REVIEW ON ETHICAL CONSIDERATIONS OF ARTIFICAL INTELLIGENCE

SANTHOSH H, VYSHAK NARASTMHA M V , YA MUNAR, DR BRAMHA PRAKASH HP

Alvas Institute of Engineering and Technology, Mijar, Moodabidri, Karnataka, India

Santhusanju903@gmail.com, venkivyshak@gmail.com, yamunarajashekar3333@gmail.com , drbrahmap@aiet.org.in

Abstract-The fourth industrial revolution's central technology, artificial intelligence (AI), has been widely implemented in various regions and drastically altered human society. Simultaneously, AI has also raised a number of ethical concerns about societal order, private safety, and fundamental human rights. Governments from many nations are attempting to create AI laws and ethical standards in order to preserve a balance between the ethics of AI and technological advancement. During the 2024 World Digital Education Conference (WDEC), a forum with the theme "Artificial Intelligence and Digital Ethics" was held as a side event. This event demonstrated how the Chinese government uses AI in digital education while adhering to the ethical notion of "human-centred AI" and the principle of "digital for good." In order to avoid pertinent ethical hazards and create conducive environments for the digital revolution of education, the event placed a strong emphasis on the importance of developing the ethics of educational AI. In light of the forum's theme, this article aims to clarify the need for developing an ethical framework for educational AI and to suggest avenues for doing so. By doing so, it hopes to shed light on the sensible use of AI in education and advance the long-term growth of digital education.

Keywords: artificial intelligence, machine learning, ethical issues, legal issues, social issues

Introduction

A key component of the fourth industrial revolution, artificial intelligence (AI) is a technology that permeates many aspects of human existence and continuously transforms civilization (Feng, 2022). The extensive use of AI and its profound integration into industries such as media, education, finance, healthcare, and communication have significantly improved economic outcomes and productivity in society. Major nations have developed their own strategies for the development of AI in order to improve their national competitiveness, perceiving this field as the center of global competition .[1] However, there is a chance that AI-related ethical concerns concerning matters like social order and fundamental human rights could pose serious hazards to society [2]. AI ethics is currently a top priority for science and technology development governance in many nations, as it is a subset of technological ethics. To direct the federal government's regulatory and non-regulatory actions for AI development and application, the US federal government published the "Regulation Guidelines for Artificial Intelligence Applications" m January 2020 [3]. In order to create a legal framework for the use of AI technology, the European Union started working on it in 2016. The High-Level Expert Group on Artificial Intelligence was established in 2018 with the aim of expediting the development of a cohesive legal and regulatory framework for AI. The Artificial Intelligence Act's draft compromise amendment was passed by the European Parliament in June 2023, solidifying the EU's status as the world leader in AI policy. [4]. In 2021, UNESCO published its "Recommendation on the Ethics of Artificial Intelligence," which is the first international document to govern AI ethics worldwide. It states that upholding human rights, freedoms, and dignity should be the top priority for AI ethics as a fundamental principle [5].

AI has a significant role in advancing educational advancement. The use of AI in education is highly valued in the majority of the world's nations. According to the US

report "Preparing for the Future of Artificial Intelligence," intelligent applications have emerged as a major area of focus for the strategy of fortifying educational foundations. AI development has raised the demand for high-level talents in society (Executive Office of the President, National Science and Technology Council Committee on Technology, [6]. As a national plan, the paper "Growing the Artificial Intelligence Industry in the UK" advocates for enlarging the talent pool for AI-specialized jobs [7]. AI technology is referred to be a "future weapon" in Germany's "High-Tech Strategy 2025 Progress Report" as a means of enhancing educational innovation and national competitiveness (Federal Ministry of Education and Research,). Rethinking Education: Towards a "Global Common Good" by UNESCO states that a Developing intelligent learning environments and tailored learning paradigms, enhancing assessment systems, and offering scientific education management and services are essential to the long-term and sound growth of educational. In China, educational AI has also attracted a lot of interest. With the theme "Digital Education: Application, Sharing, and Innovation," the Chinese Ministry of Education, the Chinese National Commission for UNESCO, and the Shanghai Municipal People's Government jointly organized the 2024 World Digital Education Conference (WDEC) in January of 2024. The improvement of teacher digital literacy and competency, the creation of a learning society and digital education, the assessment of global trends and indices in the development of digital education, artificial intelligence and digital ethics, the opportunities and challenges of digital transformation for basic education, and the digitalization of education governance and

digital education governance are the subjects of its six forums [8]. The forum on "artificial intelligence and digital ethics" stands out among the others. This article, which is based on the forum's theme, explains why it's important to develop a framework of ethics for educational AI and talks about how to do so in order to shed light on the ethical applications of AI in the classroom and support the long-term growth of digital education.

Ethical Challenges of AI in Education
Because of the advancement of big data, cloud computing, virtual reality, and deep learning, AI is evolving at a rate never seen before. Applications of AI are still being incorporated into every aspect of society, significantly altering human productivity and way of life. The way AI is developing indicates that its influence on education is growing.The Chinese Minister of Education, Huai, claims that in a world marked by swiftly advancing industrial and technological revolutions, digital technology is progressively taking the lead in radically altering human society's thought processes, organizational frameworks, and methods of operation on all fronts. There are new opportunities as well as problems for education. Every nation is considering the timeless query of "where education is headed." Educational AI can enhance teaching and learning in numerous ways, including by simulating the roles of educators, administrators, peers, partners, and rivals to foster communication and collaboration [9] offering students adaptive learning support services by aiding in the creation of adaptive learning environments and assessing and diagnosing students' learning styles and needs and helping Natural language processing and deep learning technologies help students formulate correct answers to questions affection detection technology automatically recognizes learners' body movements and facial expressions to identify their

emotional needs during the learning process and provides tailored emotional support; Perikos et al. gives students feedback appropriate to their cognitive levels; decision-making management technology helps teachers make decisions about their lessons and learners make decisions about their learning [10]. Education AI raises a wide range of ethical concerns, including challenges to the traditional role of teachers, deviations from students' holistic development, academic misconduct due to technological abuse, and security infringement caused by data leakage, despite its value in data integration and analytics. Thus, in order to ensure that artificial intelligence (AI) is used in education in a way that is appropriate, it is crucial to carefully analyze what ethical principles should be followed and to comprehensively examine the ethical issues arising in the design, development, and use of educational AI .

Challenging Teachers' Role as Educators

AI has changed the environment of traditional education, allowing robots with AI capabilities to now carry out teaching tasks that were previously limited to teachers. The history of AI's use in education shows how the technology's educational capabilities have changed significantly across its developmental stages. In training and teaching, older intelligent instructional programs like SOPHIE, MYCIN, and GUIDON served as tutors, trainers, and assessors. They could make choices and offer guidance based on subject-matter expertise and past experience.

Intelligent tutoring, question paper creation, Q&A, evaluation, and other teaching tasks can be enhanced by new-generation AI applications like LearnSmart, Knewton Platform, Squirrel AI Adaptive Learning, AI Teaching Assistant Jill Watson, MIT's Telerobo, Anki's Cozmo Robot, and robotic trainer Alpha 2. In autonomous inquiry-based learning and cooperative learning, newly created

intelligent search engines and robots have shown to be useful companions and helpers for students. Some of them can even serve as digital entertainment and emotional support (Wang, 2021). Growing evidence points to AI surpassing human teachers in some areas of instruction.

However, teaching involves more complicated and higher-order roles than just imparting knowledge; these include social education, moral character and value education, and social education[ll]. Unanswered questions include "if educational AI can help students develop social and emotional skills to prepare them for future social integration," "whether it will replace teachers entirely," and "whether it is capable of making correct moral or value-related judgments." The established ethics of education will be challenged as artificial intelligence (Al) plays more roles in the classroom.

Impeding Student Holistic Development

The idea behind tailored education is that students should get instruction with distinct goals and methods based on their unique backgrounds, skills, interests, and personality characteristics. This is in contrast to mass education. It is essential for fostering students' overall growth and developing their creative potential for the twenty-first century[12]. However, too individualized "push and customization" in the context of AI applications in education may hinder students' overall growth.

The educational community is working to accomplish personalized education by utilizing technology applications in the process of educational innovation and reform. Using student-personalized learning has emerged as a crucial element of educational artificial intelligence. Applications for personalized learning, including mentorship programs, intelligent virtual assistants, and adaptive learning systems, are created based on the unique qualities of each student, including preferences, learning styles, and language

proficiency [13]. These big data analytics and recommendation algorithm-driven applications can facilitate mass personalized learning by modifying course content to match students' learning styles, customizing exercises at the right moment, and adjusting course difficulty based on students' learning capacities [14].

Nevertheless, comprehensive student growth is not always aided by AI-assisted customized training. Big data analytics-based educational AI is capable of tracking and analyzing student learning behavior and processes with great efficiency, as well as breaking down human knowledge into machine-readable digital symbols. The "information cocoons" effect can be readily induced by personalized recommendation algorithms . The content that is shown to pupils is determined by an algorithmic push and is tailored to their interests or preferences as a consequence of technological filtering and selection. Students' learning interests and attention spans may be limited to a preset range over time, their knowledge horizons may be curtailed, the inclusiveness and diversity of the learning content may be jeopardized, and algorithms may be used to influence their thought processes [15]. Furthermore, students' excessive dependence on information acquisition driven by recommendation algorithms may result in behavioral and cognitive inertia; their initiative in learning may technology-related impairment [16]. The overall development of students is negatively impacted by each of these elements.

Furthermore, bias and information discrimination are potential risks of educational AI based on machine learning and recommendation algorithms, which are frequently hidden or implicit under the guise of individualized learning.When technology turns into a new kind of totalitarianism, people either follow the rules of technology-mandated work processes or they become tools of technology[1 7]. It is noteworthy that there are many different ethical risks connected to AI applications in education.

Threatening Data Privacy
Human dignity, individuality, and agency must all be protected, and this requires respecting the right to privacy[18]. The term "data privacy" describes people's assertions that information about them that is created during the information gathering, storage, use, and transmission stages shouldn't be available to other people or organizations[l9]. The goal of data privacy is to stop personal information from being misused without authorization or made public . As educational AI develops quickly, privacy violations and data leaks occur, posing serious risks to the security of teachers' and students' private information[20].

ETHICAL CHALLENGES
The question of whether AI "fits within existing legal categories or whether a new category with its special features and implications should be developed" is one that is constantly up for discussion. Although using AI in clinical settings has great potential to enhance healthcare, there are currently ethical concerns that need to be addressed. Four main ethical concerns need to be resolved for AI in healthcare to reach its full potential Important considerations include informed consent to utilize data, safety and openness, algorithmic fairness and biases, and data privacy[2 l]. The question of whether The "information cocoons" effect can be readily induced by personalized recommendation algorithms . The content that is shown to pupils is determined by an algorithmic push and is tailored to their interests or preferences as a consequence of technological filtering and selection[22]. Students' learning interests and attention spans may be limited to a preset range over time, their knowledge horizons may be
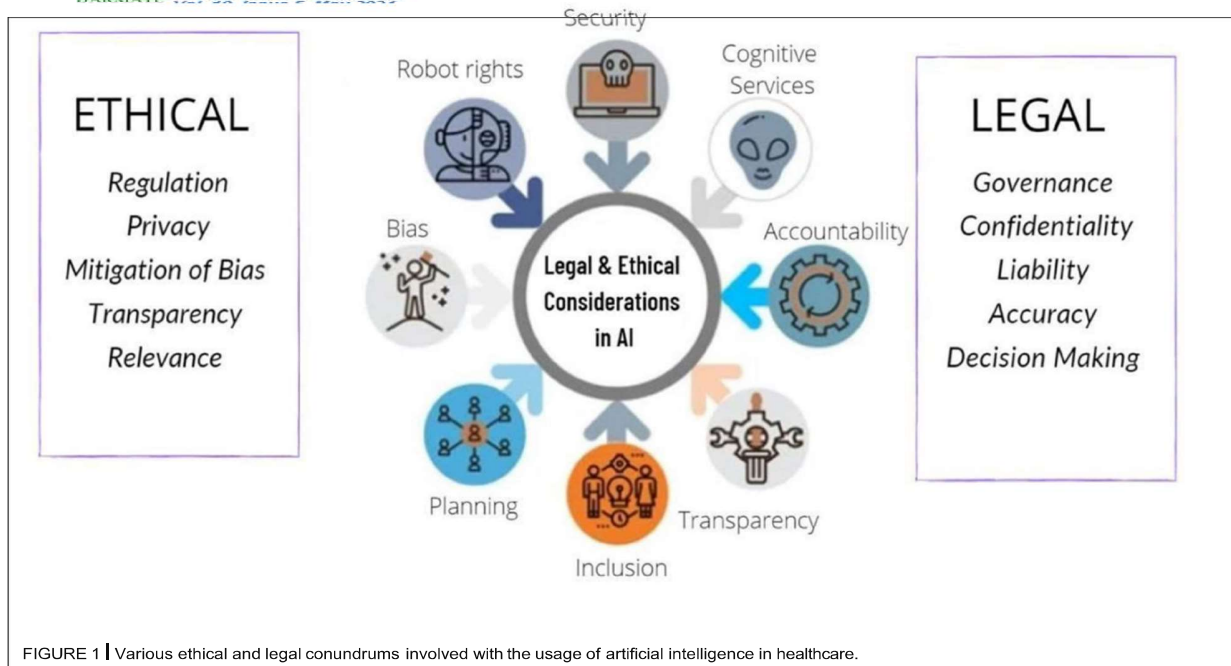
FIGURE 1 | Various ethical and legal conundrums involved with the usage of artificial intelligence in healthcare.

curtailed, the inclusiveness and diversity of the learning content may be jeopardized, AI systems may be regarded as lawful is both legally and politically sensitive (European Parliament Resolution, February 16, 2017) [23].The goal is to assist legislators in making sure that the ethically challenging circumstances brought about by implementing AI in healthcare settings are addressed early on[24]. The majority of legal discussions around artificial intelligence have focused on the issue of algorithmic transparency limitations[26]. expertise in that field of computer science [34]. Like IBM's Watson for oncology, AISs are designed to assist clinical users and hence have a direct impact on clinical judgment. After assessing the data, the AIS would suggest that the patient receive treatment[35]. Future clinical decision-making may be altered by the use of AI, and if it is implemented, new stakeholder dynamics may result[36]. If accepted, the potential of using AIS to assist physicians might transform clinical decision-making and establish a new paradigm for healthcare.[37] Clinicians have a stake in the safe implementation of new technologies 111 the clinical setting, including physicians, nurses, and other health care providers [38].

CONCLUSION

The abstract concludes by highlighting the crucial role artificial intelligence (Al) is playing in transforming societies all over the world, especially in the field of education. While artificial intelligence (AI) has enormous potential to improve educational experiences, it also raises ethical issues that need to be resolved to ensure its responsible and advantageous incorporation. China's approach to integrating AI in education, which prioritizes ethical issues like "human-centered AI" and "digital for good," was showcased at the 2024 World Digital Education Conference. The occasion underscored the need to create an ethical framework for AI in education in order to reduce any hazards and promote an atmosphere that is supportive of the digital transformation of education. In order to advance the long-term growth and efficacy of digital education programs worldwide, governments, legislators, educators, and technologists must work together to develop strong ethical norms that support the ethical use of AI in education.

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