



Artificial Intelligence in Education

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ABSTRACT

Artificial intelligence is the ability of a computer or computer-controlled robot to perform tasks that are commonly associated with the intellectual processes characteristic of humans, such as the ability to reason. Artificial intelligence (AI), in its broadest sense, is [intelligence](#) exhibited by [machines](#), particularly [computer systems](#). It is a [field of research](#) in [computer science](#) that develops and studies methods and [software](#) that enable machines to [perceive their environment](#) and uses [learning](#) and intelligence to take actions that maximize their chances of achieving defined goals. The importance of AI has been increasing vastly in each and every sphere of our life and so as the education. In this present paper, the role of AI in education has been discussed in detail. The future of AI in education is also highlighted.

Keywords: Artificial Intelligence, Education , Future

Introduction

Artificial intelligence refers to the capacity of a computer or a robot under computer control to carry out operations that are typically associated with human intellectual processes, including reasoning. In its widest definition, artificial intelligence (AI) refers to the intelligence displayed by machines, especially computer systems. This area of computer science study focuses on creating and analyzing tools and software that allow machines to sense their surroundings and use intelligence and learning to make decisions that will increase their chances of accomplishing specific objectives. These devices could be referred to as AIs. The first significant researcher in the topic he named "machine intelligence" was Alan Turing. The academic field of artificial intelligence was established in 1956. The field had several cycles of hope, known as AI winter, which were followed by depressing times and funding losses. After deep learning outperformed all prior AI techniques in 2012 and after the transformer architecture was introduced in 2017, funding and interest in the field skyrocketed. As a result, the AI boom of the early 2020s occurred, with the majority of businesses, academic institutions, and research facilities in the US spearheading important advancements in the field. (Russell and Norvig, 2016)

As artificial intelligence (AI) becomes more widely used in the 21st century, job markets, healthcare, government, industry, and education are all being impacted by the shift towards increased automation, data-driven decision-making, and the integration of AI systems into various economic sectors and areas of life. This prompts talks on regulatory laws to assure the safety and advantages of the technology, raising concerns about the hazards, ethical implications, and long-term effects of AI. The many subfields of AI study are focused on specific objectives and the use of certain instruments. Reasoning, knowledge representation, planning, learning, natural language processing, perception, and robotics support are among the traditional objectives of AI study. Long-term objectives in the field include general intelligence, or the capacity to execute any work on an at least equivalent level with a human.

Artificial intelligence (AI) holds promise for addressing some of the most pressing issues facing education today, fostering creative teaching and learning approaches, and accelerating the achievement of SDG 4. Rapid technical advancements do, however, always entail a number of risks and difficulties, which have thus far surpassed legislative discussions and legal structures. UNESCO is dedicated to helping Member States use AI technology to realize the goals of the Education 2030 Agenda, while making sure that the fundamental values of fairness and inclusivity inform its implementation in educational settings.

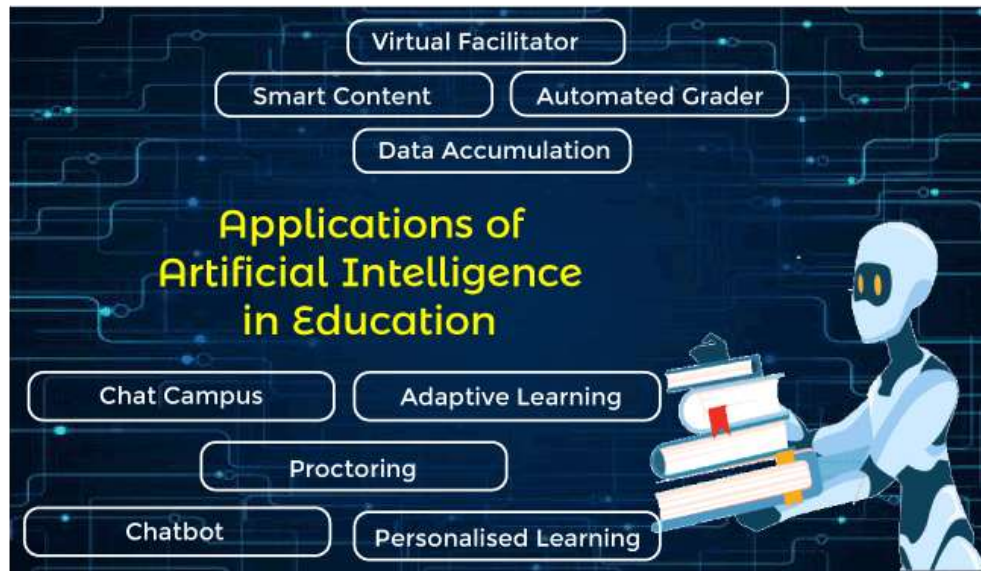
The mandate of UNESCO mandates an approach to AI that is human-centered by nature. In addition to making sure AI doesn't further technological gaps inside and across nations, it seeks to change the debate to address current disparities in access to knowledge, research, and the diversity of cultural expressions. "AI for all" must promise that everyone will be able to benefit from the ongoing technological transformation and enjoy its fruits, most notably in terms of knowledge and innovation.

Role of Artificial Intelligence in Education

Everybody believes that education is important, and having a good education is essential to living a successful life. Many changes are always being made in education systems all over the world to better serve students. These changes might range from curriculum types to teaching methods. The world is

changing due to the burgeoning technology of artificial intelligence, which is applied in practically every industry. Education is one area where artificial intelligence has the potential to significantly impact society—and in some cases, it already has.

The application of artificial intelligence in education is creating novel approaches to learning and teaching in various contexts. These days, AI is being applied by universities and colleges in several nations. AI in education has offered educators, parents, students, and educational institutions alike a whole new way of viewing the field of education. Instead of utilizing humanoid robots to educate in place of human teachers, artificial intelligence (AI) in education aims to improve and streamline the educational process by assisting teachers and students with computer intelligence. Many AI tools will be available in the education system in the future, influencing how students learn in the future.



1. **Use AI to automate basic educational tasks:** Grading tests and assigning homework are only two examples of the many tasks that teachers must complete in the educational system that take a lot of time. These activities take a lot of time and energy, which may be better spent engaging with students, pointing out their mistakes, imparting new knowledge, and many other things. Artificial Intelligence can be used to save this time. Nearly all forms of multiple-choice questions (MCQs) and fill-in-the-blank questions can have their grading processes automated with the use of artificial intelligence (AI) tools, and the ability to assess written responses is not far behind. Though it's getting better every day, AI can't yet completely replace human grading.
2. **Extra Assistance for pupils using AI tutor:** Given that college professors have set schedules, it is evident that they are unable to spend all of their time with students while they are studying. However, no student is intelligent enough to understand everything at once, thus they require extra assistance from someone to help them understand the study material. The AI tutors can offer this further assistance. These days, children can get assistance from a variety of AI-driven tutoring programs to master the fundamentals of writing, math, and other subjects.
3. **Useful feedback to instructors and students from AI-driven programs:** AI is not only assisting students in learning a tailored course that meets their needs, but it can also provide instructors and students with feedback regarding the course's degree of success. These feedback-based AI systems are presently being used by several online course providers to assess student progress and notify instructors of any serious performance issues. Professors may identify areas of instruction that need improvement and students can receive the necessary support thanks to these AI-driven solutions. Students who receive immediate feedback are better able to identify areas for improvement and learn from their mistakes.
4. **Using AI to identify areas for course improvement:** It might be challenging to identify learning gaps in the educational system. In addition to having a limited amount of time to educate in the classroom, teachers might not always be aware of the conceptual gaps in their students' knowledge. AI-driven programs can assist the educational system in resolving this issue.
5. **AI has the potential to alter the job of the teacher:** Although teachers will always be important members of the educational community, the demands of their work may change as a result of emerging technology. As mentioned in the aforementioned points, artificial intelligence may assist students in their learning, grade papers, and in certain situations, act as a substitute for a real tutor. AI can be used in a variety of educational contexts. Artificial intelligence (AI) systems can be configured to offer students knowledge, to act as a forum for students to ask questions, and to supplement teachers in delivering lessons based on course materials. In these situations, AI may alter the facilitator role of the teacher.
6. **Use AI to personalize education:** Replacing teachers entirely is not the primary goal of artificial intelligence in education. Rather, it seeks to serve as a supportive arm for both educators and learners. Students can receive individualized instruction from AI systems. Each student can study in a method that best suits their needs and comprehension level with personalized learning. Teachers are able to create a customized study plan for each student by having a thorough awareness of their needs. With artificial intelligence (AI) advancing daily, it's likely that machines

may be able to read students' facial expressions during concept learning to determine whether they're having trouble understanding the material and adjust their instruction accordingly.

7. **Generating Smart content with AI** With AI, it is possible to generate smart content in three ways:

- a. **Digital Lessons:** Nowadays, everything is becoming digital, and so the education. Digital learning is being preferred in colleges with customization options, e-books, study guides, bite-sized lessons, and many other things with the help of AI.
- b. **Information Visualization:** Visualizing things rather than listening is much more efficient to understand in a better way and keep in mind for a long time. With Artificial Intelligence, the study information can be perceived in new ways of visualization, simulation, web-based study environment.
- c. **Learning content Updates:** Moreover, AI also helps in preparing the content of lessons, keeping information up to date, and make it adaptable as per different learning curves.

8. **Guarantee Special Needs Students Have Access to Education:** For students with learning disabilities, such as those who are deaf or hard of hearing, visually impaired, etc., life is full with problems. These pupils could run into a number of challenges when they're learning and studying. They also require more time and attention. There will be new methods to engage with these pupils as cutting-edge AI technology is used. It is possible to successfully train AI-enabled tools to assist a group of special needs pupils.

9. **All-Access :** Universal access to study materials is one of the many educational applications of artificial intelligence in digital learning. Every learner has a unique grasping capacity, and they can study at any time and from any location by utilizing universal access. Without having to wait for the tutor, students can investigate topics whenever they wish to learn. Additionally, students can access top-notch instruction and resources from around the globe at their convenience without having to leave their house.

Future of AI in Education

As per the researches, in the near future, AI in education will step in three main ways, which are:

1. **Personalization of performance:** The ability to gather and aggregate data will enable the creation of customized curricula with the ongoing advancements in AI technology and processing power. A number of innovative AI tools, like "Brightspace insights," assist teachers in tracking, measuring, and keeping an eye on students' progress while also supporting them as they study. It gives a thorough picture of a learner's experience throughout the entire platform.
2. **Discrimination:** Human prejudice has always been a problem for AI tools as well as a barrier to the educational system. In order to remove bias, artificial intelligence (AI) in education will eventually develop new tools that can assess assignments and exams based on predetermined standards.
3. **Together With Us:** College professors and instructors typically hold master's degrees in respective disciplines and specialized areas of growth. However, the administrative labor frequently consists of a fruitless attempt to build rapport with the kids. In the future, AI in education can help with this issue by creating smart classrooms that have AI support systems that enable teachers to give their all.

Conclusion

Artificial intelligence is becoming more and more prevalent in many areas of our lives every day. Artificial Intelligence (AI) has begun to make an impact in the field of education, enhancing the learning process and serving as a useful tool for both teachers and students. However, not all universities have fully embraced the use of AI in education, and it will take time for this to change. Nonetheless, research indicates that AI will benefit the education industry soon. Though its true educational potential has not yet materialized, technology is revolutionizing the education sector at the moment. Additionally, while computer-based learning can be very beneficial, technology is unlikely to completely replace in-person instruction in schools.

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