The Ethical Considerations in the Development and Use of Robotics

DR. MANMOHAN SINGH YADAV

Assistant Professor, CSE Department, BBD University, BBD city, Faizabad Road, Lucknow, Uttar Pradesh, India.

Abstract- Relationships with others are the foundation of human existence and play an important role in maintaining physical and mental health. That's why researchers have worked to develop cutting-edge, innovative approaches to combat the problem of psychological and social isolation. Recent advances in embedded technology have opened up a potentially fruitful opportunity to reduce social isolation and feelings of loneliness; this can be achieved in two ways: (a) by developing social robots that can engage and entertain business users, or (b) provide users with remotely controlled robotic interfaces where one can interact with other people remotely. (a) Social robots that can accompany and entertain the user. Overcoming feelings of social isolation and loneliness is possible through these two alternatives, each of which offers a potentially lucrative opportunity. Both treatments have the potential to reduce the negative effects that may result from feelings of social isolation and/or loneliness. We think it is important to address your practical concerns about social relations and to discuss how to translate the details of this HRI module into a new revised code of ethics . We think so because we believe it is extremely important to address your practical concerns about social connections. Because it seems necessary to address the practical difficulties in social ties. because the latter option is becoming an increasingly popular alternative. Because we believe it is necessary.

Indexed Terms- Social robot, Teleportation, Telepresence, Ethic

I. INTRODUCTION

- WHAT EXACTLY IS TELEOPERATION TECHNOLOGY, WHAT DOES IT AND WHY IS IT USEFUL?

In-vehicle remotely operated technology is an essential part of modern technology, as it allows humans to control and communicate with physical robotic interfaces. This leads to an increase in the level of social connectedness people experience, a decrease in the sense of isolation they experience, and an increase in the number of actions people experience in the real world. [1,2] This particular field of technology differs from other subfields of (social) robotics in that its aim is not to develop fully autonomous, socially intelligent robots; Rather, their goal is to develop technologies that can act as an interface for people who cannot physically interact socially. In other words, the goal of this particular field of technology is not to develop fully autonomous, socially intelligent robots. The use of remote-controlled platforms has become increasingly common and is now used in a wide variety of contexts. This has happened even though a significant number of human-robot interaction (HRI) features are still in experimental testing and development. For example, many conferences, such as the HRI conference, have technology that allows remote attendance. These devices allow attendees from other countries to join the event, support other attendees at the venue, and communicate with other attendees. Companies such as the Japanese laboratory Ori devote most of their resources to the research, development and implementation of integrated remote-controlled systems. Users diagnosed with ALS (a type of amyotrophic lateral sclerosis) have the opportunity to watch and participate in social events remotely through these platforms. Another aim of these companies was to reduce the physical distance between people and increase their social presence. Furthermore, several authors have argued that teleoperation is still (and likely will continue to be) a promising option for maximizing HRI potential , as modern robots are nowhere near achieving full autonomy . In fact, modern robots are still far from

full autonomy. These authors not only highlight the benefits of teleoperation for navigational and social missions , but also highlight the unique qualities teleoperation has in these areas . In conclusion, they highlight the importance of the human components of teleoperation and the importance of considering them when building teleoperated social robots. The use of remotely controlled robots as a social interface appears to be a positive method as it has the ability to reduce feelings of loneliness and social isolation. In this context, the social impact of teleoperation and remote social presence is still underappreciated in the current literature; However, the use of remote-controlled robots as social communication interfaces seems to be a positive approach. This is despite the fact that using remotely operated robots as social communication interfaces seems like a profitable strategy. This is important as strong social ties are one of the most important factors for psychological well-being and increased life expectancy. On the other hand, the absence of this social basis can have a negative impact on one's well-being and carry an equivalent risk to other established causes of death.

Discussing the ethical principles that should be taken into account in terms of possible negative practical consequences of using remote controlled robots and discussing the possible negative practical consequences of using remote controlled robots have an important difference in our opinion. . Indeed, we believe there is a huge gap in discussing ethical guidelines that need to be addressed in terms of the possible poor practical consequences from the use of remotely controlled robots. While these new perspectives offer exciting new possibilities, we believe there is a big gap in this conversation. However, we believe there is a gap. The use of remote-controlled onboard robots can have a number of negative effects, some of which will be discussed in this article. We will also discuss some ethical principles and possible directions for future work on this topic .

- WHAT ARE THE POSSIBILITIES FOR ERROR WHEN USING ROBOTS WORKING AS A COMPANY INTERFACE? SOME PRACTICAL IDEAS AND SUGGESTIONS

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to have an immersive experience thanks to its integration with embedded technology . As you engage in an immersive experience, you may have the familiar feeling of not understanding how time flies or being disoriented because of participating in the activity .[3] People involved in long-distance relationships can use this type of technology, seeing themselves as a valuable resource. this can help them achieve a higher level of connection and presence in the lives of the people they care about. This can be especially helpful for those who want to stay in touch with family and friends who live far away. Those who want to stay in touch with friends and family in distant places may find this resource very useful. However, this immersion can come at a cost, as remote control and remote control of robotic devices can result in prolonged physical inactivity of the user. This inactivity may limit the user's ability to fully experience the immersive environment. The user's ability to properly enjoy the immersive world may be affected by a lack of exercise. Inactivity of users can prevent you from taking full advantage of the immersive experience, which can limit your ability to fully enjoy it. This is because most remote control systems do their job by requiring the user to interact with a fixed interface such as a computer or tablet. Therefore, everything is as it is and therefore requires much less physical effort to control them. This is why remote control systems are so widely adopted. However, it provides a cost-effective option when used as control interfaces for remote robots, tablets and PCs; However, users of these devices are at risk of increasing the amount of time they spend without exercise. It is true that there may be exceptions to this rule in the vast majority of control systems (e.g. remotely operated robots and virtual reality), but this does not change the fact that this is generally the case. [4.5]

The risks of a sedentary lifestyle are well known and include increased risk of various diseases and decreased quality of life and well-being. Technology addiction, favored by the level of immersion experienced in this case, is a real phenomenon to be considered when designing new social technology platforms. While these adverse effects can only be serious with prolonged use, technology addiction is a real phenomenon to be considered. Moreover, recent developments in control systems for remote

operations seem to demonstrate the feasibility and utility of direct integration with the nervous system. This integration will allow the user to experience the robotic device as an extension of their body, potentially leading to a higher level of immersion. [6]

- *Although they are far from each other, they are closer to each other.*

Some people believe that the rise of technology has contributed to the decline of interpersonal relationships that exist in a person's immediate geographic area [7, 8] . While technology has done a great job of bringing people from different parts of the world together, some people believe that technology has also done a great job of bringing people from different parts of the world together. Indeed, the use of certain technologies appears to stem not only from a desire to alleviate symptoms of loneliness, but also from a desire to perpetuate the condition [9, 10] . The fact that psychologically a person's mind cannot be in two places at the same time is a limitation to be considered with remotely operated embodied robots. This is the limit of knowledge. People who choose this technology risk isolating themselves from those living close to them and engaging in forms of social connection that are less meaningful because of this isolation. The research also shows that presence is a phenomenon that different people experience differently, and that one-on-one human encounters remain the gold standard for judging all other forms of communication and presence. In other words, the research suggests that being is a phenomenon that each person experiences in a unique way. Indeed, several studies examining the effects of using remote working platforms have found that users often view this type of technology as a physical extension of their body (they have associated the sensation with the well-known "illusion of hands").). Consistent with the results of a previous study comparing the effectiveness of communicating via an embedded robot via a disembodied avatar, in the embedded remote platform condition, participants felt as if they were face-to-face with the other person speaking face to face. .to face. However, participants in the disembodied avatar state felt as if they were communicating with a disembodied avatar. From a user perspective, the use of remotely controlled robots may have consequences due to the limitation

of sensory input due to the nature of the remote platform. These results may affect the user's ability to perform the desired task. Specifically, as humans, we have a variety of senses (such as sight or smell) that allow us to experience the outside world. These senses together make up what we call "reality". It is possible that the user's satisfaction with their social and physical condition may be adversely affected due to limitations in the user's sensory experience associated with the use of remotely controlled robotic platforms. While results like those mentioned demonstrate the extraordinary potential of these remotely operated platforms, the extent and implications of this phenomenon in this HRI area are still unknown in the state of the art. And this demonstrates the extraordinary potential of these remote-controlled platforms, despite results like those mentioned. even if the above-mentioned results show the significant potential of these remote-controlled platforms. More work is needed to examine a wide variety of issues, such as those related to emotional involvement and presence .[11,12]

- *FORPersonInsideForrobotClothes*

Unpleasant behaviors such as bullying have been shown to target robots when placed in human contexts. Whether people's responses to remote agents are closely related to how they typically respond to other people or how they respond to robots has not been extensively studied. Specifically, the question is whether humans' reactions to remote-controlled agents are closely related to how they respond to robots. The robot's incarnation and its ability to act openly and honestly may play a role. It is also important to consider whether the robot can interact with its operator in a way that is not only natural, but also consistent with the operator's emotional and psychological state. This is extremely important because it will help encourage the development of remote platforms that can create a sense of social presence in more compelling ways. This is an important step in the right direction. [23,24,25] This can be achieved not only through physical presence, but also through the ability to well connect and comfort people socially and emotionally. This can be done in several ways. In this context, telepresence medicine seems like a great demonstration of how this type of technology can transform human interactions. When it comes to

providing medical care over the Internet, there are a number of concerns that need to be addressed. The World Medical Association's Code of Ethics already takes this into account. They were concerned about physician and patient privacy, handling of sensitive situations, diagnostics, and the potential role this type of technology could play in promoting doctor attrition in underserved areas of the country. This technology has the potential to revolutionize the labor market by removing physical distance limitations caused by the above mentioned challenges which are also related to other fields of action . [26]

- *Security,legalANDSociallyBusiness*

Privacy issues and legal ramifications are relevant issues for most types of technology. These concerns are often proportional to the level of invasiveness associated with each technology platform and are crucial when it comes to remotely controlled platforms. In particular, we must bear in mind that the existence of embodiment as a method of social interaction may (or may not) offer a variety of possibilities not found in other forms of technology. Carelessness or malicious intent by the person controlling one of these robotic platforms could result in serious injury to others or property damage. Adding to the fact that users can influence platforms in other countries from the comfort of their own home, this creates a whole new level of legal challenge. This issue must be addressed as it adds a new layer of complexity to the legal system [27 , 28]. When examining the possible applications of remote working platforms in the field of legal issues, medicine is often cited as an example of one possible application of remote working platforms. Indeed, medicine is one of the most common areas where remote-controlled platforms are used. On the other hand, it is often used to show the difficulties of remote control, the importance of the correct application of international laws and standards, and the legal responsibilities of individuals. Also, while we take a step back and look at the possible practical aspects of deploying this type of technology, we must also consider the need to create user-friendly interfaces and the need to create introductory essays and training programs in some areas. We also need to consider the need for easy-to-use command interfaces to address the possible practical implications of large-scale deployment of this type of technology. In order

to consider the numerous potential logistical problems that may arise from the large-scale application of this type of technology, we must take into account that it is important to develop simple and intuitive control interfaces for end users. Jack. As we take these steps, we will better understand what steps we need to take to prepare for the widespread adoption of such technologies. The increasing use of technology in many professions is not a new phenomenon; however, the content of this article does not resolve this issue. Consider the cost and resistance associated with implementing this type of technology .[29]

HOW TO AVOID NEGATIVE CONSEQUENCES?

No matter how hard we try, it is impossible to completely avoid the negative effects of technical platform abuse. However, their dangers can be reduced to an acceptable level by implementing appropriate ethical and accountability frameworks and policies. For example, as recently demonstrated by the Institute of Electrical and Electronics Engineers (IEEE) efforts to establish a comprehensive code of ethics and conduct for the community of experts working in areas of technological growth. is a research that intersects different areas of innovation and technological development. It is also a hobby that has attracted a lot of attention in recent years and has become the center of attention. [34.35]

This emerging interest in generating ethical standards for new technologies is represented not only by the increase in the number of articles, workshops, and discussion forums addressing these challenges in science, but also by an interest in establishing ethical standards for science. new technologies. Likewise, there is a growing interest in establishing ethical standards for the development of technologies that are also reflected in the media. These ethical guidelines aim to regulate how new technologies should be used. However, it is important to note that the nature of these rules makes them temporary at best, and they must be constantly updated and changed as new technology evolves and new problems arise. While presenting its own hurdles and dangers, the particular case of using tele-operated technology to interface with the social and relational

world still seems to be underrepresented in this broader ethical discourse. [30.31]

- *Standards of Ethical Behavior in Current and Future Research and Efforts*

Seung example Korean Seop, who died of cardiac arrest at the age of 28 after 50 hours of binges without eating or sleeping, is one of many real-life examples. Shows the dangers of technology addiction. However, Lee Seung's situation The most striking of all these examples seems to be Seop. There seems to be a correlation between the level of immersion in a technological stimulus and reports of technologically addictive experiences, prevalent both in the scientific literature and in real life. We believe that remotely controlled robots can provide more immersive experiences and therefore have a higher risk of causing addiction-related issues. This is because they offer a physical platform to engage in social interaction over a remote connection. Therefore, in the above contexts, it is imperative to examine the addictive potential of these platforms and the human and robotic factors that can be exploited to ensure that the risk of abuse is reduced. This may involve, on the one hand, giving the robot some autonomy to act on its own3 independent of the user's instructions, and on the other hand ensuring that the robot can comply with a predefined set of ethical principles. [32,33] On the other hand, this shared control strategy (between robot autonomy and user commands) could lead to a more complex discussion about the responsibility of remote social platforms and the regulatory framework that governs them. reigns. The same reasoning could be used to support other remote-controlled technologies such as drones, which are more commonly called drones. The recent incidents involving drones at airports, in particular, reinforce the need to establish security measures that make it difficult for bad actors to access drones, and to self-integrate drones to avoid certain environments that may pose a risk to the user. and other passers-by (for example, by placing GPS coordinates of airports or other dangerous places in the drone, these areas can be avoided). These events reinforce the need to establish security measures that make it difficult for people to access drones. These facts support the claim that there is an urgent need to develop preventive measures that limit people's access to drones. These facts support the claim that

there is an urgent need to develop preventive measures that limit people's access to drones. It's also important to make it harder for malicious people to access drones. While some solutions have been proposed to the problem of technology addiction, the main concern that needs to be addressed is prevention. This is although some solutions have been suggested. Findings on how to avoid technology addiction should be considered in this particular scenario, both when developing new remote-controlled robots and guiding future work. [36] While it is unclear whether these results directly relate to remote-controlled robots, these results are important to consider. The ability of the robot to adequately express its actions and processes to human users is called transparency. Transparency refers to the skill of the robot. [37.38]

This is an important theme woven into almost every sub-area of HRI. The remotely operated technology situation brings with it more complexity as it requires open communication about both the remotely operated nature of the technology and the actions and intentions of the human controller. This adds a layer of complexity to the matter. Undoubtedly, more research is needed on how this level of openness can be achieved and maximized. While HRI research has repeatedly shown that humans view robots as social actors and that robots can inspire mental models, it's clear that humans don't interact with humans and robots in the same way. [39]

While cases of harassment against robots have been reported several times and are still being investigated, the transferability of this behavior to the field of remotely-controlled embedded machines is still very low. And this is despite the fact that a lot of research has already been done on this topic. And this is despite the fact that the investigation into the subject in question has been going on for some time. Although little is currently known about the transferability of this behavior to the field of remote-controlled integrated machines, this is still the case. However, until future research sheds some light on this question, we can safely assume that the distinction between an autonomously moving robot and a human-controlled robot may evoke different responses from humans and is therefore an important element. one aspect of this debate. Because humans

may react differently to an autonomously moving robot than a robot controlled by a human. Because humans may react differently to an autonomously moving robot than a robot controlled by a human. In fact, humans may react differently to an autonomously moving robot than to being controlled by a human. Until further research sheds light on this question, we can safely assume that people's responses to an autonomously moving robot may be different. As a matter of fact, it has been shown that people's reactions to an autonomously moving robot are different. We hope to learn more in the future .[40]

Responsibility – The issue of liability is notoriously difficult to resolve when considering the use of certain types of technology. The concept has often been associated with the degree of autonomy that robots exhibit when acting in social contexts. In this context, it is seen that the concepts of responsibility and accountability are closely related to each other. On the one hand it is a very important legal concern in cases of harassment or bad play, on the other hand it is supported (and enabled) by the open communication of the remotely operated character of a robotic agent. On the one hand, it is a very important legal concern in cases of harassment or foul play, and on the other hand, it allows open communication of the teleoperation feature .[41,42]

It is possible that this discussion applies to all robotic agents in general; However, the application of the logic shows that remotely operated robots are significantly unique from other types of robots in the level of intermediation they possess [43,44]. This is despite the fact that this discourse can generally be applied to all robotic agents. In remote-controlled robots, the robot itself acts only as an interface. While there are some ethical principles that state that the responsibility for a robot's failure lies with the programmers and others involved in making the robot, this is not the case. Responsibility rests with the creators of the robot. This is an autonomy (or semi-autonomous) design problem and is about how operator commands can be reconciled with autonomous robot behavior to create a two-agent system (split where agents communicate between users). and robot). This is a problem with the concept of autonomy (or semi-autonomy). As a direct consequence, there is a flaw in the concept of autonomy (or semi-autonomy). In particular, the problem is that it is not clear how to reconcile operator commands with robot autonomous actions. Accordingly, while the user is responsible for any deliberately controlled activity performed by the bot under the guise of abuse, the developer is responsible for any technological errors that may occur. This distinction is greatly simplified for the purposes of this discussion; however, it is consistent with the currently accepted concept of responsibility in autonomous robot majors. However, it is imperative to engage in a deeper discussion of accountability not only within the community of scholars working on the HRC, but also within society as a whole. This is the case in every environment. [45] It is also important to accelerate efforts to establish security mechanisms to protect you (and others) from malicious attacks; this will ultimately reduce the risk of technology being misused.

Privacy, legal and social concerns – every aspect of life, including technology, is fraught with the dangers of encroaching on personal space. This concern is a direct result of the increasing presence of technological devices in almost every aspect of daily life and is particularly relevant given their widespread use in the context of teleworking social robots. While the development of mechanisms to protect complete privacy is often beyond the full control of researchers, it is important to examine how perceptions of privacy (or lack of privacy) affect people's use and experience of television . This will allow researchers to develop mechanisms that can maintain complete confidentiality. It is also important to design methods that are both user-friendly and publicly available to communicate to the user exactly how well their privacy is protected and for what purposes their information can be used and shared between different public entities. and private.[46]

It is also extremely important to raise awareness of the roles and social spaces that can (should) be occupied by these actors and to encourage discussion on these issues. As noted at the beginning of this article, involving the public in defining what remote control technology is, what it is used for, and why it is useful can be an important aspect of promoting its adoption. This is probably more important for older, less tech-savvy demographics and people who are

less positive about technology and robots. But it certainly makes sense for everyone .[47]

We need to do more to develop technologies that are accessible to everyone so that they can meet their needs. If remote-controlled social robots are to become a popular method of communication one day, we need to make sure they are easy to use and intuitive enough for everyone from children to adults. people, you will be able to understand how to manage them. Learning to use will be easy. Moreover, its design and development must comply with a predetermined set of ethical standards that have been discussed and agreed upon in the past for working with specific groups (eg for the elderly population) [48]. From this social conversation should emerge a set of guiding principles and rules for controlling the adoption of remotely operated robots. These principles and standards should not only address the ethical and practical issues of researchers, but should also take into account the views of the public. [49 , 50]

CONCLUSION

Technology continues to offer new and innovative ways to strengthen social relationships and break down barriers to physical distancing. While there are many benefits, those responsible for research and development are responsible for thoroughly examining all potential risks before starting work. In this context, we believe that introducing ethical criteria in the research, use and development of new technologies can go a long way in minimizing negative effects, and we are working towards this goal. In this context, we believe that introducing ethical criteria for the research, use and development of new technologies can contribute significantly to the prevention of possible side effects. In this sense, we believe that incorporating ethical criteria into the research, use and development of new technologies can go a long way in eliminating the possibility of unintended consequences. Therefore, we believe it is extremely important to request further studies on the social, interpersonal and relational implications of using remote robot systems as interfaces for social interactions. We believe it is particularly important to discuss this topic, as it will give scientists the opportunity to better understand how this class of

technology affects human interactions, thereby providing a useful source of information to guide the creation of better social robots and technology platforms. That's why we think it's important to discuss this particular issue. Therefore, we believe it is necessary to talk about this particular issue. While the technological automation of ethics and modeling of human judgments about right and wrong have worked well in the past, it is important to consider the specifics of each type of HRI. Because the technical automation of ethics and the modeling of human judgments about right and wrong has been successful. In fact, there are many different types of HRIs. In fact, each type of HRI has its strengths and weaknesses.

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