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Artificial Intelligence (AI) Systems: Implications for Emotional Human Communication

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Abstract

Artificial intelligence (AI) systems are increasingly designed with affective characteristics. Emotionalized AI machines simulate human emotions to provide emotional assistance to human beings in various areas of life, and in turn, reshaping communication. Both the cognitive and affective aspects of artificial intelligence technology are widely adopted in today's world due to their positive impact in accomplishing tasks. However, the critical question regarding the implications of AI advancement on the emotional human communication is the crux of this study. Thus, this research work inquired into the implications of artificial intelligence systems on the innate emotional human interaction. Communication research in this area has not received much attention. Therefore, through the use of conceptual research approach, 186 scientific article publications were extracted from Ebsco and Google databases, out of which 47 met the inclusion criteria based on the study objective. Data from these secondary sources were critically analyzed. This study was anchored on the theoretical foundation of Diffusion of Innovation theory. The study argues that though the advancement in artificial intelligence (AI) systems comes with lots of positive values, the intrinsic human-human emotional communication is a greater value that should not be endangered or substituted by technology. Hence, the paper recommends a conscious effort on the part of researchers and manufacturers of artificial intelligence (AI) systems to strictly abide by ethical standards in order to preserve this innate value in the human person.

Keywords: Artificial Intelligence, Human Intelligence, Human Emotion, Human Communication

1. Introduction

The characteristic features distinguishing man from animals as well as every other creature on earth are intelligence and emotions. Intelligence can be viewed as the mental ability to reason, learn and solve problems (Shanthi et al., 2015). This is ascribed naturally to human beings as an innate quality that keeps developing with existential experiences, situations and circumstances (Sinha & Pathak, 2019). Human intelligence enables the human person to make abstractions and conceptualize non-existent things. However, man, in practical application of his intelligence, has also succeeded in producing a simulation or a demonstration of his intelligence in the form of artificial intelligence found today in various advancements of computing technologies; computer software, robotics, self-driven cars, chart box, virtual personal assistance, e.g. SIRI, Natural Language Processing/Natural Language Generation machines and so on (Ambekar & Kumar, 2018). Innovative technologies are coming up day by day in this area equipped with high-capacity data processing and efficiency (Olivier, 2017). In terms of powerful calculation ability, AI demonstrates a surpassing capacity compared to human beings (Olivier, 2017). Thus, robots are said to be intelligent by employing artificial intelligence in order to infuse some humanlike qualities. The idea behind Artificial

Intelligence is basically to produce machines with capabilities to think, act and behave like human beings (Sinha & Pathak, 2019). Nowadays, these Artificial Intelligent machines are gradually taking over the functions of human beings in terms of work and productivity. In other words, despite the dynamism and versatility in human competences, artificial intelligence (AI) systems possess the capacity of performing complex tasks (M. Lu, 2023). Artificial intelligence systems have the ability to outperform human beings in carrying out complex tasks (H. Lu et al., 2018). On this note, (Olivier, 2017) cites an example of an AI machine, Deep Blue, defeating a reigning world champion in chess, Gary Kasparov. It is not surprising, therefore, that there is a rapid increase in the adoption of AI systems in various areas of human endeavor such as seen today in health care, Education, industries, business, Journalism etc. (Ambekar & Kumar, 2018; Weber-Guskar, 2021) and impacting heavily our daily life (M. Lu, 2023).

This has generated questions and debates among scholars on the future of human work engagement, productivity, communication, relationship and society at large. On the one hand, scholars Dwivedi (2023) and H. Lu et al. (2018) view artificial intelligence (AI) as an important development, in fact, indispensable to the modern world, judging from its capacity to make life easier. Obviously, human intelligence is in so many ways challenged by the advancement of AI technology (Dwivedi, 2023; Sinha & Pathak, 2019). However, despite the ubiquitous and high-level capacity performance of AI system, they still remain at the level of human programing and control, and as such cannot be equated to human intelligence (Korteling et al., 2021; H. Lu et al., 2018).

Furthermore, artificial intelligence (AI) technology has evolved from thinking and acting rationally like humans to affective machine companions. Kambur (2018), posits that *"AI can understand human emotions and incorporate them into decision making"*. AI now has the capacity of recognizing, stimulating and eliciting emotions in human persons (Weber-Guskar, 2021). This amounts to using computer programming to analyze human emotions, typically facial expressions and vocal cues such as Apple's Siri, Amazon's Alexa, etc. (Sethumadhavan & Phisuthikul, 2019). Moreover, by ascribing emotions to AI machines invariably disposes a situation whereby humans develop an affective relationship with the machines. Human-machine interactions occur in different areas of human life (Weber-Guskar, 2021). AI systems provide caretaker assistance to the elderly in care homes such as robot Paro and Pepper, robot pets, personal Chartbots, Holograms engage in social interaction with human beings (Weber-Guskar, 2021).

On the contrary, though humanoid robots and other AI machines have been designed and trained to recognize and stimulate emotions in human beings (Weber-Guskar, 2021), the critical question still remains as to whether machines can actually have emotions? There is a difference between recognizing/stimulating emotions by Machine Learning process and intrinsically having emotions. Pessoa (2017) argues that the process of emotion and cognition do not work in isolation of each other, they are intertwined. Thus, basing emotions solely on cognitive process, as in the case of AI affective machines, is not a true representation (Kambur, 2018).

The fact of human-machine social interaction presupposes communication. Peter and Kühne (2018) observe that any human-social robot interaction elicits communication regardless of whether the communication is verbal or non-verbal. Due to the vast developments and capabilities of AI systems, robots are fast becoming social actors who can send and receive information (Peter & Kühne, 2018). This is referred to as communicative AI by Guzman and Lewis (2020). For them, Communicative AI systems not only function as communicators by design but in a more serious depth are interpreted as such by humans

thereby posing a grave danger to human emotional communication. As observed by Papadimitriou (2016), Artificial Intelligence (AI) is taking over the contemporary world in terms of societal and communication dependence.

Thus, this development in AI systems raises the fundamental question of the understanding of communication in the contemporary global communication research. Again, it calls for more profound scholarly attention to understanding the increasing communicative abilities of AI systems, human social interaction with them and their implications to human emotional communication (Guzman & Lewis, 2020; Peter & Kühne, 2018). Papadimitriou (2016), emphasizes that as technology transforms science-fiction to science-facts on a daily basis, there is need to preserve what is essential to human nature from degradation. Hence, this work examines the implications of human emotional communication in the age of artificial intelligence (AI).

2. Literature Review

2.1. Conceptual Framework

2.1.1. Human Intelligence

According to Shanthi et al. (2015), intelligence is the mental ability to reason, solve problems and learn. Intelligence encompasses cognitive functions such as memory, perception and language that enables the human person to make abstractions. Intelligence differentiates man from animals. Human intelligence enables man to abstract universal ideas, non-material realities such as God and even negative concepts like nothingness (Eligido cited in Onyeator & Okpara, 2019). In other words, the human person is capable of conceptualizing realities that are not perceptible to the senses due to his unique intelligence. In addition, intelligence enables the human person comprehend complex ideas, learn quickly as well as learn from experiences throughout the life time (Colom et al., 2010). Again, though human beings possess intelligence inherently, they still differ from one another in their reasoning abilities and adaptation to environmental changes in life. This accounts for the reason why there are verifiable differences in individual performances of tasks when put under the same condition. Human intelligence equally presents thought processes that enable human person overcome obstacles in his encounter with different stimuli in the environment (Colom et al., 2010). The important point to emphasize at this juncture is that intelligence is natural to the human person. Thus, that distinguishes him from any other form of artificial intelligence which is characterized by machine learning and simulation of the human intelligence.

Nonetheless, the increasing development in machine capacity to perform complex tasks is evolving a divergent view of the concept of intelligence from anthropocentric and anthropomorphic perspectives. In this line of thought, Korteling et al. (2021), argue that intelligence in general is not necessarily the same as human-like intelligence as many other forms of intelligence are possible other than biological. They observe that intelligence could be seen from the aspect of computational capabilities; being able to efficiently achieve complex goals. On the other hand, these same authors admit that no matter the level of intelligence of AI systems, they still remain unconscious devices purposefully made to support humans achieve complex tasks. In the same vein, Dong et al. (2020) note that artificial intelligence can only be a service provider for human beings.

2.1.2. Artificial Intelligence

Alan Turing in 1950 asked a basic question that contributed to what is known today as artificial intelligence-can machine think? (Turing cited in (Schröder & McKeown, 2010). Hence, development in technology has seen the effort in simulating humanlike qualities in machines such as intelligence. It is on this note that Sinha and Pathak (2019) describe artificial intelligence as something produced or something that has not occurred naturally with an ability to acquire knowledge. For Kaplan and Haenlein (2019), AI systems are equipped with the ability to interpret data, learn from such data and use data to achieve specific goals. Computers and machines are equipped with the capabilities to think, act and behave like human beings using different algorithms, language processing etc. (Sinha & Pathak, 2019). For instance, the digital assistance found in Siri and Alexa that provides varied assistance by thinking, acting and behaving like human beings while using the artificial intelligence technology. There are also self-driven cars produced by Tesla motor company built on the artificial intelligence technology and so forth.

Haenlein and Kaplan (2019) classify artificial intelligence into cognitive (analytical), human-inspired (emotional) and social (humanized) following its evolutionary stages. Today, artificial intelligence systems can detect emotions through voice and facial expressions (Kambur, 2021). However, AI systems cannot experience emotions as is the case in human beings but they can be trained to recognize them and adapt their reactions (Kaplan & Haenlein, 2019). With the rapid development in the AI technology, scholars (Ambekar & Kumar, 2018; Dwivedi, 2023; Gupta et al., 2023) express concern and fear over the future of artificial intelligence with particular reference to its negative implications to the emotional human communication/relationships. On this note, Gupta et al. (2023) observe that exposure to AI systems may affect the mental and emotional well-being of human beings. These scholars emphasize that the progressive development of AI systems in its capacity to imitate human-like actions and feelings, will likely make human beings to form emotional bonds with AI machines.

Hence, many scholars (Beck & Libert, 2017; Schröder & McKeown, 2010; Sinha & Pathak, 2019) agree that the development in artificial intelligence technology has made life easy in various ways. Many organizations rely heavily on the artificial intelligence technology in their operations. Shabbir and Anwer (2018) observe that artificial intelligence robotic thinking is efficient with expert systems. This view is shared by Beck and Libert (2017) who maintains that there are many things that machine can do better than human beings now. Robotic science fascinates people today especially in the field of medicine in terms of the time it takes to diagnose a disease. However, it has also affected negatively the human efforts in various ways. As observed by Sinha and Pathak (2019), "the escalation of artificial intelligence is taking at such a large dimension that it is now directly affecting the human intelligence and giving it a global challenge instantly". That notwithstanding, even though artificial intelligence technology is easing human labor and getting faster results, it is also in this way rendering a lot of people jobless.

2.1.3. Human Intelligence vs Artificial Intelligence

First, artificial intelligence is designed and produced by human intelligence using processes and system analysis. In other words, human intelligence is the foundation or the source of development of artificial intelligence. The natural human intelligence gets advanced with experience, situation and many unpredictable circumstances in life. Second, human intelligence cannot be predicted in all situations unlike in a programmed artificial intelligence that has predetermined outcomes. Human intelligence leverages the natural ability to multitask as against the robotic system that requires someone giving a command to act

(Shabbir & Anwer, 2018). Third, artificial intelligence robotics cannot have emotions unless humans give them that through a programmed process. On the other hand, human persons express different forms of emotions naturally depending on the environmental circumstances. Nevertheless, despite the obvious difference between human intelligence and artificial intelligence, we cannot deny the fact that the advancement in artificial intelligence is a cause for concern in today's technological world. In this case, what are the implications of artificial intelligence to the emotional human communication?

2.1.4. Human Emotions

The human person is not only intelligent but also an emotional being. According to Onyeator and Okpara (2019), emotion is a mental and psychological feeling that directs our attention and guides our behavior. For Schröder and McKeown (2010), emotion is an element of human intelligence as both work together. Stark and Hoey (2021) share this view by describing emotion as a cognitive process that interprets feelings and behavioral responses. However, this study looks at the complexity of human emotional expression and responses. Thus, it aligns with Jhala (2015) who refers to emotion as a complex psychological state involving a subjective experience, a physiological response and an expressive response. Emotion, therefore, originates from a complex psychological process in human person accompanied by physiological changes (Jhala, 2015). According to Tripathy (2018), emotions are involved in all that human beings do. Our actions, decisions and judgments are controlled by emotions. The point to emphasize here is that emotion arises from a complex process that begins with a subjective feeling that cannot be attributed to machines and robotic systems which run on artificial intelligence algorithms. It is an important property of the human person that plays a key role in human communication.

The role of emotion in human communication is found in its actual expression and usually interpreted by people. The ability to accurately interpret and understand emotional expressions from human persons is tied to our emotional intelligence. Hence, only cognitive intelligence cannot suffice in human communication and relationships. As observed by Kambur (2021), "emotional and cognitive processes are intertwined". Thus, emotional intelligence enables one to understand him/herself and be in a better position to understand others in any relationship. It affords us the position of being self-aware as well as the ability to have a better self-control even in adverse conditions.

Today, emotions are ascribed to machines using the artificial intelligence technology. Artificial intelligence systems are increasingly equipped with emotional characteristics and obviously becoming a source of worry as to the danger it poses to humans having affective relationship with machines (Weber-Guskar, 2021). AI robots such as Paro and pepper are used for emotional purposes in some elderly and care homes to improve well-being of patients (Weber-Guskar, 2021). Studies have shown that there is an obvious debate on whether machines/computers can be attributed with emotions. For instance, while Evans (2004) argues that computers are recognizing some emotions, Sethumadhavan and Phisuthikul (2019) opine that emotions are contextual as recognizing a particular facial expression in one context does not mean that the facial expression conveys the same meaning everywhere. In addition, machine emotions can only depend on the extent to which emotion is programmed. In other words, machines do not have emotions until human beings formulate one and given to them as a programmed process. Furthermore, Paul Ekman cited in Onyeator and Okpara (2019) posits six basic emotions. They are; sadness, happiness, fear, anger, surprise and disgust. The question is, can emotional artificial intelligence express subjective feelings as is the case in human person and human communication? Can emotions in emojis and emoticons found in social media today really represent or replace human emotions? This paper aligns

with the position that artificial emotions using artificial intelligence systems cannot be equated with the human emotions that have the components of subjective feelings, physiological expressions and behavioral responses.

2.1.5. Emotional Human Communication in the age of Artificial Intelligence

Following the progressive advancement in artificial intelligence technology, there is an increasing human-machine interaction that is threatening the fundamental nature of communication (Peter & Kühne, 2018) thereby creating a paradigmatic shift in communication research. Communication has been fundamentally conceptualized from the anthropocentric paradigm (Guzman, 2018; Guzman & Lewis, 2020). In other words, communication has been historically understood as the human process, an interaction and exchange of meaning between human beings using technology as a medium or channel (Mowlana, 2018). W. Schramm (1971) and W. M. Schramm (1973) clearly underscores this historical paradigm viewing communication as the understanding of human relationship.

In contrast, today, this anthropocentric communication paradigm is seriously being challenged by the advancement in artificial intelligence technology. Guzman (2018) observes that technology is now conceptualized as more than just a channel to being a communication partner. AI robots go beyond the role of medium as they can be both senders and receivers of messages, thereby acquiring the status of communication partners, social actors (Peter & Kühne, 2018). Thus, the concept of communication partner is shifting from face-face human interaction. Today, human beings interact with Amazon's Alexa, Apple Siri as well as numerous digital assistants made possible by AI technological advancement (Pew Research Center, 2017). With the shift in the understanding of the concept of communication from human-human interaction, what sort of communication exists between human beings and AI systems especially as these agents are viewed as communication partners? What could be the implication(s) of such interaction to the human emotional communication and how do people understand themselves in such communication process?

Therefore, there is an obvious tension between human agency and machine agency that is redefining the concept of communication (Hermann, 2022) away from being strictly human property (Papadimitriou, 2016; Sundar & Lee, 2022). Moreover, Papadimitriou (2016) argues that the advancement of artificial intelligence technology intensifies the alteration of human communication. For him, the danger lies in how to avoid producing artificial-like humans in the future. It is even more worrisome with the prediction of AI advancement that could surpass the human communication ability (Peter & Kühne, 2018).

2.2. Theoretical Framework

2.2.1. Diffusion of Innovation Theory

Diffusion of innovation theory was propounded by an American communication theorist and sociologist, Everet Rogers, in 1962. Diffusion of innovation is a process by which what is considered new ideas, products, behavior or technology diffuse in a social system (da Silva Gabriel & Da Silva, 2017). In other words, it is a process of delivering innovations through mass communication channels in a social system (Akça & Özer, 2014). It explains how new ideas or products (innovations), over time, diffuse into the society resulting in the idea or product adoption. The adoption of a new idea, product or behavior happens in different times and rates and brings about social change. According to Rogers et al., cited in Bodén and Dahlstedt (2023), when an innovation diffuses into the society, it causes some kind of social change. The diffusion process in a social system begins with slow change, followed by rapid

change (Momoh, 2015). Moreover, this adoption comes after an innovation must have been communicated over a period of time. Similarly, diffusion of innovation theory gives insights on how the society will interact with innovation (Rogers et al., cited in Bodén and Dahlstedt (2023)).

There are five qualities that determine the adoption rate or the success of an adoption of an innovation. First is the relative advantage which refers to the degree to which a particular innovation is perceived as better quality than other products. Second quality is how compatible an innovation is to the already existing value in the society. Third, how simple and easy to use is the innovation. Fourth, to what extent can the innovation be experimented with less uncertainty to the users and finally, the easier individuals are able to see results of an innovation, the likely they will adopt it (Dearing & Cox, 2018). Moreover, there are also five categories of adopters; innovators, early adopters, early majority, late majority and laggards.

Interaction with artificial intelligence system is increasingly part of almost every aspect of human life (Weber-Guskar, 2021), having complete control of human being's creative and communication engagements (Dwivedi, 2023). This is with its advancement that is endowed with emotional and social interactive capabilities. The foregoing provides obvious understanding of the wide spread adoption of AI technology in the contemporary world. Put in another way, there is a high rate of adoption of these technologies as they keep improving every day and as they diffuse into the society. Furthermore, AI systems have been adjudged as providing greater efficiency and emotional assistance in various human applications. On the other hand, diffusion of innovation theory also interrogates the compatibility of AI innovations to the existing values in the society with reference to the second quality of innovation adoption rate expressed by the theory. The diffusion of AI innovations has brought change in the human emotional communication and relationship as certain AI products are seen as social entities. Stansberry et al. (2019) emphasize that AI machines are taking over human interactive capacities. For them, what will happen when artificial intelligence machines get smarter than human beings? Onyeator and Okpara (2019) opine that human communication is being replaced by human-machine interaction. Therefore, diffusion of innovation theory provides a background understanding of the pervasiveness of AI technology with its widespread adoption in the contemporary social system as well as the opportunity to interrogate the AI values in relation to human emotional communication.

3. Methods

This study adopts a conceptual research approach which relies on the existing literature and involves identifying main concepts, theories as well as research findings (Çobanoğlu, 2023). Through this research approach, this study inquired into a deeper understanding of the implications of artificial intelligence (AI) systems on emotional human communication. Conceptual research also involves a critical analysis of concepts and ideas built on empirical research (Jaakkola, 2020), capable of generating new ideas or perspectives. Hence, there was a careful collection/analysis of relevant and reliable data from extant literature with particular attention to the following variables; artificial intelligence, human intelligence, human emotional communication, emotional artificial intelligence, artificial intelligence and communication as well as human-machine communication. Following the search terms around the afore-mentioned variables, a total of 186 scientific articles were extracted from Ebsco and Google Scholar databases after initial search. However, 47 of the retrieved articles met the inclusion criteria based on the main objective of this study. The extracted studies were restricted mainly to articles published between the period of 2014 and 2023 with a

consideration of the articles with the highest number of citations by the academic community. On the other hand, encyclopedia articles, editorials and non-English publications were excluded in the selection. The analysis focused on the implications of artificial intelligence systems on human emotional communication.

4. Results and Discussion

The findings from the 47 scientific articles that met the inclusion criteria were carefully studied, evaluated and critically analyzed. The analysis was based on the main objective of this study which is to find out the implications of artificial intelligence technology on emotional human communication.

4.1. Implications of Artificial Intelligence on Human Emotional Communication

There is no doubt from the foregoing that advancement in artificial intelligence technology has brought efficiency to human beings in dealing with complex issues (Ambekar & Kumar, 2018; Dwivedi, 2023; Gupta et al., 2023; Hermann, 2022; Kambur, 2021; Korteling et al., 2021). Artificial intelligence systems also facilitate communication (Guzman & Lewis, 2020) and are increasingly designed with emotional characteristics with the ability to relate affectively with human beings not just as a medium or channel but as a communicator (Weber-Guskar, 2021). Artificial intelligence systems such as social robots provide companionship to children with Autism and other forms of disorder as well as in the elderly care homes (Weber-Guskar, 2021). They are usefully engaged in various areas of human life.

That notwithstanding, the development of AI systems in the above manner poses some challenges to the emotional human communication and the society at large. For instance, artificial intelligence technologies reproduce expressions of human emotions used in social media platforms in the form of emoticons (Stark & Hoey, 2021). These are used in our everyday human communication thereby reducing consciously or unconsciously the human affective and natural emotional expression to one another. As observed by Scheutz (2011), it is possible that artificial intelligence systems could inflict emotional harm on human beings. For him the danger is on the human being's emotional dependence on artificial intelligence in robots and machines. He equally holds that there is increasing evidence that demonstrates how humans anthropomorphize artificial intelligent robots forming what seems like deep emotional but yet undirected relationship with them. He believes that in the contemporary world, human beings are increasingly attached to artificial intelligent robots. In other words, the more artificial intelligence increases in the world, the more human beings develop artificial emotional connection with them as they continuously interact with them. Effective communication depends highly on appropriate expression of emotions (Hendrix & Morrison, 2020). Thus, the implication of emotional bonding with machines is the limiting of emotional human communication with one another as social beings. Moreover, allowing machines to enter our social emotional communication also has adverse implications on the society at large.

Furthermore, these technological representations of human emotions in digital formats cannot convey the degree of the emotions of the sender to the receiver. For instance, Paro, a robotic pet providing emotional interaction with the elderly, is just expressing a programmed mode of performance (Olivier, 2017) though it provides emotional assistance. This reechoes the fact that AI systems do not intrinsically have emotions other that the one programmed into it (Weber-Guskar, 2021). This is different from humans who have the capability of communicating one emotion while feeling and displaying another (Hendrix & Morrison,

2020), and at the same time also sensitive to the emotions of others (Bakola et al., 2022). Olivier (2017) further raises a critical question as to whether one can legitimately talk about affective relationship with AI machines since they are simply simulating human emotions through programmed performance? This scholar concludes that the effort of the present world to simulate true human emotion is inadequate. Moreover, the danger lies with humans increasingly getting emotionally attached to AI machines (Gupta et al., 2023). Scheutz (2011) refers to this as unidirectional emotional bond with artificial machines. The result is that human beings begin to perceive and treat AI machines as extension of themselves (Papadimitriou, 2016). This development raises questions about the impact of AI systems on human emotional communication and social relationship in general. On this note, Gupta et al. (2023) emphasizes the possible risk of decrease in human-to-human relationships due to heavy reliance on artificial intelligence systems which could result to negative psychological impact due to inadequate human connection. These psychological effects include feeling of loneliness, isolation as well as decrease in emotional support to human persons.

In addition, attributing rationality and emotion to artificial machines raises ethical questions in terms of devaluation of the human person. The human agency is an inherent quality in the human person and cannot be adequately represented by simulation in any created machine. In the same line of thought, Weber-Guskar (2021) emphasizes that AI systems are not moral objects or subjects. Artificial intelligence machines do not take responsibility for their actions and as such should be carefully supervised (Ambekar & Kumar, 2018). Hence, this paper interrogates the programmed capabilities of artificial intelligence systems especially in terms of emotions and affectivity to highlight the implications of AI to emotional human communication.

5. Conclusion

This paper set out to inquire into the increasing advancement in the artificial intelligence technology, with particular attention to its implication on the emotional human communication. The foregoing reveals that AI systems are currently designed with emotional characteristics and affective capabilities. This has brought about a transition from technology being a medium or channel of communication to becoming a communication partner. In this way, AI systems are providing emotional assistance to human beings and widely applied in almost every area of human life. However, despite all the positive impacts of AI to humanity, the nature of communication itself has been challenged. It is becoming obviously absurd in the contemporary society to talk about communication as an interactive process between humans as AI social robots abound. In other words, the fundamental human-human emotional communication is being impacted negatively by the very existence of emotionalized artificial intelligence machines. Consequently, this study shows that there is reduction in interpersonal communication as well as other forms of alterations in natural emotional human communication process.

Therefore, this study concludes that though advancement in AI technology comes with lots of positive values, the natural emotional human communication is a great concern. Human beings interacting and bonding emotionally with AI systems portends danger to what interpersonal communication stands for. Artificial intelligence technology is a product of human intelligence and cannot effectively replicate or take the place of the intrinsic emotional human communication despite its advancement in affective capabilities.

Artificial intelligence (AI) systems are products of human beings. Thus, care should be taken by stakeholders in AI industry to design technology that will take into consideration the

implications on emotional human interaction. There should be continuous global/regional conferences by researchers in this field on how to develop AI systems that promote interpersonal communication while eliminating risks of detrimental effects. Researchers should equally engage in foundational empirical understanding of the impact of AI on wider range of human psycho-social behaviors. Similarly, this study strongly recommends that ethical standards should be strictly adhered to in manufacturing artificial intelligence (AI) systems in order to preserve what is intrinsic in humans. Policy makers around the world should develop policies that can regulate these systems responsibly to mitigate their negative impact on human-human communication.

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