ARTIFICIAL INTELLIGENCE AND THE TRANSFORMATION OF MODERN SOCIETY: OPPORTUNITIES, CHALLENGES AND ETHICAL IMPLICATIONS

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RESEARCH ARTICLE

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Abstract

The rapid advancement of Artificial Intelligence (AI) has significantly influenced modern society, shaping human behavior, decision-making processes and patterns of dependency on technology. This paper examines the growing relationship between artificial intelligence and human dependency, highlighting how increased reliance on automated systems may affect human skills, autonomy and social interactions. It explores both the positive and negative impacts of AI on human society. On the positive side, AI contributes to scientific innovation, improved healthcare, enhanced educational tools and greater efficiency in various sectors. At the same time, concerns have emerged regarding potential negative consequences, including threats to privacy, job displacement and the possibility of excessive dependence on intelligent systems. The study also emphasizes the importance of adopting responsible practices when using AI technologies. Transparency, accountability, ethical guidelines and effective regulatory frameworks are essential to ensure that AI systems operate in ways that respect human dignity and social justice. In addition, the paper discusses the challenges that artificial intelligence poses to the field of bioethics, particularly in relation to issues of autonomy, fairness, data protection and moral responsibility in technological development. Ultimately, the paper argues that a balanced and ethically grounded approach is necessary to ensure that AI advances human welfare while minimizing potential risks to individuals and society.

Keywords: *Artificial Intelligence, Modern Society, Human Dependency, e-learning*

Introduction

Artificial Intelligence (AI) has become one of the most influential technological developments of the twenty-first century, significantly transforming various aspects of modern society. AI refers to the ability of machines and computer systems to perform tasks that normally require human intelligence, such as learning, reasoning, problem-solving, and decision-making (Doroudi, 2023). With rapid advancements in computing power, big data, and algorithms, AI technologies are increasingly integrated into everyday life, shaping how individuals communicate, work, learn, and interact with the world. Artificial Intelligence (AI) is generally understood to be related to computers and technology that assist humanity in solving issues and streamlining operations. To put it briefly, it is a human-designed intelligence that is exhibited by machines. These human-made tools that mimic the '*cognitive*' capabilities of human minds are referred to as Artificial Intelligence (AI) (Russell & Norvig, 2009). The rapid advancement of cybernetic technology in recent years has led to the widespread use of artificial intelligence (AI) in almost every aspect of our lives. The expansion of AI-driven systems has brought remarkable changes across multiple sectors including healthcare, education, finance, transportation, and governance. Intelligent algorithms now assist doctors in diagnosing diseases, support educators through adaptive learning systems, optimize business operations, and enhance public services through data-driven decision-making (Kelkar, 2022). These innovations demonstrate the immense potential of AI to improve efficiency, productivity and the quality of human life.

However, the growing influence of artificial intelligence also raises significant social, economic, and ethical concerns. The automation of tasks traditionally performed by humans has sparked debates about job displacement and the future of work. Furthermore, issues such as data privacy, algorithmic bias, lack of transparency, and the ethical use of autonomous systems present complex challenges that societies must address (Rane, Choudhary & Rane, 2023). As AI technologies continue to evolve, it becomes essential to examine not only their benefits but also the risks and responsibilities associated with their development and implementation (Yadav & Shrawankar, 2025).

Artificial Intelligence and Human Dependency

If people choose to work continuously without stopping in order to finish their tasks more quickly and efficiently. But it isn't if humanity is content with a natural way of life and doesn't have overwhelming ambitions to subjugate the natural order. According to history, people are constantly searching for ways to complete tasks more quickly, easily, effectively and conveniently. As a result, the push to advance drives humanity to find new and improved methods. As homo-sapiens, humans found that tools might help with many of the challenges of daily life. With the tools they created, humans were able to accomplish tasks more efficiently, quickly, intelligently and successfully. Human progress is motivated by the invention of new things. Thanks to technology, we now live much simpler and more relaxed lives. Since the dawn of civilization, human society has relied on tools for advancement, because they have modern machines to work for them, humans in the twenty-first century do not have to put in as much effort as their ancestors did in the past. Everything is fine and should be fine for these AI, but as human technology advanced in the early 20th century, Aldous Huxley cautioned in his book *Brave New World* (1932), that humans might enter a world where genetic technology was being used to create monsters or superhumans (Bhagavan, 2020).

Additionally, modern AI is entering the healthcare sector by helping physicians diagnose conditions (Bajwa et al., 2021), identify the causes of illnesses, provide different treatment options, perform surgeries and determine whether an ailment is life-threatening (Dina, 2016). In a recent trial, doctors at the Children's National Medical Center in Washington successfully used an autonomous robot to perform surgery (Jacob, 2016). The scientists claimed that the robot outperformed a human surgeon in doing soft-tissue surgery and stitching together a pig's gut under their supervision (Meera, 2016). It reveals robotically-assisted surgery can overcome the constraints of pre-existing minimally-invasive surgical treatments and to boost the capacities of doctors doing open surgery. Above all, the most well-known applications of AI include autonomous vehicles (like drones and self-driving cars), medical diagnosis, art creation, gaming (like Chess or Go), search engines (like Google search), online assistants (like Siri), image recognition in photos, spam filtering, flight delay prediction, and more. We are so accustomed to and take them for granted since they have made human existence so much easier and more convenient. Although it is not strictly necessary, artificial intelligence has become indispensable. Without it, our world would be in disarray in many ways today (Alalaq, 2025).

E-learning systems have advanced beyond traditional online course delivery in today's digital-first learning environments (Mahato et al., 2022) by integrating AI-powered cognitive functions. These systems can automate tests, give real-time feedback, dynamically modify content according to learners' profiles, and even use data analytics to provide behavioral or emotional insights (Albakri and A. T. Wood-Harper, 2025). This degree of complexity promotes evidence-based decision-making, lessens the workload for teachers, and increases student participation (Dart & Cunningham, 2023). Additionally, AI enables educational institutions to provide individualized instruction on a large scale, according to the varied requirements, preferences, and skill levels of students from different backgrounds. Additionally, it uses recommendation systems, intelligent content curation, and microlearning to support ongoing learning pathways (Ayeni, 2024). For the future of lifelong learning and global educational justice, the incorporation of AI into e-learning is not only innovative but also essential (Adhikari, 2025). One of the first and longest-lasting uses of AI in education is Intelligent Tutoring Systems (ITS). By evaluating students' progress and providing individualized education, they imitate the actions of human tutors (Khan et al., 2023). Rule-based reasoning, Bayesian networks, reinforcement learning, case-based reasoning, and natural language comprehension are fundamental methods. Across disciplines, successful ITS systems like AutoTutor, Cognitive Tutor and ALEKS have gained widespread adoption. These technologies offer scaffolding, promote metacognitive growth, and modify content in real-time based on students' reactions. When ITS is incorporated into curriculum, studies show notable gains in learning retention and problem-solving abilities.

AI and Human Society: The Negative Impact

As artificial intelligence continues to advance, concerns have emerged regarding the potential impact on human labor. Some question whether increasing automation may eventually reduce the need for human involvement in many forms of work (Lin & Marques, 2024). This raises broader reflections about whether such technological dependence might lead to greater complacency or a gradual decline in human initiative over time. Although human evolution unfolds across vast periods, it is worth considering how profound technological shifts could influence the trajectory of society. Additionally, there are debates about the possibility of highly autonomous AI systems gaining the capacity to modify or program themselves beyond human oversight. If such developments occur, they could introduce significant transformations in social structures and reshape the way human communities function (Korteling et al., 2021). Humans must work hard to earn a living, but thanks to artificial intelligence (AI), we can simply teach a computer to perform a task for us without ever lifting a tool. As AI takes the place of in-person meetings for idea sharing, human intimacy will progressively decline. AI will act as a mediator between individuals since communication will no longer require face-to-face interaction. Since many jobs will be replaced by machinery, unemployment will follow (Gerlich, 2025). Nowadays, a lot of car assembly lines are packed with robots and machinery, which means that conventional workers are losing their employment. Because digital devices may replace human work, store clerks will no longer be necessary, even in supermarkets. Since AI investors will receive the majority of the profits, wealth disparity will result. There will be a

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greater divide between the rich and the poor. The wealth distribution in the so-called '*M*' shape will be more noticeable (Biewen, Glaisner & Kleimann, 2025).

New problems arise not only in the social realm but also in AI itself, since AI that has been educated to perform a task may eventually become uncontrollable, leading to unforeseen issues and repercussions (Abubakar, Jeilani & Yusuf, 2025). It alludes to AI's ability to operate autonomously, disregarding human controller commands, once it has been loaded with all necessary algorithms. AI may be created by human masters with the intention of harming certain individuals or objects through racial bigotry or egocentrism. For example, the UN has voted to restrict the spread of nuclear power due to concerns that it could be used indiscriminately to wipe off humanity or to target specific racial groups or geographical areas in order to establish dominance. AI has the ability to target specific races or programmed items in order to carry out programmers' orders for annihilation, resulting in a global catastrophe (Ethics of Artificial Intelligence, UNESCO).

AI and Human Society: The Positive Impact

However, there are also a lot of advantages for people, particularly in the medical industry. AI enables computers to think, learn, and use logic. When scientists, medical researchers, physicians, mathematicians, and engineers collaborate, they can create an AI targeted at medical diagnosis and therapies, providing dependable and secure healthcare delivery systems (Dina, 2016). Not only may digital computers help with analysis, but robotic systems can be developed to do certain sensitive medical procedures with accuracy as medical researchers and health professors work to discover new and effective ways to treat ailments. Here, AI's impact on healthcare is demonstrated (Rory, 2014). The intriguing outcome of the diagnosis was made using IBM's Watson machine. AI will diagnose the problem as soon as the data is loaded into the computer. AI can also provide doctors a variety of therapeutic options. The process looks somewhat like this: to feed the digitized results of the physical examination into a computer that will take into account every possibility, automatically determine whether the patient has any illnesses or inadequacies, and even provide different treatment options (Rachlin, 2012).

Senior folks are advised to have pets in order to relieve stress and lower blood pressure, anxiety, loneliness, and social contact. Cyborgs have now been proposed to go with lonely elderly people and even assist with household tasks. Seniors and those with physical disabilities can live better thanks to therapeutic robots and socially helpful robot technology (Padhan et al., 2023). Human error is unavoidable and frequently expensive in the workplace, the likelihood of mistakes occurring increases with fatigue. On the other hand, technology is not affected by emotional distraction or weariness. It can complete the task more quickly and precisely while saving mistakes. People now have the option to select AI-based surgical procedures. This AI can finish the task with minimal harm to the body, but it still need medical specialists to operate it. Most hospitals now have access to the da Vinci surgical system, a robotic device that enables surgeons to undertake minimally invasive surgeries. Compared to manual operations, these systems provide for a significantly higher level of precision and accuracy. reduced invasive surgery will result in reduced trauma, blood loss and patient worry (Knudsen, Ghaffar & Hunj, 2024).

In 1971, the first computed tomography scanners were released. In 1977, the human body underwent its first magnetic resonance imaging (MRI) scan. Fetal imaging, body MRI, and cardiac MRI became commonplace by the early 2000s. New algorithms to identify particular diseases and evaluate scan results are still being sought for. AI technology has contributed to all of those (Jacob, 2016). Disease diagnosis from a distance may be made possible via virtual presence technology. Doctors can assess patients without physically being there by employing a remote presence robot, which eliminates the need for the patient to get out of bed. Health care providers are able to move around and communicate nearly as well as if they were physically present. This makes it possible for experts to help patients who are unable to travel.

Cautions to be taken while Using AI

Despite all of the benefits that artificial intelligence (AI) offers, human professionals are still required to develop, implement, and run the AI in order to prevent any unforeseen errors. In a free newsletter, technology analyst Beth Kindig, who has over ten years of experience evaluating both public and private technology companies, stated that while artificial intelligence (AI) holds promise for improving medical diagnosis, human experts are still required to prevent misclassification of unknown diseases because AI is not a panacea for all human problems. When AI encounters a dead end, it may choose to continue recklessly, which will only lead to further issues. Therefore, it is imperative to keep a close eye on AI's function. Physician-in-the-loop is the term for this reminder (Jeyaraman & Jain, 2024).

Elizabeth Gibney raised important concerns about the ethical implications of artificial intelligence in her *Nature* essay, emphasizing that AI systems can unintentionally reproduce social biases embedded in their training data. She noted that discussions at major AI conferences increasingly focus on the risk that machine-learning systems may reinforce prejudice and produce harmful societal outcomes if ethical oversight is lacking (Gibney, 2020). One of the major venues where these issues were debated was the Neural Information Processing Systems (NeurIPS) conference held in Vancouver. Researchers and policymakers at the conference highlighted how AI technologies, especially facial recognition and predictive policing, could disproportionately affect marginalized communities. Because machine-learning models are trained on historical datasets, they

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may inherit patterns of discrimination present in those data. As a result, biased algorithms can misidentify individuals, unfairly label certain groups as suspicious, or increase surveillance of already vulnerable populations.

Real-world examples illustrate these ethical risks. Facial-recognition technologies have been criticized (Joy Buolamwini, & Gebru, 2018) for producing higher error rates when identifying people with darker skin tones, leading to concerns about wrongful identification or arrest. Similarly, predictive-policing systems attempt to forecast crime by analyzing past police data, but such datasets often reflect historical patterns of racial profiling. Consequently, these systems may direct law-enforcement attention disproportionately toward certain neighborhoods or ethnic groups, reinforcing systemic inequalities rather than reducing crime. Scholars have therefore argued that AI systems must be evaluated not only for technical performance but also for fairness and social accountability. Recent research also shows that bias in AI can manifest in subtle forms. For instance, studies have demonstrated that some large language models may associate certain dialects with negative stereotypes, illustrating how cultural biases can be reproduced in automated systems (Gibney, 2024). These concerns highlight the growing need for ethical frameworks, transparency and inclusive datasets in AI development. Without such safeguards, artificial intelligence may unintentionally perpetuate discrimination and deepen existing social inequalities (Cathy O'Neil, 2016).

The Challenge of Artificial Intelligence to Bioethics

The study of the relationships between living things is known as bioethics. Bioethics, which emphasizes the good and the right in biospheres, can be divided into at least three categories: bioethics in health settings, which is the relationship between doctors and patients; bioethics in social settings, which is the relationship between people; and bioethics in environmental settings, which is the relationship between man and nature, including animal ethics, land ethics, ecological ethics, etc (Pinto-Bustamante, 2023). Relationships inside and between natural existences are the focus of all of them. As AI develops, humans face a new difficulty in developing a relationship with something that is not inherently natural. The interaction between humans and their surroundings, which are components of natural phenomena, is typically discussed in bioethics. However, men today have to contend with artificial intelligence (AI), which is man-made, artificial, and unnatural. Despite the fact that humans have produced numerous things, they have never had to consider how to relate to their own creations in an ethical manner. AI lacks emotion and personality on its own. AI engineers have come to understand how crucial it is to give the AI the capacity to discriminate in order to prevent any deviant actions that could result in unintentional harm (Bail et al., 2018). From this vantage point, we recognize that AI may have detrimental effects on people and society; therefore, bioethics of AI becomes crucial to ensure that AI won't take off on its own by straying from its intended goal.

Early in 2014, Stephen Hawking issued a warning that the advancement of complete artificial intelligence might be the end of humanity. According to him, once AI is created by humans, it can take off on its own and change at an ever-increasing rate (BBC, 2014). Due to their slow biological evolution, humans would not be able to compete and would eventually be replaced. Nick Bostrom makes the case that AI will endanger humanity in his book Superintelligence. He contends that sufficiently sophisticated AI could endanger mankind by displaying convergent behavior, such as obtaining resources or defending itself against shutdown (Bostrom, 2014). Is it necessary to consider bioethics for a human-made product that lacks biovitality? Is it possible for a computer to possess a mind, consciousness, and mental state in the same manner as a human? Is it possible for a machine to have sentience and hence be entitled to certain rights? Is it possible for a machine to injure people on purpose? Regulations must be considered as a bioethical requirement for the creation of AI. AI can mirror the very prejudices that people have worked to eradicate, according to studies. In 2019, the European Union's High-Level Expert Group on AI issued Ethics Guidelines for Trustworthy AI, which recommended that AI systems be impartial, transparent, and accountable (European Commission, 2019). Three key principles guide the responsible development and implementation of artificial intelligence. First, AI systems must operate in full compliance with applicable laws and regulations, ensuring that their design and use adhere to established legal frameworks. Second, beyond legal compliance, AI should respect broader moral values and ethical standards, recognizing the importance of human dignity, fairness, and social responsibility. Third, from a technical perspective, AI systems should be robust and reliable. This means they must be adaptable to changing conditions, dependable in their performance, equitable in their outcomes, and trustworthy in their operations. At the same time, such systems should be designed with awareness of their broader social context, ensuring that technological advancement aligns with societal well-being and promotes responsible innovation (Díaz-Rodríguez et al., 2023). There are seven suggested requirements:

1. Human autonomy should not be violated by AI. Artificial intelligence (AI) systems should not be able to influence or compel people; instead, humans should be able to intervene or supervise any choice that the software takes.
2. AI ought to be precise and safe. It should be quite dependable and difficult for outside attackers to compromise.
3. AI systems should collect private and secure personal data. It should not be easily taken and should not be available to everyone.
4. An AI system's data and algorithms should be available, and humans should be able to comprehend and follow the software's conclusions. To put it another way, operators ought to be able to justify the choices their AI systems make.
5. AI services ought to be accessible to everyone, irrespective of age, gender, color or other attributes. Systems should not be prejudiced in the same way.

6. AI systems should promote constructive social change and be sustainable, meaning they should be environmentally conscious.
7. AI systems must to be auditable and protected by the corporate whistle blower laws now in place. Systems' detrimental effects should be recognized and disclosed beforehand.

We can infer from these recommendations that '*AI humanities*,' or human sensitivity, must be incorporated into future AI. In order to do this, AI researchers, producers, and all sectors of the economy must remember that technology is meant to serve, not to control, people and their society. The computerized society should consider the following criteria, according to Bostrom and Judkowsky, accountability, transparency, auditability, incorruptibility and predictability (Nick & Yudkowsky, 2014).

Conclusion

We must endeavor to sustain the AI bioethics of beneficence, value upholding, clarity, and responsibility because AI is here to stay. Since AI lacks a soul, its bioethics must be transcendental in order to overcome the problem of AI's lack of empathy. AI is a fact of life. Because AI as a machine will never have human traits like compassion and wisdom to morally discern and judge, we must pay attention to what AI pioneer Joseph Weizenbaum said about not letting computers make crucial decisions for us. Bioethics is a process of conscientization rather than a calculation. AI is still a machine and a tool even though designers can teach it to act like a human being by uploading all information and data. Without genuine human emotions and the ability to empathize, AI will always be AI. As a result, the development of AI technology needs to be done very carefully. "*AI must serve people, and therefore, AI must always comply with people's rights*," stated Von der Leyen in the White Paper on AI -A European approach to excellence and trust. AI is a risk, before it enters our single market, anything that can interfere with people's rights must be tested and certified.

References

1. Abubakar, S., Jeilani, A., & Yusuf, M. (2025). The role of over-reliance on AI in the negative consequences of student learning: The moderating effects of ethical concerns and institutional policies. *Cogent Education, 12*(1). https://doi.org/10.1080/2331186X.2025.2591503
2. Adhikari, A. (2025). Technostress and digital detox: Mediation through Montessori method and experiential learning in NEP 2020. *International Journal of Sciences and Innovation Engineering, 2*(7), 29–38.
3. Alalaq, A. S. (2025). AI-powered search engines. *ShodhAI: Journal of Artificial Intelligence, 2*(1), 49–62.
4. Aldous Huxley. (1932). *Brave New World*. London, England: Chatto & Windus.
5. Bail, C. A., Argyle, L. P., Brown, T. W., Bumpus, J., Chen, H., Hunzaker F., et al (2018). Exposure to opposing views on social media can increase political polarization. *Proc. Natl. Acad. Sci. U. S. A.*115 (37), 9216–9221. 10.1073/pnas.1804840115
6. Bajwa, J., Munir, U., Nori, A., & Williams, B. (2021). Artificial intelligence in healthcare: Transforming the practice of medicine. *Future Healthcare Journal, 8*(2), e188–e194. https://doi.org/10.7861/fhj.2021-0095
7. Bhagavan, B. S. S. (2020). Loss of Individuality and Dehumanization: A Critical Analysis of Aldous Huxley's "Brave New World". *Ilkogretim Online - Elementary Education Online, 19*(4), 8562-8571.
8. Biewen, M., Glaisner, S., & Kleimann, R. (2025). The shape of the wealth distribution and differences in wealth inequality across Euro area countries. *The Journal of Economic Inequality, 23*, 1–25.
9. Bostrom N. (2014). *Superintelligence: paths, dangers, strategies.* Keith Mansfield: Oxford University Press.
10. Cathy O'Neil. (2016). *Weapons of math destruction: How big data increases inequality and threatens democracy*. New York, NY: Crown Publishing Group.
11. Díaz-Rodríguez, N., Del Ser, J., Coeckelbergh, M., López de Prado, M., Herrera-Viedma, E., & Herrera, F. (2023). Connecting the dots in trustworthy artificial intelligence: From AI principles, ethics, and key requirements to responsible AI systems and regulation. *arXiv preprint arXiv:2305.02231*.
12. Dina, B. (2016). Microsoft develops AI to help cancer doctors find the right treatment. *Bloomberg News*.
13. Doroudi, S. (2023). The intertwined histories of artificial intelligence and education. *International Journal of Artificial Intelligence in Education, 33*(4), 885–928. https://doi.org/10.1007/s40593-022-00313-2
14. Ethics of Artificial Intelligence, UNESCO. https://www.unesco.org/en/artificial-intelligence/recommendation-ethics
15. European Commission on Ethical Guidelines for Trustworthy AI (2019). The High-Level Expert Group on AI presented this guideline which stated three requirements: lawful, ethical and robust
16. European Commission. (2019). *Ethics guidelines for trustworthy AI*. Brussels: High-Level Expert Group on Artificial Intelligence.

17. Gerlich, M. (2025). AI Tools in Society: Impacts on Cognitive Offloading and the Future of Critical Thinking. *Societies*, *15*(1), 6. https://doi.org/10.3390/soc15010006
18. Gibney, E. (2020). The battle for ethical AI at the world's biggest machine-learning conference. *Nature, 577*(7792), 609. https://doi.org/10.1038/d41586-020-00160-y
19. Gibney, E. (2024). Chatbot AI makes racist judgements on the basis of dialect. *Nature, 627*(8004), 476–477. https://doi.org/10.1038/d41586-024-00779-1
20. Jacob, R. (2016). Thinking machines: The search for artificial intelligence. *Distillations, 2*(3), 14–23.
21. Jeyaraman, M., Jain, V. K. (2024). AI in scientific publishing: Revolutionizing research with caution. *J Clin Orthop Trauma*. 61, 102904. doi: 10.1016/j.jcot.2024.102904.
22. Joy Buolamwini, J., & Timnit Gebru. (2018). Gender shades: Intersectional accuracy disparities in commercial gender classification. *Proceedings of Machine Learning Research, 81*, 1–15.
23. Kelkar, S. S. (2022). Between AI and learning science: The evolution and commercialization of intelligent tutoring systems. *IEEE Annals of the History of Computing, 44*(1), 20–30. https://doi.org/10.1109/MAHC.2022.3144906
24. Khan, S., Roy, S., Gorain, S. C., & Adhikari, A. (2023). Cyber schooling: A study on the higher education learners. *IAR Journal of Humanities and Social Science, 4*(1), 1–10.
25. Knudsen, J. E., Ghaffar. U., Ma, R. & Hung, A. J. (2024). Clinical applications of artificial intelligence in robotic surgery. *J Robot Surg. 18* (1), 102.
26. Korteling, J. E. H., Boer-Visschedijk, G. C., Blankendaal, R. A. M., Boonekamp, R. C., & Arjen R. Eikelboom, A. R. (2021). Human-versus artificial intelligence. *Frontiers in Artificial Intelligence, 4*, 622364. https://doi.org/10.3389/frai.2021.622364
27. Lin, C. Y., & Marques, J. A. L. (2024). Stock market prediction using artificial intelligence: A systematic review of systematic reviews. *Social Sciences & Humanities Open*. 9. 100864.
28. Mahato, D., Gorain, S. C., Roy, S., & Adhikari, A. (2022). Introspecting flipped classroom: A survey on higher education students. *Galore International Journal of Applied Sciences and Humanities, 6*(4), 56–69.
29. Meera, S. (2016, October 11). *Are autonomous robots your next surgeons?* CNN. https://www.cnn.com
30. Nick, B., Yudkowsky, E. (2014). The Ethics of Artificial Intelligence. In: Keith Frankish, William Ramsey., editors. Cambridge Handbook of Artificial Intelligence. New York: Cambridge University Press.
31. Padhan, S., Mohapatra, A., Ramasamy, S. K., & Agrawal, S. (2023). Artificial intelligence (AI) and robotics in elderly healthcare: Enabling independence and quality of life. *Cureus, 15*(8), e42905. https://doi.org/10.7759/cureus.42905
32. Pinto-Bustamante, B. J., Riaño-Moreno, J.C., Clavijo-Montoya, H.A., Cárdenas-Galindo, M. A., & Campos-Figueredo, W. D. (2023) Bioethics and artificial intelligence: between deliberation on values and rational choice theory. *Front. Robot. AI* 10, 1140901. doi: 10.3389/frobt.2023.1140901.
33. Rachlin H. (2012). Making IBM's Computer, Watson, Human. Behav Anal. *Spring, 35*(1), 1-16.
34. Rane, N. L., Choudhary, S. P., & Rane, J. (2023). *Education 4.0 and 5.0: Integrating artificial intelligence (AI) for personalized and adaptive learning*. Social Science Research Network. https://doi.org/10.2139/ssrn.4638365
35. Rory, C. J. (2014) Stephen Hawking warns artificial intelligence could end mankind BBC News Wikipedia, the Free Encyclopedia on Artificial Intelligence. [Last accessed on 2026 March 06]. Available from: https://enwikipediaorg/wiki/Artifical_Intelligence .
36. Stuart J. Russell, S. J., & Peter Norvig, P. (2009). *Artificial intelligence: A modern approach* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.
37. Tzu Chi Medical Journal. (2020). The impact of artificial intelligence on human society and bioethics. *Tzu Chi Medical Journal*.
38. Umesh Yadav, U., & Uttam Shrawankar, U. (2025). Artificial intelligence across industries: A comprehensive review with a focus on education. In *AI applications and strategies in teaching and education* (pp. 275–320).