, and ethical issues that needs understanding, should this theory become reality.

# Conclusion

It is fair to say that robots have evolved in their uses and capabilities in line with human advance in technology; instances of robots being used in different areas of society with the benefits and drawbacks that comes with their introduction. Robots have allowed humans to adapt and grow as much as they have been allowed for their value, but negative downstream effects can also be seen if not properly implemented for present and future applications. Finally, more research should be conducted outside the scope of this paper to explore further on how robots could contribute or the inverse towards humans.

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