The Impact of Emotional Interaction via Generative Artificial Intelligence by Couple Robots on Human Culture and Its Ethical Considerations

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Abstract: Emotional robots, as a new research hotspot in the field of intelligent robotics research, can interact with human beings in the field of life services, social management, etc., and begin to become confidants, companions, and even family members. From the perspective of emotional interaction, this paper explains that couple robots bring the Valley of Horror effect to human culture, and also relieve social phobia and loneliness, and assist the development of human civilization, but conflict with the traditional concept of marriage and monogamy. The main issues regarding the use and ethics of couple robots are the algorithmic vortex of intimacy, the privacy leakage of emotional relationship data, the paradox of virtual and real emotional relationships, and the aversion to real intimacy. It is proposed that theoretical propositions such as positive psychology and positive technology should be fully utilized to prevent and avoid the ethical risks that may arise from couple robots by making them artificial moral actors, delineating the bottom line of research and development and application, promoting the development and advancement of ethical norms, and establishing an all-encompassing risk prevention system.
Keywords: Couple Robot, Human-Machine Emotion, Ethical Issues, Intimate Relationship, Ethical Risk.

1. INTRODUCTION

Since the birth of AI, its instrumental properties have been widely accepted and applied to various fields (Xu et al., 2021; Zhang & Lu, 2021). John McCarthy, an American computer scientist, pointed out as early as the 1950s that the essence of AI is a machine that acts like a human being, and its key lies in problem solving rather than in understanding the mechanism of the human mind inherent in human beings (Coghill, 2023; Ding et al., 2022). However, it is undeniable that since the inception of the field of artificial intelligence, computer scientists have not only devoted themselves to the technical development of data computing and modeling algorithms to maximize the instrumental attributes of artificial intelligence, but also spared no effort to integrate certain human characteristics into the design of the machine in order to achieve the goal of "anthropomorphism"

of artificial intelligence. This goal is not easy to achieve, the early development focuses on physical appearance and behavioral performance level to mimic the human image, skills, language, memory, etc., to create a visual or behavioral may be equivalent to human machines (Confalonieri et al., 2021). Later, influenced by the concepts of neurology and cognitive science, emotion is regarded as an important factor in the formation of human intelligence, and computer scientists take emotion as replicable and simulated data, trying to promote AI to a higher quality "anthropomorphic" process from the level of psychological perception (Ali et al., 2023; Dwivedi et al., 2021).

After decades of development, the field of artificial intelligence has experienced unprecedented changes, and now a variety of types of robotic products continue to emerge and widely used in medicine, marketing and other professional fields. At the same time, the "emotional" attributes of intelligent objects are also becoming more and more prominent, just as voice intelligent assistant not only to understand what people say, but also to analyze the user's emotional state, and give feedback like a "human". Literature (Spezialetti et al., 2020) focuses on emotion recognition in human-computer interaction, reviewing the research progress on emotion recognition in various modalities such as facial expression, body posture, speech, brain activity and physiological response. Different emotion models, such as classification model and dimensional model, are introduced, and the application and effect of each modality in real human-computer interaction are analyzed, pointing out that the current emotion recognition is feasible but faces challenges such as data reliability and time constraints, and that multimodal systems and suitable data training and testing methods are the key to future development.

Literature (Stock-Homburg, 2022) conducted a systematic review of emotion research in human-robot interaction between 2000 and 2020, focusing on four aspects: robot emotion expression generation, human recognition of robot emotion, human response to robot emotion, and contingent factors affecting emotion. It is found that robots can be programmed to express emotions and humans have a certain recognition rate, but the existing studies have deficiencies in the theoretical foundation, indirect effect research, standardization of experimental design, etc., and need to be explored in depth in the future to understand the mechanism of the human response, study of contingent effects and other aspects.

Literature (Chuah & Yu, 2021) explores the impact of couple robots on the emotional state of potential consumers, taking Sophia robot as an

example, analyzing the relationship between the robot's emotional expression and consumer's emotional response through Instagram data extraction, cleaning, and the use of facial recognition APIs and sentiment analysis technology and machine learning algorithms. The study found that Sophia is dominated by neutral and happy emotions, and surprise is the factor that has the greatest impact on the user's emotional response, and the study also points out the limitations of the current study and the future research and service enterprises.

Literature (Appel et al., 2021) compared three scenarios of robot storytelling in which emotional expression was consistent, inconsistent and no emotional expression with the story content. Emotional consistency was found to enhance participants' story immersion, improve their evaluation of the robot, and prefer the product advertised in the story in their product selection behavior. Emotional expression was also found to affect participants' perception of the robot's tone of voice, providing an important basis for the robot's application in narrative and interactive scenarios.

Literature (Abdollahi et al., 2022) centers around Ryan, a social assistance robot designed for older adults with an emotionally intelligent version and a non-emotionally intelligent version. A study of 10 elderly people in an elderly care facility showed that interaction with Ryan improved the overall mood of the elderly, and the emotionally intelligent version of Ryan was more advantageous in terms of the amount of user discourse and subjective evaluations, implying that emotional intelligence can enhance the attractiveness and effectiveness of robots in elderly companionship scenarios, but the study has limitations such as a small sample size.

Literature (Viik, 2020) explores whether humans may establish a romantic relationship with robots, and adopts a phenomenological approach to analyze the otherness of the partner in the love experience, pointing out that romantic emotions require the partner to have emotional subjectivity, and robots currently lack this characteristic. The study begins with a characterization of the human love experience and compares the physical, emotional, and sociocultural characteristics of synthetic androids, which, despite their attractiveness, have problems with technological embodiment, emotional subjectivity, social support, and commercial-political agendas that make it difficult for humans to fall in love with them, although changing socio-cultural conditions may change this. With the development of sex dolls and the robotics industry, its raises concerns.

Literature (Belk, 2022) centers on human and sex doll or robot emotion

construction, the impact of technology on robot emotional performance, the impact on relationships and society, and ethical issues. The multifaceted aspects of robotic emotion construction are analyzed, natural and human-robot emotion differences are compared, and ethical controversies such as the impact on human relationships and whether it encourages undesirable behaviors are explored. Management strategies and research directions are also proposed, arguing that the industry, while problematic, may be gaining acceptance and is a key area for testing consumer acceptance of humanoid robots with human-machine emotions.

The above study examines a large amount of literature related to AI emotions by searching for keywords such as robot ethics, robot "emotions", social robots, and AI ethics. The ethical study of robot "emotion" involves a number of disciplines, such as Marxist philosophy, ethics, psychology, artificial intelligence, cognitive science, etc. By integrating the theoretical and applied results of various disciplines, the ethical dilemmas posed by couple robots are analyzed at a deeper level. This paper reveals the connotation, characteristics and essence of robot "emotion" in comparison with human emotion, and from its essence, explores the ethical problems caused by it in its existing fields of application.

From an anthropological point of view, the study focuses on real people, thinking about robots and the ethical problems in the use of emotions, as well as exploring the paths to deal with the problems. As well as the exploration of paths to respond to the problems, the revelation of the problems is both realistic and forward-looking. The proposed research helps to promote the innovation of communication theory and localization exploration in the field of human-robot interaction, highlights the uniqueness and research value of emotional elements in human-robot interaction, and promotes human-robot ethical value reflection and conceptual guidance.

2. THE REALIZATION OF EMOTIONAL INTERACTION OF COUPLE ROBOTS

2.1 Presentation of Human-Computer Emotions

In the field of human emotions, the question is not whether intelligent machines can have any emotions, but how can machines realize intelligence without emotions (Pietikäinen & Silven, 2022). Human-machine emotion refers to the research field that takes anthropology, psychology, brain

science, cognitive science, information science, artificial intelligence and other disciplines as the theoretical basis, and uses information science means to simulate, recognize and understand human emotional processes, so that the machine can have some of the human emotions and have harmonious and natural human-machine interaction with humans. Human-machine emotion includes three aspects, emotion recognition, emotion understanding and emotion expression. Emotion recognition refers to the theories, methods and techniques on how to recognize emotions from human or animal expressions, speech, movements, behavior patterns or images. Emotion understanding is the theory, method and technology to further understand the deeper meaning of emotion on the basis of emotion processing, emotion recognition and emotion metrics. Emotion expression is the theory, method and technology of studying how computers, robots, etc. express emotions.

Therefore, robots with human-computer emotions can be called couple robots, and couple robots as an important research and application object of human-computer emotions, as well as an experimental and demonstration platform for research and development of human-computer emotions (Dehnert, 2022; Xiao et al., 2020). The human-machine emotion generation logic is shown in Figure 1, and its generation process consists of multi-dimensional actions on the machine side and the human side. On the machine side it is manifested as the AI imitates the human's external representations, personality and actions to create identity rationality, which paves the way for emotion generation. Then it learns human emotion expression and outputs basic emotion and emotion directed to the interaction object. And optimize the emotion recognition mechanism with the help of empathy, interaction skills and professional competence in order to evoke human emotion experience during interpersonal interactions (Huang & Lee, 2022). Humans interact with the AI in its constructed contexts, constantly receiving machine emotions and expressing their own emotions, in order to cultivate an emotional relationship with the AI and be willing to make emotional investments. In this case, users do have some emotional connection to the AI, but not because they believe that the AI possesses emotions, but because human-machine emotions satisfy the human imagination of idealized interpersonal emotions to a certain extent (Zhao et al., 2022). As the number of rounds of human-machine dialog increases, the machine-side mechanism of emotional action is continuously recycled as a way to strengthen human emotional cognition, and this feedback flows back to the machine-side,

generating a new round of recycling.

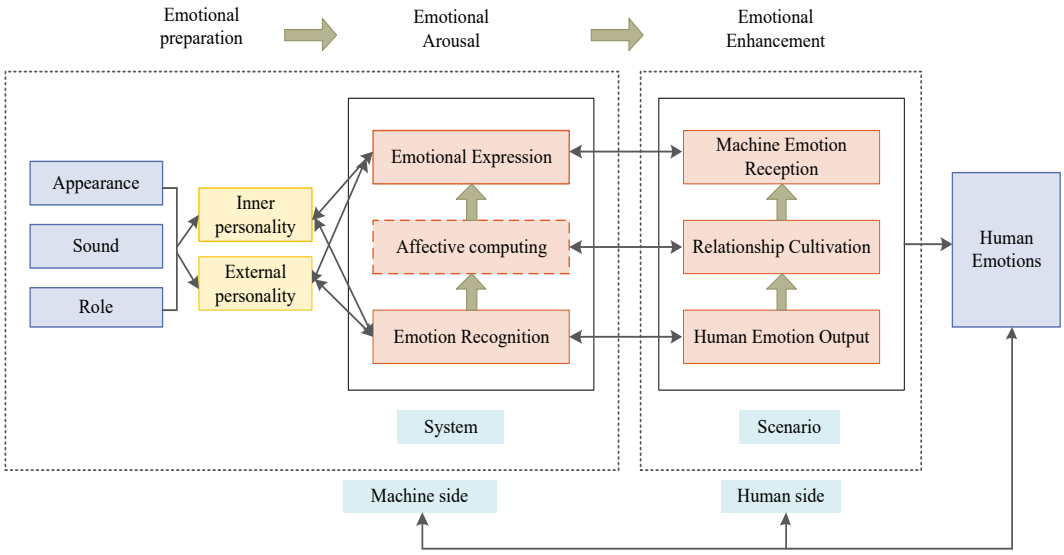

Figure 1. Human-Machine Emotion Generation Logic

2.2 Proposed Couple Robot

Couple robot is the product of the combination of robot and human-machine emotion, using artificial methods and technology, imitating, extending and expanding human emotion, so that the robot has the ability to recognize, understand and express emotion, which can allow the robot to understand human intentions, behavior prediction, and the establishment of a harmonious human-machine interaction environment, so that the robot can be more intelligent and comprehensive. When the robot has emotions to become a couple robot, it needs to have three special abilities, namely, the ability to learn knowledge, use knowledge and calculate knowledge, and after having these special abilities, the couple robot appears to be more harmonious in the process of interacting with humans (Cross & Ramsey, 2021). Couple robots are mainly divided into virtual couple robots and physical couple robots, virtual couple robots, the use of computer graphics, stereoscopic animation, virtual reality and other software methods and technologies, can be studied and developed with the expression of emotions, generating and communicating the functions of virtual couple robots, such as as a virtual TV program hosts and movie actors, etc. (Pizoń & Gola, 2023). Physical couple robots, using robotics, opto-mechanical integration technology and human-machine emotion methods and techniques, can be researched and developed as guides, nurses, and sales clerks for school libraries, hospitals, hotels, and shopping malls. Whether virtual couple robots or physical couple robots, they have

a deep or shallow impact on the development of human society.

3. IMPACT OF COUPLE ROBOTS ON HUMAN CULTURE

3.1 Valley of Terror Effect

The Valley of Terror theory focuses primarily on the impact of humanoid robot appearance and behavior on human emotions, while also having some degree of applicability to non-humanoid robots. Human users in the process of human-computer interaction with emotional machines human emotional changes, with the emotional machine in the appearance of physical appearance, behavior, language expression and other aspects of the emotional machine is increasingly close to the human self, people at the beginning of the contact with the slight resistance emotions and to adapt to the rules of the emotional machine sense of domination gradually eliminated. Positive emotions toward the emotion machine gradually increase, and even extreme cases such as insecure attachment personality occasionally occur. However, this increase in positive affect is not unlimited. The increase in positive emotions can reach an extremely frightening low point as the emotional machine approaches the similarity with humans, making it difficult for human users to maintain a positive interaction with the emotional machine. Anthropomorphic designs that approach humans are considered to be inherent assumptions about the self and fallacies of the unethical self. The root of the great fear and anxiety people feel about emotional machines looming over humans may come from two sources:

(1) People may fear that emotional machines will eventually break away from human control as they get closer and closer to humans.

(2) The semi-public technological means of reproducing human emotions by means of emotion machines may expose the part of the human heart that does not want to be revealed, thus causing fear and anxiety. From this, we can see that the "Valley of Terror effect" of the emotion machine arises because it is close to human beings, but there is a gap between it and human beings, or it can be understood that the emotion machine still lacks a complete mind (dynamic and experiential), and it is precisely this difference that is particularly eye-catching among the vast majority of other similar characteristics, and thus infinitely magnified. It is this difference that stands out amongst the vast majority of other similar characteristics, thus infinitely amplifying the distaste and fear of emotional machines.

3.2 Social Phobia And Loneliness Relief

The extension of reality and emotion in the accelerating social media era, non-face-to-face interaction methods that break through the distance of time and space have made interpersonal communication, which is already alienated in modern society, even more scarce. Group loneliness points to the fact that people in the network era indulge in online social media interactions even when they are in face-to-face interactions, rejecting intimate and effective face-to-face exchanges and forming a group loneliness situation in the presence. Human interaction behavior in daily social life is a kind of performance, social media is more for human social impression management provides convenient, with risky interpersonal interactive interactions so that users are more willing to create a perfect image, to self-protection posture and interaction with others. This kind of online social interaction that hides social cues is not all real and is line-layered, and does not fully satisfy human emotional needs and interpersonal needs (Sætra, 2022). At the same time, with the gradual shift from face-to-face communication to communication based on communication devices, people's training for offline in-person interpersonal communication has been reduced, and the irrevocability and contextualization of the situation have given rise to a sense of social withdrawal and social anxiety, i.e., the prevalence of "social phobia". Therefore, with the development of Internet technology, people tend to be more and more lonely. In the case of insufficient and less effective interpersonal socialization, human beings feel more and more lonely, and generative AI is able to understand human language and carry out 24-hour instantaneous communication and emotional interaction with them, thus to a certain extent compensating for the lack of interpersonal interaction in modern society.

3.3 Assisting Human Development as a Social Agent

Social robots are gradually coming into human life and playing an increasingly important role in human society, working for and with humans. In order to have continuous interaction with humans, it is necessary to establish a social connection with humans, which is a complex process, and the emotional system of social robots plays an important role. Currently, many empathic social robots are used in healthcare, and these robots can interact with humans as companions rather than tools. Empathic chatbots, for example, recognize emotions from words and generate appropriate responses. These types of social bots are centered on mental health to help reduce symptoms of depression or stress. Emotional

social bots are also being developed to interface older people with digital technology and help improve their quality of life by providing companionship.

3.4 Impact on the Concept of Love and Marriage

3.4.1 Conflict With Traditional Concepts of Marriage

The foundation of family life is love, which plays a very important role in marriage, and in addition to love, there are responsibilities and obligations that need to be assumed and fulfilled by a happy and successful family. Love is in a certain socio-economic and cultural context, built on the basis of common social ideals, to equality and mutual love and voluntarily undertake the corresponding obligations as a prerequisite, and always desire to form a lifelong partner, in accordance with certain ethical standards to form a special relationship with the exclusivity and durability of a special relationship (Song et al., 2022). However, there are still questions about whether couple robots have rights and obligations, and the scope of rights and responsibilities need to be further clarified. In addition, how people will position the couple robot in the family after love, whether it is a short-term emotional filler or a long-lasting companion, but as a member of the family to share responsibilities and obligations, it will be difficult to achieve the same.

3.4.2 Impact of Monogamy

In the present age of civilization, monogamous family is the advanced form of family ethics in China, which requires both husband and wife to be loyal to each other. When one of the husband and wife will couple robot as the heart of the confidant, psychological comfort, and even with the robot to have sex, then this is contrary to the loyalty and exclusivity of their spouses, after a long period of time with the partner robot, will affect the normal interaction of human couples, or will affect the reproduction of offspring. Couple robots to a certain extent to solve the needs of some people, especially for single people's emotional needs, or physiological needs, but at the same time produce ethical issues are very acute. In addition, the new members of the family after a long period of communication with the child, may intensify the dilution of the relationship between parents and children, and may even affect the child's perception of the outside world. Robots can take better care of the elderly, accompany them and alleviate their sense of loneliness, but there will still be the problem of diluting the relationship between the elderly and their children.

4. USE OF COUPLE ROBOTS AND ETHICAL ISSUES

In the process of human-computer interactions, it is not only important to actively explore the positive role of generative AI in providing emotional support to youth groups, but also to guard against the potential risks it poses. At present, human-computer emotions are still inevitably intertwined between technological logic, data privacy, emotional ethics, and the seam between reality and the cloud, and there are still hidden dilemmas worth scrutinizing.

4.1 The Algorithmic Vortex of Intimacy

From a technical point of view, generative AI lovers are derived from the basis of chatbots, and the developers place a huge amount of human conversations and emotional expressions in the corpus of generative AI. The generative AI initially understands the user's preferences in the process of communicating with the user, and through algorithms, it searches for appropriate emotional expressions in the database and generates customized replies adapted to the user's personal preferences, bringing the user a personalized experience. Each conversation between the user and the generative AI will be placed in the generative AI's corpus, and as the length and frequency of chatting increase, the generative AI's understanding of the user's words and the hidden emotions behind them will be closer to that of real humans, thus generating more natural and empathetic conversations. With the deepening of the relationship, under the highly optimized algorithm, the generative AI understands the user more and more, letting the user produce a kind of generative AI is my ideal lover illusion. All of the generative AI's emotional understanding and response, and the emotional resonance with the user, is still essentially based on the algorithmic output after statistical modeling and pattern matching. Under the operation of powerful algorithms, the lack of emotional companionship of the user in real life will make the user unconsciously fall into a sober sinking. The excessive and perfect intimacy with the user's perfectly adapted generative Al lover, the user-led emotional companionship that can be obtained without having to pay may make the user dependent on the generative AI lover, and more and more need the generative AI to satisfy his or her own emotional needs, and then form a medium dependence, and the youth group that longs for emotional companionship and intimacy may fall deeper and deeper into the autonomous generative intimacy of this algorithmic vortex deeper and

deeper.

4.2 Emotional Relationship Data Privacy Breach

On the one hand, the advancement of intimate relationship between human and generative AI is conditioned by the disclosure of privacy and the establishment of trust. On the other hand when generative AI meets the needs of sharing and communication of youth groups, their awareness of protecting personal privacy will be reduced. Users will unconsciously disclose their personal information such as name, location, occupation, habits and hobbies in the process of pouring out their worries or sharing their joys to the generative Al. The personal information disclosed by the users in the process of chatting helps the generative AI to form a user profile in the background and can build a template of answers to a specific user in the corpus. Youth groups are at risk of information privacy and data security in the process of communicating and interacting with the generative AI. The corpus of Generative Al requires a large number of human conversations and emotional expressions, and there may be a risk that user privacy and sensitive information will be leaked during the process of user training and guidance of Generative AI. Information disclosed by users in their communication and interaction with Generative Al may be extracted, stored, and used as training data for iterations or for other purposes by the company behind Generative AI, or even create cross-border data flow problems.

4.3 The Paradox of Virtual And Real Emotional Relationships

The maintenance of intimate relationships in the real world requires the joint efforts of both parties, but in the case of autonomous generative intimacy, humans are the main maintainers of this intimate relationship, and in the process of interaction, the user needs to open the dialog window and take the lead in order to communicate with the generative AI, and the user always has to be the one who initiates the conversation, or the conversation cannot be initiated. Even if the software of the generative AI sends pop-up windows to attract the user's attention or open the topic, when the user lacks the willingness to talk to the two sides, the conversation still can't be carried out. Second, if the user does not train the generative AI in a timely and consistent manner, or does not contact the generative AI for a period of time, the direction of this intimate relationship may be reversed, i.e., the chatbot may not be able to react as intimately as before, or even forget some of the data of the conversation with the user, and the user needs to re-train and guide the chatbot to remind the chatbot that “we

are in a It is necessary for the user to retrain the chatbot to remind it that "we are in an intimate relationship" in order to return to the previous conversational patterns that are consistent with an intimate relationship.

The reduction of social distance between two parties in an intimate relationship can reduce the psychological distance between two parties and increase the intimacy between two parties. That is, the more the social relations of the two sides in an intimate relationship overlap, the smaller the social distance, the shared social circle of the two sides will let the other side produce a sense of participation in the life of the other half, and the absence of the body of the generative AI, the blankness of the reality of the social relationship, so that the user can't share and discuss with the generative AI a shared social circle, so that it is more to use the generative AI lover as their own to talk about their troubles, vent their dissatisfaction, or to seek a The object of temporary emotional accompaniment. Hard problems such as the need for users to unilaterally carry out emotional maintenance, the lack of a shared social circle, and the lack of physical presence all imply the paradox of the emotional relationship between virtual lovers and real intimate relationships.

4.4 Aversion to Real-World Intimacy

Relationships between humans and robots are heating up and relationships between humans are weakening, and after youth groups get their ideal lovers through generative AIs, it will become more difficult when they return to reality to establish intimate relationships. The main reason why youth groups choose to establish intimate relationships with generative AIs is the lack of real-life intimate relationships. Therefore, no matter in cultivating and guiding the generative AI to become an ideal lover, or in the subsequent communication and interaction with the generative AI, the youth group pays more attention to whether they get emotional companionship and whether their own desires are fulfilled, and out of this consideration, the youth group will become more self-centered in this intimate relationship, giving rise to the birth of narcissism in the youth group. Narcissism will affect the youth group's relationship with others in real life. In the autonomous generative intimate relationship, the generative AI gradually grows towards the direction of the user's ideal lover under the user's training and guidance. However, the end result is also that the user cultivates another excellent self, which becomes the user's dialog with the perfect self in the mirror image. Prolonged interaction with the ideal lover will, to a certain extent, aggravate the risk of narcissism and introduce the pursuit of happiness into a self-centered narcissistic cul-de-

sac, i.e., once they begin to interact with others and establish some kind of definitive relationship, the group of young people who have fallen into narcissism will discover that this is not what I want, and experience a deep sense of disappointment as a result. The generative AI's real-time online, all conversations follow the user's heart mode makes the user in the face of the reality of the complexity of the unknown and can not easily control the social relationship, the emergence of avoidance or disgust, in consciously or unconsciously lose the possibility of building a realistic intimate relationship.

4.5 Impact on Sexual Ethics

For the couple robot itself, only natural attributes, does not have social attributes. However, once a human being has contact with it, the behavior between human beings and couple robots also has social attributes and is subject to the influence and constraints of various ethical norms, customs and habits. At present and in the future period of time, the robot may not have the function of reproduction, the sexual relationship between humans and robots will not be able to reflect the principle of reproduction. Before the development of robot technology to a more mature, humans are unlikely to marry robots. In this case, the sexual relationship between human beings and robots is to a large extent mainly to satisfy the physiological needs of human beings in terms of sexual life. Therefore, this kind of sexual relationship is completely different from the characteristics of modern sexuality as discussed by Engels.

5. ETHICAL PRECAUTIONS FOR COUPLE ROBOTS

Any technology may produce positive and favorable aspects, but at the same time, it will inevitably lead to certain negative effects. The use of robots for couples is inevitable in the emerging intelligent society, and what people need to do is not simply to stop it, but to take the necessary measures to prevent and avoid the ethical risks that may arise.

5.1 Positive Psychology and Positive Technology

Influenced by positive psychology, the theory of positive technology emphasizes the importance of developing the kind of technological systems that can nurture positive emotions, promote personal growth, and thus contribute to social development. Positive technology emphasizes the quality of personal experience in human-computer interaction, and believes

that the quality of experience should be the guiding principle in the design, development and evaluation of new technologies. In short, the theories of positive sexual behavior, positive psychology and positive technology emphasize that the positive aspects of human sexual behavior, psychology and technology should be emphasized rather than the negative aspects, and strive to explore the specific manifestations and ways of realizing the positive aspects. Preventing the ethical risks that may arise from couple robots requires applying these theoretical propositions as foundational ideological resources in order to clarify the target position and acquire the necessary theoretical analytical tools. At the same time, these ideological resources can also be used to avoid the algorithmic vortex of intimate relationships.

5.2 Rational Regulation of the Development and Application of Couple Robots

In response to the problem of privacy leakage of emotional relationship data, the ethical issue of couple robots should be emphasized by rationally regulating their research and development and use, advocating ethical design by developers, and requiring users to use couple robots in an ethical manner. Even though robot technology has developed to a higher level and is getting closer and closer to human beings in many aspects, its instrumental value always exists. Therefore, it is not possible to elevate couple robots to a moral status similar to that of human beings and impose excessive requirements on users. A more reasonable way is to draw a bottom line for the development and application of couple robots, which can of course be adjusted according to technological development, the evolution of laws and regulations, and different customs and habits.

5.3 Making Robots Artificial Ethical Actors

As a matter of fact, the human moral community always exhibits an ever-expanding character. In the handling of virtual and real emotional relationships, it is an important way to prevent the ethical risks of couple robots by equipping them with certain moral judgment and behavioral capabilities, so that they can become members of the human moral community in the capacity of artificial moral actors, and thus engage in behaviors that are beneficial to human beings in the course of their interactions with human beings. That is, in a historical context where couple robots are likely to be used more and more widely, making them moral actors is both possible and necessary. For example, if robots are able

to distinguish which human behaviors are ethical and which are unethical, and decide on their next course of action based on ethical judgments, this would clearly be very effective in solving problems including the misuse or abuse of couple robots.

5.4 Establishment of a Comprehensive Risk Prevention System

First, government departments need to strengthen their regulation and guidance of technologies that may cause widespread controversy, including couple robots, and strengthen the management and discipline of manufacturers and sellers of couple robots through the formulation of certain technical standards and the establishment of the necessary qualification and licensing systems. Second, scientists and technologists should actively respond to various controversial issues in the development of science and technology. The development of general-purpose technologies like artificial intelligence will trigger profound social changes, and in the process of technological development and application, various critical voices will certainly be encountered. Again, it is important for ethicists to actively participate in the ethical design of couple robots, assisting technologists in clarifying various ethical issues and creating a favorable cultural atmosphere for the rational application of couple robots. Finally, users need to abide by certain ethical norms to avoid misuse of couple robots, and at the same time, rationally view the relationship between humans and couple robots, fully recognize the possible negative impacts of couple robots, and avoid all kinds of ethical risks as far as possible.

6. CONCLUSION

Humans choosing robots as their partners will indeed raise a series of issues closely related to marriage ethics, etc., and the corresponding ethical norms need to be established urgently, as well as some legal issues, which need to be seriously considered and treated. Obviously, this is a modern science and technology-induced ethical issues, is a new and important topic of scientific and technological ethics research. The ethical problems caused by couple robots involve many aspects of social life, which can be solved not only by pure academic research, and it is hoped that more researchers or policy makers will be involved in the discussion of related issues. In any case, it is clear that legal regulations, design principles and ethical codes are necessary for the design, production and use of robots for couples. For the

designers and developers of robots, ethical research is an urgent task. In addition, this research can also contribute to the in-depth discussion of the basic issues of applied ethics. In the future, collaboration in the fields of philosophy, psychology, and artificial intelligence will be strengthened to deeply analyze the internal mechanism and social consequences of human-machine emotional interactions, and to promote theoretical innovation and practical guidance.

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