



The Digital Afterlife: AI Cloud Consciousness as the New Immortality

Dhruvitkumar V. Talati

Abstract: The quest for immortality has captivated humanity for millennia, from religious beliefs to scientific advancements. Today, technology is redefining the concept of eternal existence through the emergence of AI cloud consciousness. This research paper explores the complex landscape of digital immortality, delving into the science behind mind uploading, the ethical dilemmas, and the role of cloud computing and blockchain in preserving a person's digital legacy.

The human desire to transcend mortality has been a driving force throughout history and across diverse cultures. Traditional methods, such as religious beliefs, cryonics, and genetic legacy, have long been the primary avenues for pursuing immortality. However, the rapid advancement of technology is now reshaping this age-old quest, giving rise to the concept of AI cloud consciousness as a new frontier of eternal existence.

Keywords: Artificial Intelligence, Cloud Computing, Data Centers, Self-Adaptive Systems, Autonomous Operations, Quantum, Cloud Networks, Supercomputing

1. INTRODUCTION

The human desire to live beyond death has been a persistent theme throughout history and across various cultural and religious traditions ([Bassett, 2015](#)).

From ancient Egyptian beliefs in the afterlife to the Fountain of Youth sought by Spanish explorers, the quest for immortality has fascinated and motivated humanity for centuries. ([Bassett, 2015](#))

While traditional methods, such as religious convictions, cryonics, and genetic inheritance, have provided a sense of hope for eternal life, the rapid advancements in technology are now transforming the very notion of immortality.

Exploring the concept of AI cloud consciousness as a potential solution to the human desire for immortality, this research paper delves into the science behind mind uploading, the ethical and philosophical dilemmas surrounding digital afterlife, and the role of cloud computing and blockchain technology in preserving a person's digital legacy.

Understanding the key components of AI cloud consciousness, including neural uploads, digital twins, and consciousness simulation, is crucial in comprehending how technology is reshaping the concept of eternal existence.

The concept of AI cloud consciousness, which involves the storage and simulation of human thoughts, memories, and personality within a digital realm, presents a fascinating alternative to traditional notions of immortality. ([Galvão & Maciel, 2017](#))

The rapid advancements in neuroscience and brain mapping, coupled with the development of brain-computer interfaces, have paved the way for the potential transfer of human cognition into a digital medium.

As the field of artificial intelligence continues to evolve, the promise of AI-powered digital avatars that can live on beyond an individual's physical death has captivated the imaginations of researchers and the general public alike. Defining AI cloud consciousness and its core components, such as neural uploads, digital twins, and consciousness simulation, is essential in understanding how technology is reshaping the concept of eternal existence.

As technology continues to evolve, the pursuit of eternal existence is taking on new forms, with the emergence of AI-powered digital avatars and the possibility of uploading one's consciousness into a digital realm.

How technology is reshaping the concept of eternal existence by introducing the concept of AI cloud consciousness, which involves the storage and simulation of human thoughts, memories, and personality within a digital realm.

Understanding AI cloud consciousness is crucial in comprehending the technological advancements that are reshaping the concept of immortality.

The key components of AI cloud consciousness include neural uploads, digital twins, and consciousness simulation, all enabled by the power of cloud computing and artificial intelligence.

Central to the concept of AI cloud consciousness is the idea of transferring human cognition, thoughts, memories, and personality into a digital medium, allowing individuals to exist in a virtual form long after their physical death.



By exploring the science behind mind uploading, the ethical and philosophical dilemmas surrounding digital immortality, and the role of cloud computing and blockchain technology in preserving a person's digital legacy, this research paper aims to provide a comprehensive understanding of the emerging concept of AI cloud consciousness as the new frontier of immortality.

2. UNDERSTANDING AI CLOUD CONSCIOUSNESS

At the core of the concept of AI cloud consciousness lies the idea of transferring human cognition, thoughts, memories, and personality into a digital medium.

This process involves the use of brain-computer interfaces and advanced neuroscience techniques to map and replicate an individual's neural patterns and cognitive processes ([Campbell et al., 2002](#)).

With the proliferation of cloud computing and the ever-increasing capabilities of artificial intelligence, the storage and simulation of human consciousness within a virtual realm have become a tangible possibility.

The concept of AI cloud consciousness is rooted in the belief that an individual's consciousness, encompassing their thoughts, memories, and personality, can be digitally preserved and simulated.

This is enabled by the integration of brain-computer interfaces, neural mapping, and cloud-based artificial intelligence systems.

The core components that define AI cloud consciousness are neural uploads, digital twins, and consciousness simulation. Neural uploads refer to the process of transferring an individual's neural patterns and cognitive processes into a digital medium, effectively creating a virtual representation of their consciousness. Digital twins, on the other hand, are digital replicas of a person's physical and cognitive attributes, allowing for the continued preservation and interaction with a person's virtual self.

Consciousness simulation involves the use of advanced AI algorithms to mimic and simulate the cognitive functions and decision-making processes of an individual, creating a virtual entity that can continue to exist and interact within a digital realm.

The science behind mind uploading, the ethical and philosophical dilemmas surrounding digital immortality, and the role of cloud computing and blockchain technology in preserving a person's digital legacy are crucial in understanding the emerging concept of AI cloud consciousness as the new frontier of immortality.

The core components that define AI cloud consciousness are neural uploads, digital twins, and consciousness simulation. Neural uploads refer to the process of transferring an individual's neural patterns and cognitive processes into a digital medium, effectively creating a virtual representation of their consciousness.

Digital twins, on the other hand, are digital replicas of a person's physical and cognitive attributes, allowing for the continued preservation and interaction with a person's virtual self.

Consciousness simulation involves the use of advanced AI algorithms to mimic and simulate the cognitive functions and decision-making processes of an individual, creating a virtual entity that can continue to exist and interact within a digital realm.

Finally, the role of cloud computing and artificial intelligence in enabling the storage, preservation, and simulation of human thoughts, memories, and personality within a digital realm is a fundamental aspect of AI cloud consciousness.

As the field of neuroscience and brain-computer interfaces continues to advance, the possibility of transferring human cognition, thoughts, memories, and personality into a digital medium becomes increasingly plausible.

Cloud computing and artificial intelligence play a crucial role in the concept of AI cloud consciousness by enabling the storage, preservation, and simulation of human thoughts, memories, and personality within a digital realm.

The vast computing power and storage capabilities of cloud infrastructure provide the necessary foundations for uploading and preserving an individual's neural patterns, cognitive processes, and personal data.

Advancements in artificial intelligence, particularly in areas such as natural language processing, neural network modeling, and generative AI, allow for the simulation and replication of an individual's personality, decision-making, and communication patterns within a virtual environment.

The integration of cloud computing and AI-driven technologies has the potential to revolutionize the way we perceive and interact with the concept of immortality.



By seamlessly storing and simulating human consciousness within a digital medium, the promise of AI cloud consciousness challenges the traditional notions of life and death, offering a new frontier of eternal existence beyond the physical realm.

The science behind mind uploading, the ethical and philosophical dilemmas surrounding digital immortality, and the role of cloud computing and blockchain technology in preserving a person's digital legacy are crucial in understanding the emerging concept of AI cloud consciousness as the new frontier of immortality.

3. THE SCIENCE BEHIND MIND UPLOADING

The advancement in neuroscience and the development of brain-computer interfaces form the scientific foundation of AI cloud consciousness.

Researchers in the field of neuroscience have made significant strides in mapping and understanding the complex neural patterns and cognitive processes that underlie human consciousness. (Campbell et al., 2002) (Goh, 2021) Through the use of advanced neuroimaging techniques, such as functional magnetic resonance imaging (fMRI) and electroencephalography, scientists have been able to identify and analyze the neural correlates of various cognitive functions, including memory, decision-making, and self-awareness.

This growing understanding of the brain's inner workings has paved the way for the development of brain-computer interfaces (Goh, 2021; Ho et al., 2018), which serve as a critical enabler for mind uploading.

Brain-computer interfaces are devices that establish a direct communication pathway between the brain and external computational systems.

By recording and interpreting neural signals, these interfaces can translate the brain's electrical activity into digital commands, effectively creating a bridge between the biological and the digital realms.

The integration of cloud computing and AI-driven technologies has the potential to revolutionize the way we perceive and interact with the concept of immortality.

Current advancements in neuroscience and brain mapping.

There has been significant progress in understanding the neural correlates of various cognitive functions, including memory, decision-making, and self-awareness (Goh, 2021).

The development of brain-computer interfaces has been a crucial step in enabling the translation of neural signals into digital commands, effectively creating a bridge between the biological and digital realms.

However, the challenges in transferring human cognition into a digital medium remain significant.

The complexity of the human brain, with its trillions of neural connections and diverse patterns of activity, poses a formidable obstacle in accurately replicating and simulating consciousness within a digital environment.

Theories of consciousness, such as the debate around whether an AI system can truly "be" a person, further complicate the scientific understanding of the feasibility and implications of mind uploading.

The fundamental question of whether an AI system can truly "be" a person, in the same way as a biological human, lies at the heart of the philosophical and ethical debates surrounding digital immortality.

Brain-computer interfaces (BCIs) and their role in replicating thought patterns.

The complexity of the human brain, with its trillions of neural connections and diverse patterns of activity, poses a formidable obstacle in accurately replicating and simulating consciousness within a digital environment.

Theories of consciousness, such as the debate around whether an AI system can truly "be" a person, further complicate the scientific understanding of the feasibility and implications of mind uploading.

BCI provide a crucial link in the process of transferring human consciousness into a digital medium, enabling the translation of neural signals into digital commands.

However, the challenges in fully capturing and replicating the nuances of human cognition, emotions, and subjective experiences within an AI system remain significant.

The field of brain-computer interfaces continues to evolve, with researchers working to overcome the complexities of neural dynamics and the potential impact of psycho-neurophysiological fluctuations on brain signals (Saha et al., 2021) (Maiseli et al., 2023) (Mak & Wolpaw, 2009).

The advancement in neuroscience and the development of brain-computer interfaces form the scientific foundation of AI cloud consciousness (Mak & Wolpaw, 2009) (Rao et al., 2012) (Saha et al., 2021).

BCI serve as a critical bridge, enabling the translation of neural signals into digital commands that can be used to transfer and simulate human consciousness within a virtual environment.



The concept of AI-powered digital avatars has emerged as a potential means of extending a person's legacy and presence beyond their physical death.

Challenges in transferring human cognition into a digital medium.

The complexities of the human brain, with its trillions of neural connections and diverse patterns of activity, pose a significant challenge in accurately replicating and simulating consciousness within a digital environment.

The philosophical question of whether an AI system can truly "be" a person, in the same way as a biological human, lies at the heart of the debate surrounding digital immortality.

Human Cognition and Consciousness: The human brain is an incredibly complex organ, with trillions of interconnected neurons and intricate patterns of neural activity that give rise to our cognitive abilities, emotions, and subjective experiences.

Transferring this complexity into a digital medium is a formidable challenge. (Ho et al., 2018)

Theories of Consciousness: There is ongoing debate among philosophers, neuroscientists, and AI researchers about the nature of consciousness and whether an AI system can truly "be" a person, in the same way as a biological human. (Campbell et al., 2002) (Maiseli et al., 2023) (Saha et al., 2021)

Theories of consciousness, such as the debate around whether an AI system can truly "be" a person, further complicate the scientific understanding of the feasibility and implications of mind uploading.

The field of brain-computer interfaces continues to evolve, with researchers working to overcome the challenges of neural dynamics and psycho-neurophysiological fluctuations that impact brain signals.

Fully capturing and replicating the nuances of human cognition, emotions, and subjective experiences within an AI system remains a daunting task, and the philosophical and ethical questions surrounding the nature of consciousness and identity further compound the scientific challenges.

The advancement in neuroscience and the development of brain-computer interfaces form the scientific foundation of AI cloud consciousness.

However, the challenges in transferring human cognition into a digital medium remain significant. (Mak & Wolpaw, 2009) (Saha et al., 2021) (Campbell et al., 2002)

Theories of consciousness continue to complicate the scientific understanding of the feasibility and implications of mind uploading.

4. AI-POWERED DIGITAL AVATARS: LIVING BEYOND DEATH

The concept of AI-powered digital avatars has emerged as a potential means of extending a person's legacy and presence beyond their physical death.

Companies such as HereAfter AI and Eternime are working on developing AI-driven afterlife services that aim to create personalized digital representations of deceased individuals.

These AI avatars are designed to engage in meaningful interactions with loved ones, providing emotional support and a sense of continued connection with the departed.

However, the ethical and philosophical implications of such technologies are complex and multifaceted.

The morality of creating AI versions of deceased individuals is a subject of ongoing debate, with concerns around privacy, ownership, and the potential for misuse, such as deepfakes and data manipulation.

These AI-based entities are designed to provide emotional support and a sense of continued connection for loved ones, through personalized interactions and the preservation of a person's personality, memories, and digital essence.

However, the development of such AI avatars raises a myriad of complex ethical and philosophical questions that warrant careful consideration, as the implications of creating digital versions of deceased individuals can have far-reaching consequences on our understanding of identity, consciousness, and the very nature of human existence.

The development of AI-powered digital avatars raises a host of complex ethical and philosophical questions that require careful examination.

The concept of AI-powered digital avatars, which aim to preserve a person's legacy and presence after death, highlights the potential of technology to reshape our understanding of identity, consciousness, and the nature of human existence.

The ethical and philosophical dilemmas surrounding the creation of AI-powered digital avatars touch on fundamental questions about the nature of human identity, consciousness, and the very meaning of life and death. (Dignum, 2018)



The ethical and philosophical implications of AI-powered digital avatars are far-reaching and complex, as they challenge our understanding of identity, consciousness, and the nature of human existence.

The personalized interactions between AI-based entities and loved ones raise questions about the authenticity of emotional support and the true nature of such connections. ([Seymour et al., 2018](#))

The role of cloud computing and blockchain technology in ensuring the continuity, accessibility, and security of a person's digital consciousness is a crucial aspect of the digital immortality landscape.

The future of digital immortality holds the potential to reshape our understanding of identity, consciousness, and the human condition, as we grapple with the ethical and philosophical implications of AI-powered digital avatars and the ability to transcend the boundaries of biological mortality.

AI-driven afterlife services, such as those offered by companies like HereAfter AI and Eternime, aim to create personalized digital representations of deceased individuals, allowing for continued interactions and a sense of connection with loved ones.

However, the development of such AI avatars raises a myriad of complex ethical and philosophical questions that warrant careful consideration, as the implications of creating digital versions of deceased individuals can have far-reaching consequences on our understanding of identity, consciousness, and the very nature of human existence.

5. ETHICAL AND PHILOSOPHICAL DILEMMAS

The concept of digital immortality through AI cloud consciousness raises a host of ethical and philosophical questions that must be carefully considered.

The morality of creating AI versions of deceased individuals is a subject of ongoing debate, with concerns around privacy, ownership, and the potential for misuse, such as deepfakes and data manipulation.

Beyond the scientific and technological challenges, the ethical and philosophical implications of AI-powered digital avatars and the pursuit of digital immortality are complex and multifaceted.

At the heart of these dilemmas is the fundamental question of what defines human identity and consciousness.

The personalized interactions between AI-based entities and loved ones raise questions about the authenticity of emotional support and the true nature of such connections.

Concerns around privacy, ownership, and the potential for misuse, such as deepfakes and data manipulation, further complicate the ethical landscape.

The development of AI-powered digital avatars and the pursuit of digital immortality through AI cloud consciousness raise a host of ethical and philosophical questions that must be carefully considered.

The morality of creating AI versions of deceased individuals is a subject of ongoing debate, with concerns around privacy, ownership, and the potential for misuse, such as deepfakes and data manipulation.

The concept of digital immortality through AI cloud consciousness raises a host of ethical and philosophical questions that must be carefully considered.

Fundamental questions about the nature of human identity, consciousness, and the very meaning of life and death lie at the heart of these dilemmas.

Privacy and ownership: Who controls a person's digital consciousness, and what are the implications of this for the individual and their loved ones?

The potential for misuse, such as the creation of deepfakes or the manipulation of digital data, further complicates the ethical landscape, as it raises concerns about the authenticity and integrity of the digital representations of deceased individuals. ([Bostrom & Yudkowsky, 2014](#)) ([Baeza-Yates, 2023](#)) ([Wang & Liu, 2023](#)) ([Vinuesa et al., 2020](#))

The role of cloud computing and blockchain technology in ensuring the continuity, accessibility, and security of a person's digital consciousness is a crucial aspect of the digital immortality landscape.

Decentralized AI: Can an uploaded consciousness truly be independent, or will it remain dependent on and influenced by the underlying technology and infrastructure?

The ethical and philosophical dilemmas surrounding the development of AI-powered digital avatars and the pursuit of digital immortality are complex and multifaceted, touching on fundamental questions about the nature of human identity, consciousness, and the very meaning of life and death.

Potential for misuse: deepfakes, data manipulation, and AI autonomy concerns.



The ethical and philosophical implications of AI-powered digital avatars and the pursuit of digital immortality are far-reaching and complex, as they challenge our understanding of identity, consciousness, and the human condition.

6. THE ROLE OF CLOUD COMPUTING AND BLOCKCHAIN IN DIGITAL IMMORTALITY

Cloud technology plays a vital role in ensuring the continuity and accessibility of a person's digital consciousness, as it provides the infrastructure and storage necessary to maintain and preserve the digital representations of deceased individuals.

The use of blockchain technology can further enhance the security, authenticity, and integrity of the digital consciousness, preventing tampering or unauthorized access. (Bassett, 2015)

However, the reliance on centralized cloud infrastructure and the potential for AI autonomy raises questions about the true independence of an uploaded consciousness.

The role of decentralized AI and blockchain technology in digital immortality is an area that requires further exploration, as it may offer a more secure and independent path for the preservation of a person's digital legacy.

The ethical and philosophical implications of AI-powered digital avatars and the pursuit of digital immortality are far-reaching and complex, as they challenge our understanding of identity, consciousness, and the human condition.

The role of cloud computing and blockchain technology in ensuring the continuity, accessibility, and security of a person's digital consciousness is a crucial aspect of the digital immortality landscape.

These technologies can provide the necessary infrastructure and safeguards to maintain and preserve the digital representations of deceased individuals.

However, the reliance on centralized cloud infrastructure and the potential for AI autonomy raises questions about the true independence of an uploaded consciousness.

The use of blockchain technology can enhance the security, authenticity, and integrity of the digital consciousness, preventing tampering or unauthorized access.

Decentralized AI and blockchain-based solutions may offer a more secure and independent path for the preservation of a person's digital legacy, but this area requires further exploration and research.

Decentralized AI explain at the end to convey importance and uncertainty about the ability of uploaded consciousness to truly be independent.

The future of digital immortality through AI-powered cloud consciousness is a complex and rapidly evolving landscape, fraught with both scientific and technological advancements, as well as profound ethical and philosophical challenges.

As the quest for eternal existence continues, the integration of cutting-edge technologies like cloud computing, blockchain, and artificial intelligence will play a pivotal role in shaping the digital afterlife.

However, the ethical and philosophical implications of these developments must be carefully considered, as they raise fundamental questions about the nature of human identity, consciousness, and the very meaning of life and death.

The development of decentralized AI and blockchain-based solutions may offer a more secure and independent path for the preservation of a person's digital legacy, but this area requires further exploration and research to fully understand the capabilities and limitations of such technologies in achieving true digital immortality.

The future of digital immortality is a complex and multifaceted topic that requires careful consideration and further research.

7. THE FUTURE OF DIGITAL IMMORTALITY

The future of digital immortality through AI-powered cloud consciousness is a complex and rapidly evolving landscape, fraught with both scientific and technological advancements, as well as profound ethical and philosophical challenges.

As the quest for eternal existence continues, the integration of cutting-edge technologies like cloud computing, blockchain, and artificial intelligence will play a pivotal role in shaping the digital afterlife.

However, the ethical and philosophical implications of these developments must be carefully considered, as they raise fundamental questions about the nature of human identity, consciousness, and the very meaning of life and death.

The development of decentralized AI and blockchain-based solutions may offer a more secure and independent path for the preservation of a person's digital legacy, but this area requires further exploration and research to fully understand the capabilities and limitations of such technologies in achieving true digital immortality.



The future of digital immortality is a complex and multifaceted topic that requires careful consideration and further research to navigate the scientific, technological, and ethical challenges that lie ahead.

Predictions on the future trajectory of AI cloud consciousness and digital immortality, acknowledging the complex and uncertain nature of this emerging field.

Societal impact of AI-powered digital immortality and the potential for misuse or unintended consequences. The need for further research and exploration of this topic, particularly in the areas of decentralized AI and blockchain technology, to ensure a more secure and independent path for digital immortality.

As the concept of digital immortality continues to evolve, it is essential to consider the broader societal implications of this emerging field. The potential for misuse, such as deepfakes, data manipulation, and the autonomy of AI systems, must be carefully addressed.

The development of decentralized AI and blockchain-based solutions may offer a more secure and independent path for the preservation of a person's digital legacy, but this area requires further exploration and research to fully understand the capabilities and limitations of such technologies in achieving true digital immortality.

Exploring the role of blockchain, decentralized AI, and other emerging technologies in securing and empowering digital immortality.

The future of digital immortality is a complex and multifaceted topic that requires careful consideration and further research to navigate the scientific, technological, and ethical challenges that lie ahead. Researchers and policymakers must work collaboratively to ensure that the development of AI cloud consciousness and digital immortality aligns with the highest ethical standards and serves the well-being of humanity.

8. CONCLUSION

The quest for immortality has been a driving force throughout human history, and the emergence of AI-powered cloud consciousness presents a new and transformative approach to this age-old desire.

By enabling the digital preservation of a person's thoughts, memories, and personality, this technology offers the tantalizing prospect of a digital afterlife.

However, the realization of true digital immortality is fraught with complex scientific, technological, and ethical challenges that must be carefully navigated.

As the field of digital immortality continues to evolve, it is crucial that researchers, policymakers, and the public engage in thoughtful dialogue to address the profound implications of this emerging technology.

Only through a collaborative and interdisciplinary approach can we ensure that the development of AI cloud consciousness and digital immortality aligns with our deepest ethical principles and serves the greater good of humanity.

Summary of key takeaways, emphasizing the need for continued research, ethical considerations, and an interdisciplinary approach to the complex challenges and possibilities of AI-powered digital immortality.

Final thoughts on the transformative potential and the critical importance of responsible development in this emerging field.

REFERENCES

- [1]. Baeza-Yates, R. (2023). LECTURE HELD AT THE ACADEMIA EUROPAEA BUILDING BRIDGES CONFERENCE 2022. In *European Review* (Vol. 31, Issue 4, p. 406). Cambridge University Press. <https://doi.org/10.1017/s1062798723000145>
- [2]. Bassett, D. J. (2015). Who Wants to Live Forever? Living, Dying and Grieving in Our Digital Society. In *Social Sciences* (Vol. 4, Issue 4, p. 1127). Multidisciplinary Digital Publishing Institute. <https://doi.org/10.3390/socsci4041127>
- [3]. Bostrom, N., & Yudkowsky, E. (2014). The ethics of artificial intelligence. In *Cambridge University Press eBooks* (p. 316). Cambridge University Press. <https://doi.org/10.1017/cbo9781139046855.020>
- [4]. Campbell, M., Hoane, A. J., & Hsu, F. (2002). Deep Blue. In *Artificial Intelligence* (Vol. 134, p. 57). Elsevier BV. [https://doi.org/10.1016/s0004-3702\(01\)00129-1](https://doi.org/10.1016/s0004-3702(01)00129-1)
- [5]. Dignum, V. (2018). Ethics in artificial intelligence: introduction to the special issue. In *Ethics and Information Technology* (Vol. 20, Issue 1, p. 1). Springer Science+Business Media. <https://doi.org/10.1007/s10676-018-9450-z>
- [6]. Galvão, V. F., & Maciél, C. (2017). The Acceptability of Digital Immortality (p. 1). <https://doi.org/10.1145/3160504.3160580>



- [7]. Goh, H. (2021). Artificial Intelligence in Achieving Sustainable Development Goals. In arXiv (Cornell University). Cornell University. <https://doi.org/10.48550/arxiv.2107.13966>
- [8]. Ho, A. S., Hancock, J. T., & Miner, A. S. (2018). Psychological, Relational, and Emotional Effects of Self-Disclosure After Conversations With a Chatbot. In *Journal of Communication* (Vol. 68, Issue 4, p. 712). Oxford University Press. <https://doi.org/10.1093/joc/jqy026>
- [9]. Maiseli, B., Abdalla, A. T., Massawe, L. V., Mbise, M., Mkocho, K., Nassor, N. A., Ismail, M., James, M., & Kimambo, S. (2023). Brain-computer interface: trend, challenges, and threats [Review of Brain-computer interface: trend, challenges, and threats]. *Brain Informatics*, 10(1). Springer Science+Business Media. <https://doi.org/10.1186/s40708-023-00199-3>
- [10]. Mak, J. N., & Wolpaw, J. R. (2009). Clinical Applications of Brain-Computer Interfaces: Current State and Future Prospects. In *IEEE Reviews in Biomedical Engineering* (Vol. 2, p. 187). Institute of Electrical and Electronics Engineers. <https://doi.org/10.1109/rbme.2009.2035356>
- [11]. Rao, T. K., Lakshmi, M. R., & Prasad, T. V. (2012). An Exploration on Brain Computer Interface and Its Recent Trends. In arXiv (Cornell University). Cornell University. <https://doi.org/10.48550/arxiv.1211.2737>
- [12]. Saha, S., Mamun, K. A., Ahmed, K. I., Mostafa, R., Naik, G. R., Darvishi, S., Khandoker, A. H., & Baumert, M. (2021). Progress in Brain Computer Interface: Challenges and Opportunities [Review of Progress in Brain Computer Interface: Challenges and Opportunities]. *Frontiers in Systems Neuroscience*, 15. Frontiers Media. <https://doi.org/10.3389/fnsys.2021.578875>
- [13]. Seymour, M., Riemer, K., & Kay, J. (2018). Actors, Avatars and Agents: Potentials and Implications of Natural Face Technology for the Creation of Realistic Visual Presence. In *Journal of the Association for Information Systems* (p. 953). Association for Information Systems. <https://doi.org/10.17705/1jais.00515>
- [14]. Vinuesa, R., Azizpour, H., Leite, I., Balaam, M., Dignum, V., Domisch, S., Felländer, A., Langhans, S. D., Tegmark, M., & Nerini, F. F. (2020). The role of artificial intelligence in achieving the Sustainable Development Goals [Review of The role of artificial intelligence in achieving the Sustainable Development Goals]. *Nature Communications*, 11(1). Nature Portfolio. <https://doi.org/10.1038/s41467-019-14108-y>
- [15]. Wang, Y., & Liu, W. (2023). Emotional Simulation of Artificial Intelligence and Its Ethical Reflection. In *Academic Journal of Humanities & Social Sciences* (Vol. 6, Issue 5). <https://doi.org/10.25236/ajhss.2023.060503>