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AN EXAMINATION OF ARTIFICIAL INTELLIGENCE'S SIGNIFICANCE IN REACHING THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

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ABSTRACT

This paper assesses the role of AI as one of the very likely technologies that can best help in achieving the Sustainable Development Goals of the United Nations (SDG's). AI stands behind revolutionary upgrades in the fields of healthcare, agriculture, education, and ecology. AI relies on larger sets of data and uses the process of machine learning to accomplish diverse objectives, like improving healthcare, equalizing education opportunities, and even introducing sustainable agriculture. Lastly, AI is used to address climate change. AI can open many opportunities, but at the same time, they can pose questions like ethical problems, the effects on society, and the issue that they may even aggravate. This paper proposes that the temporary adoption of stringent ethical laws and collaboration among experts in AI research are vital to ensuring that AI is not abused and is used for the benefit of society. We underscore the significance of equality and inclusivity in developing AI, which, on a global level, both benefits and improves the lives and welfare of all people.

Keywords: Sustainable Development Goals, Artificial Intelligence, Artificial Intelligence Applications

BİRLEŞMİŞ MİLLETLER SÜRDÜRÜLEBİLİR KALKINMA HEDEFLERİNE ULAŞMADA YAPAY ZEKANIN ÖNEMİ ÜZERİNE BİR İNCELEME

ÖZ

Bu makale, Birleşmiş Milletler Sürdürülebilir Kalkınma Hedeflerinin (SKH'ler) gerçekleştirilmesi açısından en umut verici teknolojilerden biri olan yapay zekanın (YZ) katkısını incelemektedir. Yapay zeka sağlık, tarım, eğitim ve ekoloji gibi birçok alanda birçok değişiklik getirebilir. Daha büyük veri setlerinin toplanması ve makine öğreniminin kullanılması yoluyla YZ, sağlık hizmetlerinin iyileştirilmesi, eğitime eşit erişim, sürdürülebilir tarım uygulamaları ve iklim eylemi gibi birçok amacı hayata geçirmektedir. YZ bir yandan bir dizi fırsat sunarken, diğer yandan YZ kullanımı etik kaygılar, sosyal etkiler ve belki de mevcut bozulmaların daha da kötüleşmesi gibi sorunları gündeme getirmektedir. Bu makale, YZ teknolojisinin gerçekten ahlaki ve faydalı bir şekilde uygulanması için titiz etik düzenlemelerin ve kolektif çabaların oluşturulmasının vazgeçilmez kabul edilmesi gerektiğini iddia etmektedir. Adil ve iyi bir YZ gelişiminde eşitlik ve kapsayıcılığın rolü vurgulanmakta ve temel amacın toplumdaki herkesin daha iyi bir refaha sahip olmasına yardımcı olmak olduğu belirtilmektedir.

Anahtar Kelimeler: Sürdürülebilir Kalkınma Hedefleri, Yapay Zekâ, Yapay Zeka Uygulamaları

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INTRODUCTION

Artificial intelligence (AI) plays a crucial role in robotics across all sectors, ensuring the successful implementation of the United Nations Sustainable Development Goals (SDGs). The growth of AI technology involves the advancement of the most recent technological innovations and their integration into many domains, ultimately leading to the attainment of sustainable development objectives. Artificial intelligence (AI) is effectively fulfilling its objectives and successfully working towards a future that is both safe and dynamic (Liengpunsakul, 2021). AI is playing a crucial role in several areas because it addresses the pressing need to improve global development, as shown in the SDG objectives. The use of artificial intelligence (AI) for tasks such as analyzing large datasets, performing complex mathematical computations, identifying patterns, and predicting outcomes is undeniably advantageous in addressing contemporary challenges and paving the way for future progress (Vinuesa et al., 2020). Hence, integrating AI into the achievement of the SDGs for sustainability is a crucial component required for the complete fulfillment of the global sustainable agenda. In addition, it is important to acknowledge that the influence of AI on society, the economy, and the environment is groundbreaking. Therefore, we must conduct ongoing research and regularly monitor knowledge to ensure the responsible and effective use of AI (Hasan et al., 2023). Artificial intelligence has transformed how humans solve issues on a global scale, as presented by the United Nations Sustainable Development Goals (Palomares et al., 2021a). AI can deal with and can analyze vast amounts of data, which provides an opportunity to solve many of the world's societal, economic, and environmental issues. This can help the world make progress toward achieving the sustainability agenda. Given that many applications of artificial intelligence appear promising in terms of their capacity to facilitate the achievement of the United Nations Sustainable Development Goals, there are potential drawbacks to the increasingly prevalent use of AI technologies. As a result, it is critical to consider these drawbacks to reduce the risk of biased outcomes (Yin et al., 2023). One of those downsides is the expected influence of AI on employment and the labor market. While the impact can be significant, it is a nuanced issue, and many experts have different opinions on it. Indeed, as AI advances, it will eventually render many human workers performing low-skill or repetitive tasks unemployed due to automation (Ernst et al., 2019). This is probably going to make the already-existing economic disparity much worse. However, if quality policies and regulations are in place, artificial intelligence will also create more jobs and increase overall productivity, contributing to more inclusive economic development. Wahyudi Sumari (2020) suggests that AI has the potential to address critical environmental problems like global warming and resource management.

First, there are the ethical aspects of AI that constitute a significant issue due to privacy, biases, and transparency, which have received a sharp focus lately. The type of data we give for AI system training is one of the most crucial things that highly determines its effectiveness. If the algorithm does not discard any flaws or biases that might be hidden in its system, it will yield discriminatory results that could reinforce social inequality internally. These results lead to concerns about the accountability, clarity, and scope of negative outcomes in AI-based decision-making tools, particularly those used in the criminal justice complex or health care system (Wahyudi Sumari, 2020). The issues related to the appropriate and prudent utilization of AI applications to prevent the occurrence of potentially dangerous consequences should be taken cautiously into consideration for solving societal problems. Since, in addition, it is vital to examine the ecological effects that are going away from every process, The carbon dioxide emissions that it uses in the link to electricity generation and the number of resources needed to power and run the artificial intelligence infrastructure systems influence the sustainability goals that AI faces (Furman & Seamans, 2019). Along the line, it is prudent to chalk out an inclusive and equitably gender-oriented forum for the discussion of AI developments as the United Nations's Sustainable Development Goals are sought. This dialogue must pay attention to not only the positive points but also the hardships and consequences that are likely to be borne during the phase of AI implementation. AI has impressive potential to enhance the accomplishment of the UK SDGs, but AI systems also face many critical barriers and impediments. Jobs losses, wage gaps, and ethical and green issues are among the economic impacts. The solution to these problems would be combined, as we can solve them collectively only in terms of each other (Vinuesa et al., 2020).

The major task for addressing the impact of AI on employment and the labor market is to implement training programs that help widen the rate of workers' abilities and give them a chance to cope with the technical developments implying the use of AI. Lastly, but also very essential, is to implement laws and regulations that will govern AI (artificial intelligence) applications while also addressing ethical issues related to privacy, bias, and transparency. In this specific case, we are referring to the installation of structures to provide supervisory activities for data governance management. This aims to test AI models that will be free from discrimination and bias during the training process to enhance fairness (Palomares et al., 2021a). To offset the impacts of AI on the environment, it would be essential to endorse the development of AI systems that are sustainable in design and mode of operation. These results show that AI system technology development in the direction of energy efficiency, the selection of renewable energy, and the employment of inventive mechanisms to reduce the negative impact of AI on the environment have become very important aspects (Villagra et al., 2020). This will help the whole process of interdisciplinary discussion and dialogue involving governments, academia, businesses, and civil organizations. These interactions became the stripped part of the tackle to control such complex trade-offs and related challenges in AI in the field of sustainable development. To achieve the full potential of AI, including the overcoming of possible negative issues, it is crucial to engage in a fair and open debate that is inclusive of everybody and covers a wide range of views (Sirmacek et al., 2023). As AI can be expected to revolutionize a lot of aspects of life, it is important to evaluate the changes in detail and focus on incorporating AI in a well-thought-out manner to accomplish sustainable development goals. As a result, the UN must endeavor to forge an alliance with AI to create a future in which AI helps accomplish the SDGs. AI applications can be a starting point for a change of mindset and a move towards designing and developing a system of equal societal status. The growing use of artificial intelligence (AI) as a replacement for the Sustainable Development Goals (SDGs), including the implementation of sustainable development programs, is attesting to the growth of artificial intelligence as an instrumental tool for sustainable development. AI can do exceptionally well in the work that is demanding for robotics and automation, data processing, pattern discovery, etc. AI provides a powerful tool that can save many lives and expedite SDG implementation. These technologies not only address a complex social and environmental issue from a global perspective but also the dispersal of resource management efficiency and fairness. AI technology helps with the optimization and automation ability of work; thus, this can provide improved methods of attaining all the goals of the Sustainable Development Goals (SDGs) and a future that is sustainable (Khamis et al., 2019).

AI, a technology for processing, analyzing, mining, and making predictions based on big data, is seen as one of the most innovative solutions to the challenges that we currently face. This is capable of AI tools being done without the involvement of human beings, the role being to focus on the building of social spaces, sustainable environments, and economic development. Nonetheless, it is also important to mitigate the possible dangers of AI solutions, such as the loss of jobs that generate inequality or employ people unevenly in sectors like high- or low-skilled jobs or routine jobs. With the growing trends in AI technology, where individuals's job roles may be eventually replaced by machines (Vinuesa et al., 2020), there may be a vast change that no doubt could further separate social classes if no smart steps are taken. Job losses because of AI automation are surely one of the most major risks to be addressed. Such problems as upskilling people with those skills that are going to be in demand in the future and offering those who are successful social protection should be the directions of the policy to prevent the proliferation of negative consequences.

The issue of AI deployments' ethical and societal consequences is key here, and it can't be ignored. Privacy, objectivity, and transparency

are the main questions. It becomes relevant to devise targeted policies and rules that can ensure the AI is only deployed while considering ethical aspects. Significant emphasis should be put on creating data governance models that are strong enough, as well as ensuring that AI systems are built and trained largely based on fighting biases and providing fairness as their integral concepts (Sætra, 2021). There is little doubt that AI poses a huge challenge in terms of environmental problems. Specifically, AI prioritizes and allocates energy-efficient computing hardware as well as renewable energy sources, which pin down the increase in computation power and energy that is associated with AI infrastructure. This can affect carbon emissions and the utilization of resources. So that sustainability plans are not enthused, it is vital to allocate sustainable methods of design and operation for AI infrastructure. This includes encouraging energy-efficient computers and the utilization of renewable sources for energy that is meant to meet the demand for increasing computation needs and power consumption that AI infrastructure has, which consequently implicates emissions of carbon and the utilization of resources (Fuso Nerini et al., 2017). Acting differently from the participants' choice and getting the different disciplines together play a primary role in overcoming the trade-offs and problems of artificial intelligence in the context of sustainable development. We can really optimize the power of AI if we involve different points of view. That way, we will make sure we don't compromise more than we gain. In the sections ahead, we will look into the different aspects of AI and the UN SDGs, like the transformational potential of the technology, while also making sure that it is properly applied and managed in a responsible and thought-provoking manner. In the era of big data, companies as well as governments often employ algorithms to impact the choices around hiring, managing employees, policing, credit scoring, etc., thereby affecting the various facets of our lives (Wahyudi Sumari, 2020).

This article investigates different aspects of applying artificial intelligence to realizing the UN Sustainable Development Targets. It emphasized the power of AI to redefine technological accounts of the world and restructuring society for equity and sustainability. On the other hand, the topic revolves around the impact of AI on sustainable development projects around the world and expresses the need to understand that AI is a tool in driving global economic stability, inclusiveness, and prosperity. In this case, the article presents challenges and potential solutions related to the interconnection of AI with the UN Sustainable Development Goals. So, it looks into how AI can be used to reach most of the SGDs and finally describes the role of AI in creating a fairer and greener world for tomorrow.

I. REVİEW OF THE LİTERATURE

The different AI applications in different fields are among the purposes that can be achieved with the 17 Sustainable Development Goals of the United Nations.Speaking of Campo Ruiz (2024), research on the employment of artificial intelligence (AI) in environmental surveillance is likely to be both beneficial and detrimental. The AI may be beneficial to tackling some crucial environmental issues, such as reducing greenhouse gas emissions, ocean acidification prevention, and preserving biodiversity, yet it also faces imminent challenges. AI's inability to dominate environmental policies and practices on a global scale might be a cause of the growing inequality in development, as they are mostly owned by high-income countries' private companies. Thus, the poor and disenfranchised communities are often excluded from decision-making processes, causing wealthy individuals to dictate global affairs to their liking, namely, the continuation of colonial thinking. While AI brings about an influential change in environmental risk management, it is highly imperative to outline universally accepted morals and laws for which AI must be accounted for. It is important to align AI with human, social, and ethical values to offer sustainable and socially responsible environmental management programs. First, AI can undoubtedly help conserve environmental resources and reduce the footprint of human activities. However, AI development and implementation should be done very carefully, considering possible social impacts and ethical frameworks.

Nanehkaran et al. (2023) inform us that, at present, floods and riversides are a global geological danger to humanity that threaten both human lives and infrastructure. However, to tackle the issue, more methodologies, such as quantitative, qualitative, and semi-quantitative, are developed by the experts that meet the Sustainable Development Goals (SDGs) of the UN. From among these methods, ANN has risen to prominence, as the network is demonstrated to work greatly on riverbanks. By providing a decent structure for analyzing and prognosticating landslide events, ANNs participate in the objectives of the Sustainable Development Goals and can achieve Goal 11, which focuses on creating sustainable and resilient urban settlements. Utilizing geohazard preparedness plans (GPPs) will turn communities into hazard risk managers and resilient community builders. Although the number is constantly increasing, the main purpose of the use of ANN models is the refinement of methods for a particularly precise prognostication. This review stresses the need to connect both SDGs with GPPs to achieve sustainable development, increase disaster resilience, and implement risk prevention measures.

Mhlanga (2020) indicates that with this new analysis method, he critically carried out a holistic content review to establish artificial intelligence for poverty reduction. The resultant effect indicated that AI's role is pivotal in poverty alleviation, especially where suitable data for community mapping can be gathered, i.e., poverty maps. The scale of the impact that AI has on poverty reduction is evident in the huge multiplier effect it has on a variety of sectors, including agriculture, education, and finance, where mobile money has played a significant role. The new framework utilizes the image satellite that pinpoints poverty levels, therefore enabling hosting stakeholders to target the real stakeholders living in abject poverty. Agriculture is facing a rapid transformation in the wake of robotics and artificial intelligence by using advanced tools such as those developed by Google and Standford University's Sustainability and Artificial Intelligence Lab. These AI applications are contributing to disease detection, crop yield forecasting, and identifying famine-prone regions. The study advocates for greater investment in AI by governments, development institutions, and other stakeholders committed to poverty reduction efforts. Increasing AI adoption offers promising opportunities to effectively fight poverty.

Recent research by Campero (2020) exhibited that the key components of poverty reduction success in developing regions were policies aimed at directly addressing the poor. However, targeted social policies were also not adequate without cash transfers and subsidies aimed at satisfying the vital needs of the low-income population in different areas such as healthcare, education, housing, and energy. Given their deep impact and unquestionably important role in today's global systems, the research demonstrates the importance of the algorithms used to determine eligibility. The paper presents a case that unfolded over a year, with the aim of establishing community-based targeting systems in specific developing countries. These two examples demonstrate that integrating the AI toolset into the targeting strategies of the two poorest countries resulted in the precise and extensive involvement of approximately 1 million impoverished individuals, while also reducing the associated costs. Yet, the data suggests that a combination of conventional and AI technologies can exclude groups of the population when issues of equality are left without precise equity measures being taken. Conversely, qualitative assessments conducted with other social institutions within the community reveal a lack of clarity regarding what should not take precedence over fairness. In conclusion, a model of decentralized authority emerges to support institutions specifically targeted for their strategies.

Singh (2019), argues that AI brings great opportunities, but it can also create dangers for humanity. An outstanding AI art can be brought in to flush the Sustainable Development Goals (SDGs) operationally with utmost ease, for example, SDG 3, which comes up precisely for sustainable health and development from 0 to 100 years of age. On the contrary, achieving this goal will manifest its purifying effects throughout the world. The adoption of ethical, transparent, and responsible screening of the development, and this also goes for the process of the usage of artificial intelligence technology, is very important. In the process of that, the AI may do a deep analysis of great data and find the most relevant knowledge and good recommendations that would be helpful in urgent social problem solving and result in positive transformations.

Hosny & Aerts (2019), Low-tech intervention is not a necessary solution; instead, technologically advanced solutions emphasizing social responsibility in reducing disparities among communities may be better. AI has prodigiously advanced in detecting, deciding upon, and even treating the disease, among many others. The advancement of AI systems with learning capabilities, such as deep learning through artificial neural networks, enables the creation of AIs that outperform professionals, matching or even surpassing their abilities, especially in tasks like medical image analysis and chemical molecular identification. However, even though the development of AI within the medical area has mainly tended to benefit countries with a high rate of income, it has not therefore paid attention to the possibility of improving nations with a lower or medium rate of income. In low- and middle-income countries (LMICs), where the shortage of healthcare workers and the prevailing scarcity of resources are considerable, AI has the prospect of narrowing the health disparities across the public health sector through areas like individual patient care, health system management, and population health. Apart from the previously mentioned barriers, we still need to overcome a number of impediments to successfully implement and incorporate AI into global health systems.

TABLE 1 | Literature on Artificial Intelligence Applications for the United Nations SDGs

Author and Year	The Relationship Between Sustainable Development Goals and Artificial Intelligence
Campo Ruiz, (2024)	AI systems change infrastructure, construction, agriculture, and fishing practices, among other aspects of nature, in addition to describing them. (SDG-6, SDG-9, SDG-11, SDG-13, SDG-14, SDG-15)
Fazri et al. (2023)	The study's final product clarifies the possibilities and effects of using artificial intelligence to reduce pollution in the maritime environment in a sustainable manner. (SDG-13, SDG-14)
(Kumar et al., 2023)	This review paper looks at the various uses of AI in agriculture, with an emphasis on how it can help with nutrient management and irrigation scheduling to increase output and save resources. (SDG-1, SDG-2, SDG-15)
Lau, Nandy, and Chakraborty, (2023)	The contributions of artificial intelligence (AI) in healthcare adequately represents the realm of women's healthcare. (SDG-3 and SDG-5)
(Schaefer, 2023)	Artificial intelligence (AI) in agriculture offers farmers several advantages, such as increased yield, lower costs, better crop quality, and quicker go-to-market plans. (SDG-1, SGD-2, SDG-15, and SDG-12)
(Chauhan & Kaur, 2022)	This essay seeks to examine how artificial intelligence is impacting gender equality, bringing up questions about the UN's role in promoting gender equality through its conventions and resolutions. (SDG-5)
(Moghaddam et al., 2022)	Using the European Union as a case study, this study attempted to assess the effectiveness and efficiency of AI in the renewable energy sector. (SDG-7, SDG-11, SDG-12, SDG-13)
Krishnan et al., (2022)	A few important application domains that are required for efficient water management are covered in the suggested reading. (SDG-6, SDG-7, SDG-13, SDG-14)
(Goh, 2021)	AI in agriculture makes it possible to automate a lot of labor-intensive tasks, such as supply chain, transportation, and logistics autonomous systems. (SDG-4, SDG-7, SDG-15)
Mhlanga, (2020)	Investigate the influence of AI on poverty reduction using content analysis. (SDG-1)
Singh, (2019)	If AI can be positioned and leveraged correctly, it can rapidly accelerate progress toward achieving the United Nations' Sustainable Development Goals (SDG-3).
Hosny and Aerts (2019)	Socially responsible technologies promise to help address health care inequalities. (SDG-3)

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Artificial intelligence (AI) possesses a useful coefficient for materializing Sustainable Development Goals (SDGs) (Khan, 2024). This kind of innovation is mainly focused on ensuring that the planet is preserved; however, it also aids in other areas such as environmental sustainability, healthcare, education, poverty alleviation, and many others (Khan, 2024). The AI-SD interaction being extremely synergistic is pointed out, while the transformative nature of AI in dealing with existing global issues from the personal, industry, and national to the international level is highlighted (Khan, 2024). While such ethical disputes, privacy issues, and collaboration from many fields of expertise are the key issues for the implementation of AI, AI for sustainable development serves a vital purpose in the area (Hermansyah et al., 2023; Khan, 2024).

Artificial intelligence is not being utilized as much as it should and could (Khan, 2024). Many of its applications can be found in areas like education, environment, climate change modeling, sustainable resource management, and healthcare, where AI not only increases but also supplements human productivity as well (Khan, 2024). Besides, there is a new direction for ethics concepts that have been incorporated into AI research so that the technology conforms to principles of social justice, human privacy, and the SDGs as they are formulated and periodic targets are being set (Hermansyah et al., 2023; Khan, 2024).

A comprehensive analysis reveals that AI technologies, particularly those driven by the Internet of Things (IoT), can play a crucial role in managing air quality and environmental sustainability (Khan, 2024; Odirichukwu et al., 2024). By leveraging AI-driven IoT systems, it is possible to address the challenges related to air pollution, health implications, and environmental preservation (Khan, 2024; Odirichukwu et al., 2024). This research will also reveal the problems and opportunities to be expected in the way of operationalizing AI-powered IoT infrastructure in the Nigerian case, which seems to require due attention to the technical, regulatory, and socioeconomic aspects (Odirichukwu et al., 2024).

AI is widely regarded as one of the key management mechanisms of SDG by various stakeholders and constructivists (Hermansyah et al., 2023; Khan, 2024; Rybalko, 2024), who are responsible for the ethical consideration of the problems that may crop up as a result. This study is focused on the humanistic-cognitive characteristics of AI that could be further applied to the area of cognitive functioning support. Further, it answers why the partial awareness of pondering and AI cognitive capacities is not sufficient. A complete understanding of the human brain and AI cognitive potential is desired (Awoeyo, 2023; Hermansyah et al., 2023; Rybalko, 2024). The ethics-based principle depicts that AI, steadily followed by the ethical manner of its delivery, would be the apex of building sustainable development (Hermansyah et al., 2023; Khan, 2024).

Besides, AI's influences on the skills of education staff as well as readiness for AI integration into the functions of teaching at the university have been examined (Alnasib, 2023; Awoeyo, 2023; Khan, 2024). The study reveals that faculty members demonstrate a varying degree of readiness to integrate AI into teaching practices (Alnasib, 2023). Factors that affect the readiness of AI include the perceived benefits of integrated AI in classrooms, the tone of attitudes towards AI, and the resulting responses to the facilitation that this brings (Alnasib, 2023). This finding underlines the need to identify if the factors that affect the acceptability of AI in the educational system play an important role in supporting SDG 4 (Quality Education) (Alnasib, 2023; Khan, 2024).

In an intellectual AI-based enterprise, the research shows that the interaction between wealth creation, intellectual property, and organizational creativity determines the performance of such enterprises (Pinarbasi et al., 2023). Through targets, the research seeks to identify trends in the abovementioned variables, thus shedding light on ways to boost the prosperity and purpose of AI-oriented business and, in that respect, SDG 9 (Industry, Innovation, and Infrastructure) and SDG 8 (Decent Work and Economic Growth) (Khan, 2024; Pinarbasi et al., 2023). The research argues that, through value creation, intellectual property, and organizational creativity, the prospects and challenges of AI-focused companies may be made more promising (Pinarbasi et al., 2023).

Moreover, it also explores XAI in complicated areas, including medicine, finance, and the legal system ('Explainable Artificial Intelligence (XAI)', 2023; Khan, 2024). Through the provision of a framework for clear decision-making processes in complex AI models, XAI helps AI applications to be ethical and accountable; thus, it corresponds with the big picture target of developing AI systems that are fair, targeted at social justice, and respect for the privacy of their users, which are altogether important to the SDGs ('Explainable Artificial Intelligence (XAI)', 2023; Hermansyah et al., 2023).

The AI (artificial intelligence) application in breast cancer detection is seen as one of the good examples of this new technology conforming with the SDGs (Sustainable Development Goals) framework and striving to make healthcare more efficient (Shaban, 2023). The early detection and classification of breast cancer using AI and machine learning techniques will contribute to the attainment of SDG number three (Shaban, 2023). This general survey on AI's ability to detect breast cancer shows the potential of this tool to increase the efficiency of medical interventions that fit the targets of the SDGs (Chen et al.,

2022; Shaban, 2023).

Lastly, the study delves into the application of deep learning networks for disease diagnosis using chest X-ray images, particularly for COVID-19 and viral pneumonia cases (Chen et al., 2022; Yenikaya et al., 2024). The success of these deep learning networks in disease diagnosis highlights their potential to support healthcare experts, ultimately contributing to healthcare organizations and policymakers, aligning with SDG 3 (Yenikaya et al., 2024).

In a general sense, the pervasive impacts of AI in all domains ranging from environmental sustainability to education disrupting companies, healthcare service delivery, and ethics among global citizens have demonstrated the power of AI in achieving the United Nations' Sustainable Development Goals (Awoeyo, 2023; Hermansyah et al., 2023; Khan, 2024). Nonetheless, ethical issues, regulatory mechanisms, and multidisciplinary approaches are crucial and should be carefully considered and addressed in AI adaptation for sustainable development (Hermansyah et al., 2023; Khan, 2024).

II. THE INTERSECTION OF SUSTAINABLE DEVELOPMENT, SDGS, AND ARTIFICIAL INTELLIGENCE

In the crosspoint of environmentally safe development, the Sustainable Development Goals, and artificially intelligent AI the future of AI projects is to have a grand influence on the hitting of the SDGs goals and creating sustainable development globally. The potential less of AI technologies in solving the complicated on societal, economic, and environmental levels gives room to emerging of new sustainability issues worldwide, thus development aims to come. Among the most important factors that may impact the attainment of the UN SDGs through AI is the fact that it is immense. AI can greatly increase the productivity and progress of a campaign to remove extreme poverty, ensure food security, promote health, enhance education, combat global warming, and much more. What is also critical to mention is that AI is an amazing tool, but it is only effective when used alongside some other approaches.

Being able to process and analyze huge information sets, as artificial intelligence brings to us, is helpful when making evidence-based policy and interventions. As an instance in the healthcare sector, AI algorithms can help to analyze a patient's medical data to assist in early disease detection, personalized treatment plans, and optimizing systems of health care delivery. This exclusively means health care performance here is highly contributing to the SDGs in relation to human beings and their health-related goals, as initially theorized by (Hasan et al., 2023). AI technologies can significantly make farming more precise through accurate farming techniques, improved crop yields, and curbing the impact of the environment on farming processes. These developments may be useful by sustainable food production, which also makes a critical contribution towards the Sustainable Development Goals related to zero hunger and responsible consumption and production.

AI stands out as one of the most significant technological contributors to fighting climate change by generating models that foresee environmental dangers, producing energy more efficiently, and implementing the use of renewable energy sources. The AI strengths can play a substantial role in goals such as affordable and clean energy, sustainable cities and communities, and climate action (Elbasi et al., 2023). On one hand, AIs are thinkers capable of intelligent cognition and thus may significantly contribute to the sustainability objective. In the opposite direction, however, the fact that AIs ought to be considered a problem must not be neglected. For the sake of both social and environmental wellbeing, AI technology can be used only ethically after serious considerations, since it is the means of attaining the Sustainable Development Goals (Nishant et al., 2020).

AI is becoming a part of our work daily, and many issues of ethics, fairness, and transparency that it raises come to us with it. However, AI technology is already integrated into social life. Consequently, the first step aims at solving privacy, bias, and accountability concerns. A framework must be built with provisions with which AI systems are intended to be created and utilized, keeping in view ethical norms and the demands of individuals (Aizenberg & van den Hoven, 2020). The ongoing evolution of AI is resulting in an impending confrontation to consider reskilling and upskilling to assist workers in adapting to job automation and new technological progress. An investment should be made in education and employment skill training that provides individuals with the necessary skills for success in a tech-driven economy and helps minimize the risks of any disparities in employment and economic opportunities (Nathaniel & Adeleye, 2021). Also, we should draw attention to the impact AI's life cycle has on the ecosystem. To keep pace with AI and sustainability goals, particularly in the area of AI design and governance, it is of critical importance to foster sustainable practices. In the same way, this involves increasing the energy efficiency of computing, as well as the use of renewable energy resources (Sætra, 2021).

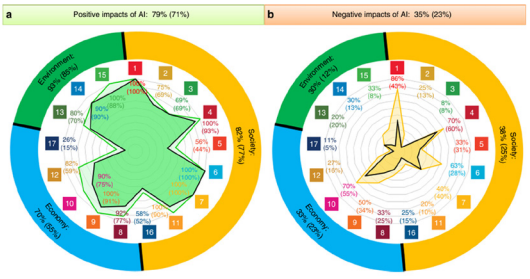
In this experience, we will investigate the crossroads between AI and the SDGs, whereas we will be trying to understand the complexities of using AI for sustainable development and the challenges associated with such a recurrence. Our goal is to critically analyze the role of AI in achieving UN SDGs and create emphasis on responsible implementation of AI, thereby providing insights to the navigation of the rapidly changing landscape due to AI and UNSDG in the process (Fuso Nerini et al., 2017). While AI can bring to light the advantageous outcomes associated with sustainable development to a great extent, it is critical to accept the fact that AI carries the same risks (Fukuda-Parr, 2018).

While one of the dangers stemming from the integration of AI systems is increased social inequality, it can also lead to exclusive opportunities and uneven platform access. AI systems are data-driven and make decisions based on the knowledge in their memory banks. This may lead to an escalation of the biases in the dataset, resulting in even more unfair outcomes for minorities. The above processes contribute to the ethical and equitable dilemmas that must be properly addressed during the AI implementation so that it should not increase the existing social differences as observed (Tomašev et al., 2020). The jobs automation and reallocation of human workers through artificially intelligent technologies has blended the concern whether in those sectors where AI performs the tasks more efficiently. While the implementation of this technology might lead to various economic disruptions and inequality intensification, if adequate measures like training and skill development for affected workers for alternative jobs aren't in place, these disruptions must be avoided and inequalities must be attenuated (Ernst et al., 2019).

Furthermore, the expanded role of AI systems created privacy and security issues with data. Human-like robots constantly predict and process data from personal sources; neither is it an easy thing in the world at all. Therefore, this requires putting in place high-end regulations and safeguards as a means of protecting individuals' privacy rights while at the same time making use of AI among the leaders of sustainable development efforts (Barrett et al., 2019). Additionally, it is downright terrible that the carbon footprint from the infrastructure of AI, mainly the electrical power consumption and the e-waste from computing facilities, affects sustainable development. However, AI technologies are likely to become the power durables with the rapid pace of their usage, causing increased energy demand and corresponding carbon emissions. The unsustainably managed integration of AI environmentally might endanger the result of climate change mitigation efforts and the preservation of the ecology (Taddeo et al., 2021).

It is the job of the AI directed at sustainable development to take these challenges seriously and implement the correct measures.

FIGURE 1 | A summary of the positive and negative impacts of AI on the different SDGs



Refence: (Vinuesa et al., 2020).

The use of AI in SDG implementation, as documented through data, can be seen in the contribution AI can apparently offer. The horizontal-colored bars are dedicated to the SDG goals, and the numerical value noted just beside them portrays the percentage of SDG targets that are possible to be affected by AI. As well as the scaled icons on the interior circle of the illustration, they visually underline the order of components in the specified SDG. The next line of the diagram indicates the results tied to economic, social, and ecological factors, respectively. The analysis starts by indicating the type of evidence suggested by the blackened outer fitting and the values that are figured out inside the brackets. Carrying out the comprehensive analysis, we can explore AI´s manifold prospects in the context of SDG accomplishments. The AI could make a deep difference between the UN Sustainable Development Goals in this context and the development of all sorts of areas.

Positive Impacts:

Goal 3: The AI applications represent the possibility of transforming the health system by automating more precise diagnostic methods, designing personalized treatment programs efficiently, and managing resources. Health care providers can directly or indirectly engage community health workers to help identify and minimize risk factors to attain better health outcomes for patients collectively as a public agency.

Goal 4: AI technologies like adaptive tutoring systems, personalized learning platforms, and data-based instructional models have the potential to improve the quality of education through enriching learning material and increasing the availability of learning resources, as well as student engagement. One of the main advantages of AI in education is that it enables tailored learning approaches that cater to the specific needs and affordances of each learner. This ability is highly relevant to bridging the gap among the different groups in terms of learning outcomes.

Goal 7: AI ensures energy consumption is optimized, energy generation is improved, and energy production process efficiency is enhanced for the sake of sustainable and clean energy.

Goal 8: The use of AI in different sectors such as manufacturing, transportation, healthcare, etc. may lead to higher productivity and advanced innovation, which in turn causes economic growth and the emergence of new career opportunities. AI algorithms can not only automate and optimize processes then and there but also enable people to concentrate on the important tasks that require highly skilled professionals.

Goal 9: AI is a core pillar for innovation and infrastructure development by transmitting information flows effectively, deploying resources properly, and achieving higher resilience and sustainability in industrial processes and projects.

Goal 11: AI solutions can assist in the launch of smart city programs, aiming to create the most efficient city planning, energy schemes, and transportation systems. AI-driven tools can be an all-encompassing solution to environmental issues, through which cities are able to handle waste properly, decrease resource use, and, as a result, increase the general population's well-being.

Negative Impacts:

Goal 1: (No Poverty) AI has the potential to contribute to job displacement and widen economic inequality, which could hinder efforts to eradicate poverty.

Goal 5: (Gender Equality) The use of AI technologies raises concerns about reinforcing gender biases and perpetuating disparities in opportunities and representation, both in AI development and in the deployment of AI solutions. Without proactive measures to address gender inclusivity, AI may exacerbate existing gender inequalities.

Goal 10: (Redwiden Inequality) A crucial obstacle in the way of a more equitable society is the called-to-mind ability of AI to create more extraordinary differences in the use of technology and the division between socio-economic groups. AI-available tools and benefits unequally allocated to power and economic communities could deepen the divide between socially and economically vulnerable groups, resulting in a worsening of the status quo rather than reducing it.

Goal 12: The energy consumption in the manufacturing sector, especially in the manufacturing process, may become higher if AI is applied in the process, and that may have a negative environmental impact if not accompanied by other sustainable practices. AI-powered automation, if mismanaged, can trigger an increase in waste production due to the consumption of natural resources, hence the emergence of e-waste.

Goal 13: (Climate Action) While AI may help enhance energy efficiency, it is important to monitor the AI model's training phase and operation in terms of its carbon footprint to avoid a case where the gains may be neutralized by the gargantuan amount of carbon emissions coming from this model.

Goal 16: Peace, Justice, and Strong Institutions Ethical considerations for AI usage in the field of the penal justice system are vital for technology to be responsible. Then, problems of AI, such as AI deployment, data privacy, and impartial decision-making, will be considered. It is crucial to deal with distortions of information and not let personal opinions capture the objective.

When it comes to the usage of AI in the realm of Sustainable Development Goals, it is vital to assess the possible positive and negative outcomes as well as put into practice preventive means on the one hand and effective utilization on the other. The promising role of AI is brought about by deliberate abidance to ethical and responsible utilization, and the challenges of global development can be overcome.

Eventually, the AI-driven technology will demonstrate its potential to make sustainable development even more viable; therefore, it is a must to carefully examine and provide solutions for all the possible risks and challenges it may carry along. Knowing this issue as a whole and the opposing arguments will be helpful in making the most well-balanced and informed-based approach to AI application in sustainable development, but we must still dig deeper into the intersection of AI and the SDGs.

III. LEVERAGING AI FOR INCLUSIVE AND SUSTAINABLE DEVELOPMENT

The power of AI to assist in a more responsible, inclusive, and equitable future is enormous. This includes the discovery of new technological, social, and environmental ways to address the UN SDGs (Pizzi et al., 2020). In the aspects of social equality, resource management under the economy, and environmental matters, AI has the potential to serve as the main factor that will move the world forward into a more holistic and inclusive sustainable development realm. Furthermore, AI can perform some tasks that primarily target narrowing the gaps in education and healthcare, which are vital areas for the SDGs. We can exploit AI technology in such a way that we come up with innovative solutions that can serve to remove barriers to accessing education and healthcare services that are essential, especially in remote or underserved communities (Nishant et al., 2020). Through artificial intelligence-enabled interfaces such as online learning platforms and telemedicine, we would close the gap between urban and rural zones, increasing educational performance and availability. Through case studies and demonstrating the best application techniques, we will show how AI can be used to demolish geographical factors and become a weapon in the war against poverty, inequality, and many other global problems. We will try to cover the prospects and issues of the unification of AI with sustainable development concepts, as well as highlight the necessity for careful use of AI technologies during the implementation of this concept. Such a perspective will emphasize AI's potential for positive change and give some idea of the negative aspects of AI usage too (Chui & Harrysson, 2019).

We keep on mentioning how it is important to implement sustainable AI in our search for effective development methods; the ethical and inclusive release of AI technologies must be highlighted. The accountability of AI implementation is vital because this is the way to make sure that there is some sense in the transformation that happens and that the principles of justice, equality, well-being, and digital ethics are not violated (Dignum, 2023). To achieve this, we have to give attention to the ethos of AI and standards for the use of AI in all domains that shall be developed and implemented. These guidelines should surround

the principles of transparency, accountability, and fairness, which will reduce the risk of bias and favor individual and group rights, leading to more equal outcomes as well (Zhou et al., 2020).

Additionally, inclusive planning embraces giving and considering the opinions of the diverse participants, such as marginalized communities and insufficient segments, in the design and deployment of AI solutions (Critch & Krueger, 2020) AI technologies could offer, by integrating different views and brainstorming, both unique needs and problems faced by different communities. In this integration, more progressive and efficient results will be derivable from sustainable development (Kshirsagar et al., 2021; Palomares et al., 2021b). Furthermore, in addition to the ethical aspects, one should also speak about the effect that AI may have on the workforce. With technology becoming ever more pervasive, specific policy plans should be made to ensure that people are given the ability to acquire the capabilities necessary to successfully work in a technologically driven society. This will be achieved through investing in multifaceted education and training programs that will enable the elimination of social disparities. Furthermore, this will assure that the workforce will be equipped with the skills to be able to do their work as the work landscape changes (Stahl, 2021; Verhagen, 2021).

In addition to this, sustainability practices exert a triple function when influencing the AI-based solutions that we implement. This incorporates, however, not only the energy efficiency of AI infrastructure but also the ethical sourcing of raw materials and the correct treatment of electronic waste (van Wynsberghe, 2021). If we infuse sustainability across the design, development, and utilization of AI systems, we will be able to limit environmental budget expectations and achieve sustainable growth in AI. The overall necessity of employing a holistic approach to using AI for sustainable development is not without its ethical issues, such as privacy, data security, and individual rights (Coeckelbergh, 2021). Skilled regulations and safeguards—data protection and data exploitation being some of them—are necessary to prevent breaches of privacy and abuse of personal data, and that way we can build trust and, at the same time, ensure that the privacy rights of individuals are secured (Lepri et al., 2021).

During our future communication, we are going to reveal real cases and projects that demonstrate how AI technology features drive sustainable development and are applied in the best interests of human society. By this way, we want to make AI tools' application specific and give some examples, as shown by Goralski & Tan, (2020), with the primary goal of creating best practices on the one hand and sustainability and equality on the other. The multifaceted intelligence of AI makes it necessary for us to appraise its ethical, social, and environmental dimensions to understand its positive and negative implications for sustainable development. For this, we can work on making AI a force for good change.

IV. ENHANCING THE CONTRIBUTION OF ARTIFICIAL INTELLIGENCE IN THE REALIZATION OF SDG

The Square Kilometre Array project is the gift of an intellectual magnitude that is designed to help achieve fundamental scientific research successes and introduce more innovations through AI (Grainge et al., 2017). Utilizing AI in the SDG project will not only lead to enhanced capacities for capturing, storing, and processing vast astronomical data but also help to take insights to a much deeper and wider level and thus contribute to the realization of its scientific objectives (Zhou et al., 2020). In addition, AI may contribute to the design of green solutions for mitigating environmental effects related to both SDG2 projects and their processes, such as looking for ways to reduce the energy wasted or cut down on the scale of waste generated.

At this point, it is imperative to mention that AI is vital in the process of improving the contribution of AI in attaining the goal of completing the SKA, as seen in the role of AI in optimizing data management and extracting significant insights from the unprecedented volumes of radio data that are expected to be generated by the SKA. AI algorithms and machine learning techniques can help astronomers and scientists spot trends, find anomalies, and observe a variety of celestial occurrences in an incredibly effective and precise manner, causing a total rethinking of radio astronomy (Palomares et al., 2021a). In addition to that, AI can be utilized for creating processes for tracking and evaluating SKA's environmental impact. Besides that, the implementation of AI in the process of the SKA will also serve as a vehicle for the improvement of conventional sensor technologies, data transmission methods, and signal processing techniques, which, in turn, will increase the efficiency and sensitivity of the SKA radio telescopes. The AI-based algorithms will be integrated into the signal processing process of SKA, which will aim to make its observations more efficient and later on will allow scientists to make outstanding discoveries and hence lead to scientific advancements (An, 2019). This will be the role of the growth and development of AI technologies in creating sustainable behavior within the SKA project.

Besides the scientific research, AI can combine the technology of SKA to improve its efficiency and the way resources are used. Through the deployment of AI-empowered predictive maintenance models, the SKA is poised to project and mitigate potential threats showing up in the integrated system, which in turn provides the continuity of successful operations and makes the project go on for a period of time (van Wynsberghe, 2021). Besides, AI may be taken into account to specify and administer the worldwide SKA project. distributed infrastructure (Berry, 2021).

On the top of that, the use of AI technologies within the SKA Project indicates the overwhelming importance of ethic as well as responsible behavior. Establishing that the designed AI systems align to the already established ethical frameworks where discrimination and unfair treatment is avoided by using transparent and accountable AI-related developments within the SKA projects is of utmost importance (Dignum, 2018). The implementation of AI technologies in the implementation of the United Nations Sustainable Development Goals (SDGs) is a critical ploy to optimize the outcomes of projects such as the SKA. This is the only way to reap the possible benefits on environmental issues (Berry, 2021).

As we continue to dig deep into the possibility of the AI application that will be used to augment the contribution of the SDG mission, in the next session we are going to highlight some specific use cases, case studies, and collaborative efforts that really succeed in the integration of AI in the quest for science and discovery. The two examples can provide the community with concrete examples of how AI can strengthen the SKA realization objectives and offer generally accepted best practices and recommendations for effective and equitable AI deployment in these processes (Wirtz et al., 2019). With the help of an all-round cognition of the influences of AI on the SKA project, AI utilization would be considered a tool for the accomplishment of our goals in the SKA project. This will in turn aid us in disruptive innovation, accelerating scientific research, and propelling the realization of the vision of the SKA. Although there have been certain advantages linked to the application of AI in the accomplishment of the SKA project, there is a different view that the incorporation of such technology may in fact introduce a new set of ethical and societal issues (Aizenberg & van den Hoven, 2020).

A significant problem, causing further accentuation of the existing bias in science and technology innovations towards those who have access to the latest scientific and technological advancements, is the application of AI in research projects such as SKA. The implementation of computer-enabled systems, unintentionally, increases the difference in utilizing AI technologies between the advanced and lagging regions, as the oversight of AI technology and the advantages that it brings will depend on the few owned entities or countries (Wahl et al., 2018). This requires a critical debate on fair access to scientific information and resources, considering the risk of a situation in which traditional power positions in such a super-human parallel science community are reproduced. Additionally, the dependence of AI under the scope of SKA challenges the privacy of data, and doubts arise pertaining to its ownership. Since a huge amount of astronomical data is processed or analyzed with AI algorithms, there is a risk that data privacy will be compromised by an unintentional breach of sensitive information. So, it is inevitable to erect and implement strong data governance frameworks and checkpoints securing individual privacy rights and adherent data use in AI-driven research (Coeckelbergh, 2021).

Additionally, the adoption of artificial intelligence in the SKA project can be considered to have long-term consequences for job creation within the sphere of scientific endeavors. The fact that AI might be useful for handling data faster and more accurately raises the question of whether it may eliminate the need for humans in scientific research or data interpretation. This leads to the ethical claims that can accompany the automation of AI over human being's opportunities that are meaningful and expert in the science fields (Floridi et al., 2017; Gao & Wang, 2023).

In the context of the complex AI integration into the SKA project, dealing with the opposing viewpoints and ethical implications, besides the positive prospects, can provide the opportunity for the fair integration of AI that is aimed at consistency with the objectives of social justice, equality, and inclusive research (Cheng et al., 2021). Despite the positive sides, it is necessary to consider the implications of integrating AI consciously into the scientific knowledge and innovation duties of the SKA project. We aim at tackling these objections so that we can formulate a moral and ethical paradigm for responsible AI application in the scientific research and discovery domain and thereby contribute to the continuous development of a more equitable and fair artificial intelligence technology. Mr. Robot Tron the envisaged deployment of AI-powered applications is critical to meeting the Sustainable Development Goals of the UN (Coeckelbergh, 2021).

TABLE 2 | Contributions of Artificial Intelligence to Sustainable Development Goals (SDGs)

Project/Study	Contribution of Artificial Intelligence	Affected SDG
Pachama	Monitoring the forests and tracking the routes to lower the carbon emissions to a sustainable level through AI-based technology.	Climate Action (SDG 13)
Open Climate Fix	Use of AI for superior solar panel layout optimization in a particular region.	Climate Action (SDG 13)
Afrocentric NLP	Identification of stories or poems in African languages and development of solutions customized to the regional circumstances.	Reduced Inequalities (SDG 10), Quality Education (SDG 4)
MALENA, (Devi et al., 2023)	AI-boosted machine learning algorithms will make a vast difference in the sectors of early disease diagnosis and the quality of healthcare service provision.	Good Health and Well-being (SDG 3)
Human Resource Development	AI-based education and skill development platforms.	Decent Work and Economic Growth (SDG 8)
Sustainable Agriculture Projects	Increasing productivity, water management, and monitoring of agricultural products using AI.	Clean Water and Sanitation (SDG 6), Zero Hunger (SDG 2)
Energy Efficiency Initiatives	AI-based energy management systems.	Affordable and Clean Energy (SDG 7)
Urban Planning and Management	AI for traffic management, waste management, and city planning.	Sustainable Cities and Communities (SDG 11)
Marine Biology Research	AI for monitoring and conservation of marine ecosystems.	Life Below Water (SDG 14)
Climate Change Modeling	Modeling and predicting the effects of climate change.	Climate Action (SDG 13)
COV-AI	AI-based solutions for monitoring, prevention, and treatment of the COVID-19 pandemic.	Good Health and Well-being (SDG 3)
Digital Education Platforms	Personalization of educational materials through AI-driven analysis of student performance.	Quality Education (SDG 4)
Water Management and Purification	Efficient and sustainable management and purification of water using AI.	Clean Water and Sanitation (SDG 6)
Air Pollution Monitoring	AI for monitoring air quality and proposing policy measures for pollution reduction.	Clean Air and Clean Energy (SDG 7)
Sustainable Transportation	AI-based traffic optimization and promotion of electric vehicles.	Sustainable Cities and Communities (SDG 11)
Zero Waste Projects	Optimization of waste management processes using AI.	Responsible Consumption and Production (SDG 12)
Social Aid and Welfare Programs	Development of more effective and equitable social aid programs through AI.	Reduced Inequalities (SDG 10)

Reference:(Nahar, 2024; Nasir et al., 2023; A. Singh et al., 2024; Vinuesa et al., 2020; Visvizi, 2022)

The table presents the contributions of work done by AI in projects or studies that fulfill the Sustainable Development Goals. This section espouses connecting some scenarios to the AI projects while focusing on the positive contribution the technology makes to people and the planet. It also highlights the advancements in SGDs resulting from the outcomes of the technology. This presentation emerged from the fact that the integration of AI applications is critical to the application of the SDGs to the different global challenges. Each implementing concept acts as an individual effort applying AI technology to tackle specific players within sustainable development, such as environmental conservation, health care, and education. The table clusters the contributions under the Santali SDGs in a way that offers an all-round comprehensiveness of how AI interventions address sustainable development. This picture emphasizes how many-sided AI can take the lead in global sustainable development all around the world. It provides credible reference material for policy analysts, researchers, and practitioners who are keen on providing AI solutions to address the global challenges that are aimed at the 2030 agenda.

CONCLUSION

Generally, AI applications will make a significant contribution towards the UN Sustainable Development Goals, no matter how hard they are. In one direction, AI could make a significant improvement in our power to tackle wide-reaching problems and thus help us fulfill our objectives. Yet on the other hand, such integration of AI technology certainly creates a set of issues that are rising in complexity, and it very much deserves careful and thoughtful treatment. Because AI is at the intersection of sustainable development and its use, it is important to understand the wide range of its effects and approach AI interpretation with a clear understanding of all its benefits and areas that could be improved.

AI can be the hope for this, as technology delivers innovation, resource optimization, and faster scientific research, all of which are key areas for all Sustainable Development Goals to move forward. Through AI applications, we can widen the scope of our ambitions to target and resolve the profound global challenges faced by humanity every day, such as poverty, inequality, improvements in health, environmental sustainability, and more. Nevertheless, it is worth mentioning that the advantages of using AI in sustainable development come at a price; therefore, responsible AI deployment should consider the challenges that come with it. We should strive to match AI capabilities to the goal of achieving the Sustainable Development Goals and govern such processes through principles of equity, inclusivity, transparency, and ethical governance. An integrated approach to AI—both its positive and negative impacts—will be necessary, with a focus on maximizing the positives and limiting any harm to those who can handle it without causing harm to others. Furthermore, AI deployment entails a host of ethical and social issues, the discussions of which necessitate consistent dialogue and joint efforts, as well as keeping different disciplines in mind. Through the mediation of open discussions and the engagement of multifaceted perspectives, we would want to build a framework of ethics and equity in the integration of AI towards sustainable growth, thus contributing to an all-rounded, inclusive, and visionary future for all.

To summarize, the role of AI-driven tools in achieving the 17 UN Sustainable Development Goals has immense potential to spur meaningful improvement. Indeed, to introduce elections into the political system, we should give them close scrutiny with a view to their possible consequences, making certain that the issues of fairness, diversity, and ethical governance are the key points of would-be policy. By which we can channel the amazing potential of AI to help reach the Sustainable Development Goals while also remaining true to the principles of ethical AI technology development. At the end, it's clear that the AI's use for the SDGs, whether it be saving lives, reducing poverty, fighting climate change, and others, is a big deal.

AI is very versatile and competent to perform in many diversified sectors and attain many of the United Nations Sustainable Development Goals at the end. With the increasing application of AI technology, we can reasonably conclude that its potential cascades extend to health, education, conservation, and economic development. In the world of healthcare, AI-based detection systems and predictive analytics techniques are considered revolutionary forces that bring to light patient care, disease treatment, and pharmaceutical research. Healthcare providers can leverage data-driven insights to enhance treatment outcomes, optimize resource allocation, and improve public health initiatives by harnessing AI capabilities, ultimately contributing to the

advancement of SDG 3: health and well-being. Another impact of AI applications in education is the opportunity for the system to become the ultimate world equalizer by providing quality learning for everyone and narrowing the educational gaps. Individual learning platforms powered by AI and tailored to students' demonstrated competence can provide a more suitable teaching environment. We should execute the multipronged approach in collaboration with all stakeholders from different sectors, not only to maximize its positive and overwhelming effects, but also to mitigate the risks associated with AI adoption. With the evolution of technology in view, periodical checking of its consequences and adopting adjusting strategies are inevitable to increase the power of AI on sustainability topics all around the world.

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