The Ethical Implications of Employing Socially Assitive Robots in the Aged-care Sector in Japan

Teodora Octavia Stirbat
Leiden University
teo.stirbat@gmail.com

ABSTRACT

Ground-breaking innovations in technology depict a promising future for humanity. In particular, the robotic industry is expected to solve many of our modern challenges especially with regard to the health sector. As expected, when introducing human-robot interactions in our daily lives, we need to renegotiate our human values in terms of autonomy, control and privacy. This paper aims to explore the ethical dilemmas occurring when employing socially assistive robots in the aged-care sector. It will also make recommendations for future ethical use of social robots. The cultural background is set in Japan, a leader in robotic development.

Connection with SDG 9

The Sustainable Development Goals number 9 refers to building resilient infrastructure, promote sustainable industrialization and foster innovation. These actions are highly dependent on technological innovations. In order to create long-term sustainable structures, we need to welcome advancements in our life but in the same time treat them carefully. This paper tackles one of the recent technological advancements in the field of robotics. Socially Assitive Robots have been designed to help children, people with disabilities and elders in a social, non-intrusive and positive way. In spite of this, ethical dilemmas which clash with the design of the robots are not often taken into account. That is why, the research is meant to fill in the gap and prove that an ethical sustainable goal can be met by responsible advancements in technology.

Keywords
Robots, Aged-care, Japan, Ethics, Privacy, Autonomy.

INTRODUCTION

Humanity is standing at a crossroads where taking the next step means deciding on how our future will be constructed. Never before has society experienced such a fast pace in terms of aging population, considering that people over 65 years old will count for almost half of the population of Japan by 2050 and other countries will surely be following the same path. Paired with an alarming shortage in labor force, the stratification of society will be suffering significant changes demanding critical economic and political reforms. Simultaneously, scientific advancements continue to leave people in awe by depicting a wide array of future opportunities meant to enhance human lives. From preventing diseases to considerably prolonging human lives, medical innovations are promising a safe and flourishing outlook demanding in exchange a revision of our time-honored moral values. As an attempt to restore the balance between the ambitious but often reckless design of modern devices and the inflexible yet fundamental code of ethics humans hold onto, this thesis will explore the dynamics between elemental moral values and innovations in the field of robotics. Since the relevance of a rapidly ageing population was formerly mentioned, the focus of this paper will be placed on the elders, their needs and best practices meant to increase their wellbeing. Correspondingly, in terms of scientific advancements, robotic mechanisms meant to fulfill the requirements of older people will be analyzed with a special outlook on socially assistive robots. In order to clearly depict the practical implications of technologies, the thesis will target the aged-care sector in Japan a field which is hardly coping with present challenges. Therefore, the pressing question this thesis aims to answer is: "How can Socially Assistive Robots be ethically employed in the aged-care sectors in Japan?".

In the pursuit of an answer, this paper will employ ethical assessment of moral dilemmas in regard to the introduction of socially assistive robots (SARs) while also including specific references to the Japanese ethical structure. In addition, a real life case study will illustrate the capabilities and ethical implications of Kabochan, an adorable Japanese SAR already employed in the aged care sector in Japan. In this field it is important to mention that the variety of circumstances older adults experience cannot be fully encompassed in the thesis and, as a result, special attention will be offered to vulnerable elders experiencing age-related afflictions and mostly being admitted to nursing homes In addition, the last part of the paper will include future recommendations for ensuring a ethical and safe employment of increasingly smart and autonomous robots. The ultimate aim is to contribute to discovering ways of guaranteeing a peaceful, secure and pleasant experience for older adults through means of robot utilization without compromising fundamental human values.

METHODOLOGY

In order to adequately determine the ethical implications of employing SARs in the aged-care sector in Japan, a theoretical framework should be set in motion. Considering that the aim of the thesis is to interpret the ethical challenges put forward by rapid advancements in technology and to use the results for present and future recommendations, a qualitative research approach is the most suitable way of investigation. Taking into account that the analysis relies on ethical assessment, the thesis`s foundation depends on normative ethics theories which are meant to illustrate the desirable moral values we conform to in our society. In spite of this, theory alone will not be sufficient in developing an effective argument therefore; the theoretical framework will employ the field of applied ethics. The study of applied ethics is concerned with engaging normative ethical principles with recurrent and

problematic cases in order to solve them. In the interest of pinpointing the field of research, this thesis will consider specific branches of applied ethics respectively bioethics and roboethics. A combination of both fields alongside a special insight into Japanese ethical values and principles will assist the evaluation of ethical dilemmas when dealing with SARs. Firstly, bioethics is concerned with solving ethical problems put forward by progressive technologies introduced in the medical sector. A popular approach in bioethics, developed by Beauchamp and Childress, is „principlism", a system which employs four moral principles: autonomy, non-maleficience, beneficience and justice. Doctors, medics and nurses are encouraged to guide themselves with the aid of these concepts to solve a particular case. Secondly, roboethics is a recently formed subsection of techno-ethics and is concentrated on developing tools meant to ensure that the design and use of robots will benefit human society and will not be used for harmful purposes. The suitable branch of roboethics which will be used for ethical assessment in the aged-care sector is sociorobot ethics which particularly refers to SARs. This category is meant to respect the bioethical principles formerly mentioned but, in the same time, draws attention towards particular socio-psychological dilemmas resulted from human interaction with SARs. Some challenges are represented by the socio robot's authority, responsibility and safety. Thirdly, the particularities of Japanese values must be taken into account as they interact differently with new technological challenges and particularly the introduction of sociorobots.. This paper will consider the „multiplicity" of the moral world and prove that different cultural perspectives can highly influence moral judgment and policies. Japan occupies a crucial position in the field of sociorobots, being one of the most affected countries in terms of a rapidly ageing population but also is also a leader concerning the development of SARs. Therefore, the degree of Japanese compliance with the moral principles but also particular distinctive ethical practices in Japan can offer new insights in employing and using SARs in the aged-care sector. For the sake of meeting the space limit, this paper will only employ the principles of autonomy and privacy while exploring authentic Japanese values.

ETHICAL DILEMMAS ASSESSMENT

Guided by bioethics and roboethics with special attention given to Japanese perspectives on ethics, the following ethical dilemmas have been selected as a result of a thorough literature review. In terms of autonomy, robot authority and hierarchical power systems will be taken into account. When analyzing privacy, the main subjects will refer to surveillance, data privacy and information disclosure.

Autonomy

In bioethics, autonomy is one of the four fundamental pillars guiding moral judgments in medical cases. Firstly, it implies that the patients must be allowed and encouraged to freely make their own decisions regarding the care they receive. Secondly, it includes the right of being fully informed about their medical state and of all available remedies. Accordingly, medical staff is required to administer treatment while maintaining the highest degree of the patient's autonomy.

Difficulties emerge when the patient's capability to exercise their right to self-determination is being obstructed by the effects of their illness. This is common in the case of older adults, when age related afflictions such as dementia, cataract or depression can weaken their ability of taking decisions in their best interest. In these situations, the balance between respecting autonomy and preventing dangerous or unpleasant circumstances is difficult to maintain. In some unfortunate cases, doctors and nurses adopt a toxic paternalistic view based on their superior abilities and exploit the vulnerabilities of the elderly. Coming to rescue or at least to mitigate difficulties, SARs are being introduced in the aged-care sector, in nursing homes as well as in private accommodations. By using, verbal interaction, entertainment methods, forms of encouragement and even monitoring systems, SARs are given autonomy and even authority to fulfill caregiving tasks, ease the work of the staff and in the same time, enhance the living conditions of elder patients. In spite of this, roboethics reveal more problematic situations, for instance, in cases where SARs are required to use their authority to persuade older adults to keep practicing physical exercises meant to restore their health. Even if the patient expresses their unwillingness to comply, SARs are designed to overlook these discomforts and pursue encouragement for the future end goal of recovery. In such cases, the robot requires to be treated in the same way as a human caregiver and not as a servant, limiting the patient's control over the robot as well as desires which may be harmful to them (such as smoking or pursuing unhealthy eating habits). Sorell and Draper illustrate these predicaments as tensions between the carebot's role as an enabler and the patient's autonomy. They also ponder which one should prevail according to each individual case and to what extent should a robot exercise its authority.

In order to fully grasp the concept of autonomy regarding SARs in Japan's aged-care sector, an insight into ethical Japanese particularities on the „self" should be utilized. To being with, in Japanese cultural literature, there is a notable discourse of how individuality is constructed by also keeping in mind the society in which is embedded. Although there are many attempts of explaining the predilection for a weak or even lack of individualism in Japanese society, the most justifiable explanation might have deep roots in Buddhist reflections. The doctrine illustrates the self as continuously changing and evolving entity which is embedded in one's „social and physical environment". Desires are balanced with empathy towards other people, fact which places the self „within a moral hierarchy". Moreover, it is believed that our identity is surviving within groups, weather it implies family, friends or work colleagues, thus our „self" controls its intentions in relation to these groups and takes decision as a result of the interaction with them. For the elder community in Japan, these conceptions are highly relevant and they partly account for the terrifying phenomenon of kodokushi. Translated to lonely death, kodokushi refers to older Japanese adults dying in their private homes, unaccompanied by any family members or caregivers.

For these reasons, in terms of autonomy, employing SARs in the aged-care sector in Japan can prove to deliver great ethical value. Considering the great respect for hierarchical power relations, the Japanese elderly might be more willing to yield their unhealthy habits when persuaded by a SAR and hope for a more speedy recovery. In the same time, by employing a robot for an elder person who lives alone in a private accommodation, it can highly decrease their feeling of loneliness; it can enable them to safely perform daily activities and inform family or medical staff in case of accidents. Moreover, it might be perceived as the best way of maximizing older adult's autonomy, since sociorobots accommodate the „shame" of exposing their illness or demanding help from human caregivers or family.

Privacy

Privacy and confidentiality are key elements in bioethics and healthcare. These concepts are mentioned in the Hippocratic oath illustrating the critical importance of a confidential and trustful relationship between doctors and their patients. Privacy refers to a person`s right to limit access to private information about themselves. In medical settings, the information refers to sensitive data such as the history of medical records which should be protected and not disclosed to other parties. One the other hand, privacy in the aged care sector implies not only data privacy but also personal privacy since the medical condition of older adults often requires frequent or even permanent monitoring.

The advantages of monitoring older adults in an institutionalized setting such as a nursing home or at their private accommodations are quite convincing. In exchange for their privacy, caregiver surveillance can ensure immediate response in case of accidents and increased overall security. Recent developments in remote monitoring devices are also advertised as ingenious methods of restoring elderly's independence by inconspicuously observing them from a corner of the room and sending emergency signals to family or doctors in case of an accident. In spite of this, issues concerning the ethicality of monitoring and the extent to which it is necessary to implement such measures are still being debated. In the case of electronic devices meant to watch over the elderly one pressing issue is who is allowed access to the video and audio data collected. While advancements of valuable advantages technological devices can provide, the risks of data theft collection is also super high. In addition, aside of the discomfort being produced by the big brother watching effect, older people also might be anxious about who has access to the footage. Doctor and family have proven to be accepted by the elderly but with time as the elderly learn more about how the system function, anxieties towards bad- intentions people arise. As any other device, monitoring technologies are imperfect and some of the risks implied by using them one`s home refer to them potentially malfunctioning.

The same risks are being translated to SARs which often possess the capacity of monitoring the elderly through video, audio or even with the help of artificial intelligent systems. As explained by Mataric, one of the most important ability of a SAR is monitoring and it can include simple, remote surveillance as well as more complex forms of observations such as detecting and assessing the well execution of rehabilitating exercises and responding with verbal encouragements. In spite of this, the SARs itself might encounter difficulties in distinguishing private from public information and which pieces should be shared. Therefore, communicating sensitive information to other parties might prove lack a discreet and compassionate approach. All of these limitations might be enhanced by the weak capabilities of older people to understand the process of data collection and disclosure.

While interpreting these ethical implications thought the aged-care sector in Japan, the concept of privacy should also be viewed from a cultural sensitive perspective. One of the circulating narratives reveals that Japanese people do not concern themselves as much with privacy, disregarding its importance. The argument supporting this theory explains how the Japanese word for privacy (puraibashii) is merely imported from English therefore lacking authentic perspectives towards the subject and representing just a superficial response to external trends. Murata, Orito and Adams admit that the loan word rather illustrates a reaction to popularized western concerns but at the same time, they bring forward numerous other Japanese values which directly refer and explain the term of privacy in Japan. Their theoretical framework illustrates a clear distinction between honne speech which is characterized as a truthful and honest discourse used in private settings (with family or friends) which exposes the real person. On the other side, there is the tatemae speech which refers to small, formal talk with acquaintances or others unknown people and is seen as a mask or as superficial behavior. The dichotomy is strongly visible in society and is even marked by different linguistic expressions and degrees of formal speech. Depending on the group one individual is part of, he or she will be more likely to share or receive sensitive information. In the context of the aged-care sector, it is important to mention that doctors and nurses form a privileged group towards which individuals consider it safe to disclose information about themselves. Accordingly, since age-related afflictions are often viewed as burdensome and shameful, older patients are highly secretive about their condition and illnesses such as dementia and depression are sometimes considered taboo. Under the circumstances presented above, it is clear that some conditions should be formed in order to ensure that SARs will not negatively interfere with privacy of the elder citizens of Japan. To establish an ethical operation and use of SARs, the previously mentioned distinctions between several layers of intimacy of Japanese people should be included during the design and programming of the sociorobot. Verbal capabilities of the SAR should also adhere to the linguistic particularities of Japanese speech, including distinctions in honne and tatemae forms of interaction. Both these measure will not only offer the patients a more secure and pleasant experience but will also prevent confusion and cultural misunderstandings concerning to whom and how should information be disclosed. In addition, while privacy regulations in Japan concerning data collection or surveillance are lacking a structured and legal framework, widely agreed upon social and ethical norms should be viewed as substitutes in the meantime. This does not mean overlooking the necessity of regulations regarding privacy in SARs.

Study-case Kabo-chan

Unazuki Kabochan is Japanese SAR illustrated as a lovable robotic doll, resembling a 3 year-old child. As portrayed below, due to its small dimensions (28 centimeters), its brightly colored uniform and soft, fluffy material, Kabochan might be perceived at first glance as a simple, inoffensive puppet. Its appearance sends a more familiar message to its users evoking a simple childhood toy rather than a sophisticated social robot. Its main purpose is to provide emotional support and companionship to older adults in Japan. It fulfills this task by singing, talking, answering to questions and encouraging elders thought their daily routine. In addition, the SAR is programmed to respond to changes of light, sound and motion and has recently been equipped with a monitoring device. When employed in both private accommodations of older adults and in nursing homes Kabochan proved to be immediately adored by most seniors which often regarded the doll as a potential grandchild. Some testimonies expressed by the seniors include attitudes such as: „I started to feel affection for him and cannot leave him alone" or „I feel more positive and talk more often".

One of the previously stated concerns regarding SARs is whether they allow or restrict older patient`s autonomy. Kabochan relies of its child-like vulnerability to motivate older people to become responsible and active for him. Its sensitive appearance might be more relatable to some elders which are not comfortable interacting with superior entities. In this way, Kabochan adopts a non-paternalistic approach, enabling older people to display their independence by being responsible for him. At the same time, he is supporting its users in making

decisions about their daily routine or by stimulating conversations; methods which also promote autonomy for seniors in the long run and contribute to delay in dementia symptoms. On the other hand, since the SAR embodies a child, the extent of its authority is limited and some older patients can, as a result, disregard its indications and requests. Even if by freely deciding how and when to use the robotic doll older patient affirm their autonomy, these attitudes might also limit the scope of the SAR bringing it closer to being just a talking toy. In the Japanese aged-care sector, Kabochan might be a perfect enabler for the elderly considering that it provides decent companionship without the possibility of users feeling ashamed of sharing their lives with it. In addition, by employing the importance of hierarchical structures and family relations in Japan, the embodiment of a child may be a more ethical way of utilizing SARs taking into account that children might stimulate more intensively parental sentiments, mobilizing the older adults to be more self-dependent, not only for their benefit but also for Kabochan. For example, one of Kabochan`s previous users started exercising their mobility more and more by cleaning the house and Kabochan every day. The desire of maintaining a positive environment for the SAR resulted in increased responsibility and independence.

In terms of privacy, the latest version of Kabochan has been equipped with a monitoring system named „PeChat" also illustrated in the picture below. Also available on Amazon, the simple transmitter in form of a button attached to Kabochan`s uniform, allows a third party to listen and vocally transmit information to the patient. The system can be easily used with an app by family members or medical staff but also allows the older person to send a vocal message in case of emergency which will be recorded. In this case, the simple robot does not have access to sensitive medical information about the patient yet it can still record and store vocal data when verbally interacting with the user. Since Kabochan is intended to represent a grandchild for the older adult, in Japanese culture it would be part of the most intimate group, being addressed with honne speech and benefiting from trust and compassion. Considering this, the methods through which the SAR records information might be viewed as highly unethical if the older person is not aware of it. Ethical implications also have to be considered when the older person lost the capacity to understand how the transmitter works and that their conversations is being recorded. For example, when employed in a research project regarding the Transactive Relationship Theory of Nursing, Kabochan was programmed to friendly ask the patient for their birthday. Upon this question, the older adult became fearful and suspicious, even asking if he is being checked by someone. This case reveals not only increased anxieties related to old age but also the possibility of a SAR perpetuating these concerns rather than solving them.

CONCLUSIONS AND RECOMMENDATIONS

To conclude, we are going through exciting times and our world view is being continuously altered by impressive advancements in science. On one side, these can be the answer to humanities` most pressing problems but on the other hand they require in exchange a negotiation and even sacrifice of deeply rooted values we possess. To what extent we need to adjust our code of ethics in order to accommodate new intelligent robots meant to assist us. There is no clear answer yet but this paper attempted to bridge the gap between humans and robots by bringing together bioethics, robot ethics and recent dilemmas experienced in the aged-care sector. The examination was focused on Japan, which is a relevant country due to its unique social stratification but also leading position in robotic developments.

One important lesson regarding how to ethically employ SARs in the aged-care sector in Japan is an open and clear communication of the sociorobot`s capabilities taking into account the agedrelated limitations of understanding of older adults. In addition, personal privacy and information disclosure should be treated with great attentions considering the increasing risk of infringement upon sensitive data. Nevertheless, great advancements in technologies should not overshadow the importance of their accessibility to the modest public. By completing this analysis, the scope of contributing to present and future ethical concerns regarding SARs has been achieved.

ROLE OF THE STUDENT

Teodora Stirbat is an undergraduate student who worked under the supervision of Thomas Mes, at Leiden University, in the context of the International Studies Bachelor. The topic, methodology and research analysis were proposed and carried out by the student with the supervisor`s full approval.

REFERENCES

1. Adams, Andrew A., Kiyoshi Murata, and Yohko Orito. "The Japanese Sense of Information Privacy." Ai & Society 24, no. 4 (2009): 327-41.

2. Andreae, Helen E., Peter M. Andreae, Jason Low, and Deidre Brown. "A Study of Auti." Proceedings of the 2014 Conference on Interaction Design and Children - IDC 14, 2014.

3. Ben W. Mortenson, Andrew Sixsmith, and Ryan Woolrych, "The Power(s) of Observation: Theoretical Perspectives on Surveillance Technologies and Older People," Ageing and Society 35, no. 3 (2015): 525-527.

4. Brent Mittelstadt et al., Ethical Issues of Personal Health Monitoring: A Literature Review, proceedings of ETHICOMP 2011, United Kingdom, Sheffield (2011), 3.

5. Callahan, Dan, Singer, Peter, and Chadwick, Ruth. Encyclopedia of Applied Ethics. 2nd ed. Elsevier Science, 2012.

6. Dhira Talukdar, A Study on Applied Ethics with Special Reference to Bioethics, PhD diss., Gauhati University, 2007 (ProQuest Dissertations Publishing, 2007),1-2.

7. Feil-Seifer, David, and Maja M. Mataric. "Ethical Principles For Socially Assistive Robotics." IEEE Robotics & Automation Magazin 18, no. 1 (March 2011): 24-31.

8. Katsutoshi, Saito. "Solving the "super-ageing" Challenge." OECD. 2014. Accessed June 1, 2019. https://www.oecd.org/forum/oecdyearbook/solving-the-super-ageingchallenge.htm.

9. Klemmer, R.S., Thomsen, M., Phelps-Goodman, E., Lee, R. and Landay, J.A. Where do web sites come from? Capturing and interacting with design history. In Proc. CHI 2002, ACM Press (2002), 1-8.

10. Kyodo. "Osaka Startup Releases Updated Robot Doll to Keep Seniors Company." The Japan Times. June 28, 2016.

11. "Japan: Child Robot Dolls Help Dementia Sufferers." BBC News. July 14, 2014. Accessed June 01, 2019.

12. Mcdonald, Mark. "In Japan, Lonely Deaths in Society's Margins." The New York Times. March 25, 2012.