ARTIFICIAL INTELLIGENCE AND BIG DATA IN EDUCATION: SHAPING THE FUTURE OF LEARNING AND TEACHING

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Abstract

The use of Artificial Intelligence and Big Data in education has great potential to improve the quality of teaching and learning management. It is used to personalize the learning process, improve student outcomes, and optimize administrative tasks. It is capable of analyzing student's learning style and customizing educational content according to their individual needs. By collecting and analyzing large amounts of data, valuable insights into learning processes and student needs can be gained, allowing for a more efficient learning process and personalization of learning. However, when using Big Data in education, high standards of data protection and ethical principles must be observed.

Keywords: big data, artificial intelligence, education, educational process, educational process management, performance prediction, technical aspects, pedagogical aspects, data protection, teaching methods, data analysis tools, recommendations, research areas.

Introduction

Artificial intelligence and Big Data are two technological phenomena that are transforming the world as we know it. These two technologies are now making inroads into the education sector, promising to revolutionize the way we learn and teach. The intersection of artificial intelligence and Big Data in education is creating a new landscape map shaping the future of learning and teaching.

Artificial intelligence is the simulation of human intelligence processes by machines, used to personalize the educational process, improve student outcomes and optimize administrative tasks. He is able to analyze the student's learning style and customize the educational content according to his individual needs.

AI-powered systems can also provide real-time feedback, helping students identify their strengths and weaknesses and improve their performance. Additionally, AI can automate administrative tasks such as grading and scheduling, freeing up time for teachers to focus on teaching and interacting with students.

On the other hand, Big Data, the huge amount of data that is generated every second, is used to make educational decisions. It can provide information about student behavior, educational trends, and learning style, helping educators make informed decisions about curriculum design, teaching methods, and resource allocation. Big Data can also be used to predict student performance, providing early support and assistance to students at risk of falling behind.

The interaction of artificial intelligence and Big Data in education creates powerful synergy. Artificial intelligence algorithms are capable of analyzing the huge volumes of data generated in the education sector, providing insights into things previously thought impossible. A data-driven approach to education can improve the quality of teaching and learning, making education more effective.

For example, AI-powered analytics can analyze student data to identify patterns and trends, predicting future outcomes and enabling proactive action. This helps close the achievement gap and ensure every student has the opportunity to succeed. And artificial intelligence and Big Data can be used to personalize learning by delivering content that suits each student's individual needs and learning style. This increases student interest and performance, making the learning process more fun and effective.

Moreover, the integration of artificial intelligence and Big Data in education can change the role of teachers. Instead of being the sole source of knowledge, teachers can become facilitators of learning, guiding students along their individual learning journey. This makes teaching richer and more influential, improving the quality of education.

However, the use of artificial intelligence and Big Data in education also raises important ethical and privacy issues. The collection and analysis of student data must be conducted in a manner that respects confidentiality and confidentiality. Additionally, the application of artificial intelligence in education must be transparent and responsible so as not to reinforce existing biases and inequalities.

At the same time, the potential of AI in relation to the transfer of an array of knowledge to a generation of schoolchildren and students seems unusually broad. First of all, the maximum expectations from the effect of using AI in educational processes are associated with the creation and implementation of previously non-existent innovative teaching methods. This includes new forms of knowledge generation (intelligent expert systems based on Big Data); new channels of knowledge communication based on programs with AI in dialogue systems: computer - student, computer - student (graduate student), student - teacher, student (graduate student) - teacher; new forms of presenting information with an emphasis on visualization; new forms of monitoring the digestibility of educational materials; taking into account 3 individual and, first of all, intellectual characteristics of the subjects of the educational process (pupils and students), as well as other areas. In fact, the massive introduction of AI into the education system poses a serious challenge to the existing education system. At the same time, the question is asked here: won't these features become "glass ceilings" for AI, finalizing the results of education according to criteria, albeit complex, but external to the education system? The issue of accessibility of the AI environment in school in the next five years, the national project "Education" will be developed in Uzbekistan, the global goal of which is to create a unified educational platform that will enable every student to receive a quality education. Including the use of adaptive learning and individual educational trajectories. Of course, AI as a technology could become part of this ecosystem. According to the founder of the Foxford online school, Alexey Polovinkin, the introduction of AI in schools will be possible when schoolchildren have constant access to computers at school and the educational technologies collected in them. "When every student starts using a personal digital device, we can talk about

the beginning of the introduction of a full-fledged digital school. Only in this way will we get a digital educational footprint" [3].

Consequences of the use of AI in education It seems that the functioning of the education system based on AI will require a serious analysis of not only the paths of development and its prospects, but also the consequences in terms of psychological, social and humanitarian aspects. Yes, there is no doubt that AI will introduce new technologies for the generation and transfer and assimilation of knowledge, which will give new impetus to the development of science and the economy.

Currently, my generation has a recognized problem of perceiving and assimilating new information is the so-called "clip thinking". It forms mental and visual images according to the same principles as video clips. As a result, the individual perceives the surrounding reality as a sequence of unrelated phenomena, and not as a homogeneous structure, which implies the interconnection of all particles.

Additional opportunities of Big Data in education

The introduction of Big Data into the educational sphere opens the door not only to the optimization of traditional methods, but also to the discovery of completely new horizons. Let's dive into additional facets of this innovative approach that can radically transform the educational process.

• Transdisciplinary approach to learning. Analysis of data on the professional trajectories of graduates, their interests and needs can become the basis for the creation of cross-disciplinary courses connecting various scientific areas.

• Dynamic learning resources. Big Data allows you to monitor current trends and market needs in real time, which makes it possible to adapt training materials, making them more relevant and up-to-date.

• Global interaction. Collecting and analyzing data on international educational practices can stimulate the creation of joint programs and courses with foreign universities, expanding the cultural and scientific horizons of students.

• Professional navigation. Based on data on labor market trends and industry needs, institutions can provide students with valuable career guidance.

• Introduction of artificial intelligence. The combination of Big Data and AI can give rise to innovative educational platforms that can adapt to the individual needs of each student, offering unique educational scenarios.

In conclusion, Big Data in education is not just a technological innovation, it is a revolutionary tool that can not only improve existing methodologies, but also open up new ways for learning. This is a challenge to traditional approaches and at the same time an invitation to create an educational future in which each student finds his own unique and optimal path of development. The intersection of artificial intelligence and Big Data in education is shaping the future of learning and teaching. This creates a new picture of the world where education becomes personalized, predictable and effective. However, it is critical to use these technologies wisely and carefully, ensuring they are ethical, transparent and fair. The future of education is not just about technology, but about using it to advance human learning and teaching.

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