

How will AI rewire our emotions?

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1 Introduction

The new era of information society even called the "Fourth Evolution"[1] has produced deep changes in sciences, economics, and societies. Floridi extrapolates from the artificial companions of today to a time when this artificial companion will not only pass the Turing test but also offer a means of artificially continuing life[2]. These machines will be able to deal with the most intrinsic feature of human nature: emotions[3]. Today, there is a huge demand for social robots and intelligent systems, which must also connect to the Internet of Things.

This report aims at exploring what are brought to human beings with the development of AI and robots. To the end, two relevant topics are discussed in the following. Firstly, Is the development of AI a good thing or a terrible thing? What was the downsides and the upsides? What should be done to avoid the downsides? Secondly, is mutual love between human and AI possible? What are the differences and similarities between human-human relationship and human-AI relationship? Can human-AI relationship replace human-human relationship one day?

The following section examines the public discourse surrounding these two issues by determining how relevant perspectives made in the popular press are interpreted by scientists and what feasible remedies researchers propose to address concerns.

2 Emotional artificial Intelligence - a boon or a curse ?

Aristotle the legendary Greek philosopher said, "Man is by nature a social animal; an individual who is unsocial naturally and not accidentally is either beneath our notice or more than human." Human Beings, by nature, tend to bond. We are always prone to rational decisions consciously and unconsciously. With the advent of technology, this 'bonding' has taken a new meaning. Technology appeals to us most when we are most vulnerable and hence, we expect more from technology and less from each other. In one way or another, we develop a sense of friendship with artificial bots.

2.1 Popular Press

AI can not represent complex emotions

Sherry Turkle, in her TED talk, says we are tempted by machines that offer companionship. We are designing technology that gives us the illusion of companionship without the demands of friendship. Human relationships are rich, demanding, and messy and we clean them up with technology. We find it difficult to have conversations in real-time because we can't control what we are going to say. Texting, emailing, posting, let us present the 'polished', 'edited', and 'finer' versions of ourselves. And when we do, we sacrifice conversation with mere connections. The feelings of empathy and real attachments can not be given by the social bots that are mainly being built for the elderly and the children[4].

AI can be an emotional support for humans

Judith Donath, in his book, puts up his concerns that by 2030, most social situations will be facilitated by bots-intelligent-seeming programs that interact with us in human-like ways. Able to mimic emotions expertly, they will never be overcome by feelings. These social bots will have so much data about an individual that they will surpass humans in their ability to attract and persuade us. They will be filling up a big part of our lives, from helping kids to do homework, catalyzing dinner conversations to treating psychological well-being[5].

Build with advanced programming, these empathetic AI will be so convincingly sincere in advising us about who to marry and how to spend our sexual lives with others that we would increasingly rely on them for every decision.[5][6]. We might even progress from treating robots as instruments for sexual gratification to treating other people that way. Other observers have suggested that robots could radically improve sex between humans. In his 2007 book, 'Love and Sex With Robots', the iconoclastic chess master turned businessman David Levy considers the positive implications of "romantically attractive and sexually desirable robots." [7]. AIs will become more human-like, executing more human-like behaviors, reciprocating to emotions, and having long conversations[6].

Big tech companies invest millions of dollars over the years to create humanoid robots or operating systems that help humans fill the emotional void in their lives. Even though it's an abstract being, we tend to care for it more than a real human[8]. The movie, 'Her' raises many questions about the nature of consciousness — which is central to the issue of loving and being loved.[9]

Interacting with artificial beings also has an effect on personality

Interacting with artificial beings also has a deep effect on our personalities and upbringing. An article of *The Atlantic*, states an experiment on a small group of people working with humanoid robots. The robots were trained to make occasional errors and acknowledge them. As it turned out, the clumsy, confessional robots helped the group perform better by relaxing them and improving communications.[7]. We aim to design robots with the imperfections of a real human to make them more adaptable. The aspects of AI that should concern us most are the ones that affect the core aspects of human social life—the traits that have enabled our species' survival over the millennia.[7]

2.2 Scientific Literature*AI can be very helpful for special groups*

The development of emotional robots such as entertainment robots companion robots have started gaining interest in a lot of ways [10] [11][3]. In all the above contexts, the close and personal interaction with users makes suitable the introduction of emotional components in the robot design and implementation. In particular, the robots that are designed for the children and the elderly, already embody several features of the emotional design. Psychological studies show that for humans, the elderly and children in particular, robots can impersonate missing or imaginary living subjects[12]. In such circumstances, they

attribute emotions to them and develop emotions towards them, even independently of the specific emotional design. In one aspect, it offers another exciting perspective for emotional robots and on the other, it raises basic ethical questions on robot designs. A specific area of application of emotional design is that of robots that interact with cognitively impaired patients. Under specific therapeutic guidelines, a suitable design of emotional robots can have an impact on the quality of life of the patients, as well as on their rehabilitation[13].

Luciano Floridi has emphasized the importance of the "transition" as "ethically smooth" as possible. He is quite right to worry about ethics after the fourth revolution. To engineer human nature into something significantly different is not an activity that can even in principle be guided by a theory grounded in a fixed notion of human nature. The very rationale for ethical thought and moral principles is to guide us to the realization of our human potential[1].

Design guidelines for a social robot

It is especially important to foster research on the question of how robots affect humans' emotions and how humans treat robots based on the sentiments they evoke, as this also raises normative and ethical questions: Is it justifiable from an ethical stance to build a robot that the user feels sorry for when it is switched off? Is it appropriate to design a robot that is so engaging that people become emotionally attached to it, forming a relationship that is comparable to a human-human relationship? How do we want people to perceive and interact with robots? And what kind of reactions would we like to prevent?[12].

In the end, what we need is a way to ensure that robots will not be able to manipulate us in ways that would not be possible for other (normal) human beings. And just like revolution over the years have set certain rules for humans, we need to do the same for robots. We need to equip ourselves with an emotional system that strikes a balance between individual well-being and socially acceptable behaviour[14].

3 Can human-human relationship be replaced by human-AI relationship?

Humans have a relation with everything in the world. In the category of philosophy, under this definition, human-human relation is irreplaceable for thousands of years. Since the development of advanced technology, AI has improved the human-human relationship, even can replace some parts of the relations such as emotional care. The main task of this section is about whether human-AI relation can take place the human-human relation with two different fields of overview. Could a robot replace a human relationship ?

3.1 Popular Press

The Technology development makes it more and more possible to have a real relationship with AI

Of course, AI was developed to benefit people initially as well as for emotional needs. Due to the pandemic and isolation, many face chronic loneliness. Sometimes, AI can step in. Millions of people found comfort by AI robot[15]. And ELIZA was the first robot that was created as a psychotherapist. And many people tend to share vulnerable thoughts to ELIZA and some even refuse to admit that ELIZA is not a live person. Do chatbots actually work to relieve loneliness or anxiety? More research is needed, but it seems so. Several studies provide promising results. For example, young adults who regularly messaged a therapy chatbot reported less loneliness and anxiety than did their peers who did not use the AI. Elderly users may also benefit from communicating with chatbots, especially if those elders live alone or do not have regular contact with loved ones.

According to tmtpost, emotion recognition function makes it possible to perform multiple categories of complex tasks for an artificially intelligent robot. Machines with emotions are not only more general, powerful and effective, but also closer to human values. Once AI robots were in the position of passive response. With the development of science and technology, AI has achieved a leap from "equal dialogue" to "dominant dialogue"[16]. Evolvable neural unit networks (ENUs) are capable of performing more complex information processing and, over time, are capable of possessing specific types of evolutionary processes that mimic the concepts of survival of the fittest, random mutation, and reproduction. More and more breakthroughs in this realm make it likely to have a "real relationship" with AI in the future[17].

Kate Darling, from the newscientist thought that we humans are all social creatures, and we tend to personify everything in an effort to understand them, even if we knew they are just non-humans, for example, pets. Because of this tendency to anthropomorphize and project human traits, motivations, and behaviours onto objects, a robot, especially an advanced human-like robot, can easily build an emotional connection with us[18].

We are not ready to make such AI to replace real person

Some simple experiments were conducted by Nicholas A. Christakis, the results of which recipes that adding AI to our social environment can also make us behave less productively and less ethically [19].

A chatbot is always designed by its script. It's because of these scripts that AI cannot currently be seen as a serious replacement for a human. AI chatbots are prone to mistakes in understanding, and that can cause a serious problem. For example, when a robot was given input about the user being anxious and not able to sleep, it responded with "Ah, I can't wait to hop into my jammies later" with "z" emojis. For users who are feeling suicidal, depressed, or on the verge of an anxiety attack, that type of response is off-putting and discomfoting. As a result, AI chatbots aren't ready yet to handle some extreme situations[20].

As the charity's director Caroline Abrahams clarifies: "While increasing in sophistication and ability, it [AI technology] does not yet and may never have the creativity, intuition and emotional range that people have." [21]

In Marcrey's view, Artificial Intelligence should complement but never replace, the human connection. She gives an example about buying lipsticks. The sales of lipsticks often increase in times of crisis. The pleasure of trying out a new color when everything else seems out of control is a human impulse that machines can neither comprehend nor anticipate[22].

3.2 Scientific Literature

Some progress are made in this realm

In some scientists' points of view, robots can influence how humans define and understand love and that our actual experiences with them will also have consequences for this understanding. Love as a cultural concept is continually changing. Change has two sides, can not be considered as a bad thing simply. This change can lead to a situation in which previously excluded minorities might be included in socially sanctioned forms of love[23].

Keith Darlington thinks that even AI can not feel akin emotions, it can stimulate our emotions. With numerous research being done in the realm of speech generation and emotion detection, AI has improved significantly at detecting emotions in humans through voice, body language, facial expressions, and so on[24]. In a book called *Homo Deus*, Yuval Noah Harari, asserts that humans themselves are essentially a collection of biological algorithms shaped by millions of years of evolution. This means that non-organic algorithms could replicate and even surpass everything that organic algorithms can do in human beings. We can expect to hear more about emotional AI in the future[24].

It is not possible for AI to replace human-human relationship in the short run, due to the downsides of AI, the prerequisites conditions in communication and so on

However, the downsides are also discussed by a bunch of scientists. These discussions are mainly in the following six aspects[25]. 1) will the relationship between humans and AI reduce or weaken the human relations. (2) privacy issues due to the data collection by robot (3) deception and infantilization, (4) loss of control, (5) loss of personal liberty, and (6) questions about responsibility. For example, if something goes wrong when older people are in control of the robot, who is to blame? With so many unsolved issues, the progress of developing such AI can be very slow.

Similarities and Differences of human-robot and human-human interactions are discussed by N.C. Krämer et al. in 2012. To enable interaction, some basic abilities which humans have but yet no robot already incorporate such as social perspective talking and tailoring the message to the knowledge are essential. In common ground theory, common ground is seen to be the basis of communication. This kind of common sense is also not easy for a robot to acquire in a short period of time. Not enough knowledge on human's daily lives and lack of techniques for adjustment to the initial default model will make it impossible to replace the human communication with robot[26].

Nyholm, S. R. and Frank, L. E from Cambridge discuss several ideas and associations commonly discussed within the philosophy of love, and try to answer the question of whether mutual love could be generated between humans and sex robots. They conclude that it is unlikely that we will be able to create robots sophisticated enough to be able to participate in love relationships anytime soon[27].

4 Conclusion

This report shows that even though we are very much excited about the concept of artificial Intelligent beings being fully self-aware and independent, there's a long way to be there. Not to say, with such great minds in this field, the 'impossible' sci-fi fictions to the human mind is quite achievable. Being the witnesses of such being revolutionary changes over time, we should be careful about how we invite our artificial companions to live peacefully with us. Technology is an achievement of the human mind, we are the creators and we should be careful about how we use them.

When it comes to the topic of whether human-human relationships can be supplanted by human-AI relationships, the answer is No. The popular press, in general, exaggerates AI's capabilities and is fearful of its future ramifications. For ethical, technological, and other reasons, the majority of scientists believe that AI will not be able to replace human interactions in the near future.

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