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THE APPLICATION OF ARTIFICIAL INTELLIGENCE ACROSS VARIOUS FIELDS AND THE ISSUE OF MANAGING ARTIFICIAL INTELLIGENCE IN EDUCATION

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Abstract: This article analyzes the current application of artificial intelligence (AI) technologies across various socio-economic sectors, examining their effectiveness and future prospects. A significant portion of the article focuses on the integration of AI into the education system, its role in transforming the educational process, and issues related to the effective management, oversight, and ethical implementation of these technologies within educational environments.

Keywords: Artificial intelligence, digital transformation, educational management, adaptive learning, educational ethics, academic integrity.

Today, artificial intelligence—the primary driving force behind the Fourth Industrial Revolution—is rapidly transforming every aspect of human life. Its capacity to process vast amounts of data, analyze complex algorithms, and make decisions without human intervention has established artificial intelligence as the most powerful tool in the modern world. As these technologies continue to evolve, their application—not only in manufacturing or medicine but also in education, the vital sector responsible for developing human capital—has emerged as a pressing issue, as has the critical need for their proper management. The deployment of artificial intelligence across various fields enables the automation of human activities, boosts efficiency, and allows for the resolution of complex problems in a matter of seconds. Artificial intelligence technologies have now advanced well beyond simple algorithms, evolving into systems capable of making independent decisions.

In his address to the Oliy Majlis and the people of Uzbekistan on December 20, 2022, the President of the Republic of Uzbekistan, Shavkat Mirziyoyev, emphasized: "Improving the quality of education is the sole path toward the development of a New Uzbekistan" [8]. In the process of providing military education to future officers, a significant emphasis is placed on exploring issues related to artificial intelligence and the challenges of its application within the military sphere. Scientific research is currently being conducted with the aim of further fostering a national and combat spirit among these future officers—who represent the present and future of the nation's peace and development—by encouraging them to form their own perspectives on global events, develop a deep understanding of the complexities surrounding the use of AI in military contexts, and cultivate a sense of responsibility for their country's future. Furthermore, this research focuses on enhancing their ability to make rapid, independent, and unconventional decisions in highly complex situations.

In recent years, extensive reforms have been implemented within the military education system of our country. It is well known that in our country, special attention is being paid to

several key areas: fostering national revival; enriching the minds and worldviews of future officers based on national values; protecting them from contemporary threats; and training them to address challenges such as the application of artificial intelligence in the military sphere. Furthermore, efforts are focused on safeguarding our national army from alien ideologies and cultivating future officers who possess a broad worldview, creative thinking, a strong sense of honor, pride, patriotism, and devotion to the people. These officers are being groomed to be conscientious, proactive, and highly skilled in modern information technology—individuals who are honest, dedicated, capable of making sound decisions in complex situations, and characterized by an unyielding national and combat spirit.

As Sh. M. Mirziyoyev has noted: “The fact that our national army has become a true school of courage, self-sacrifice, and genuine patriotism for thousands of our young men is, without a doubt, our greatest achievement in this endeavor. Parents across our country, and indeed our entire nation, acknowledge this reality with pride and gratitude.” However, this does not mean that the qualities of combat readiness and courage in military personnel develop automatically or in a mechanical fashion. These qualities are cultivated, first and foremost, in specialized schools and educational institutions, during practical exercises and tactical military training at testing grounds, as well as through the reforms being implemented across all spheres of our society—that is, in the context of our everyday lives. It is difficult to envision the defense of our state without military personnel who possess strong patriotic values, a robust national spirit, and a high combat morale. The strength and power of any nation, its standing within the global community, and its political and economic development are determined by the potential of its young personnel [1].

1-Table

The application of artificial intelligence across various fields and its key capabilities

Sector	Areas of Application	Key Benefits
Education System	Individualized study programs, automated assessment systems, virtual tutors, and bots	Adapting to a learner's knowledge level and saving teachers' time.
Healthcare	Early-stage disease detection, analysis of medical imagery (MRI, X-rays), and modeling of new pharmaceutical drugs	Improving diagnostic accuracy and accelerating the treatment process.
Finance and Banking	Blocking fraudulent transactions, assessing credit risks, and automating stock market trading	Ensuring financial security and performing market analysis in seconds.
Manufacturing	Intelligent robotics and predictive maintenance for equipment	Reducing human error in manufacturing and increasing productivity.
Logistics	Planning optimal shipping routes and automated warehouse inventory	Decreasing time and fuel consumption, and accelerating

	management	deliveries.

Just as in our society as a whole, significant transformations are taking place within the Armed Forces of the Republic of Uzbekistan. Our Armed Forces have been rebuilt, serving as a guarantee of our nation's independence and one of its primary symbols. In recent years, the Republic has been establishing the regulatory framework and material-technical infrastructure necessary to cultivate future officers—defenders of the Motherland—imbued with a spirit of military patriotism and deep devotion to the country, and capable of addressing the challenges associated with applying artificial intelligence in the military sphere. In addition to establishing the foundations for industry and society, the plan calls for "reforming education—as the bedrock of the future—and restructuring the system of research and development."

As future officers are cultivated with a national and combat-oriented spirit, enhancing their knowledge of artificial intelligence (AI) and addressing the challenges of its application in the military sphere have become critical priorities. Regarding the reform of military education, there is a significant focus on how AI-related instruction—specifically the integration of AI into military training curricula—should be structured, as well as on the implications of applying AI within the military domain and its potential to elevate military training to higher levels of advancement.

What exactly is artificial intelligence? Artificial intelligence refers to an artificial, intellectual system capable of performing tasks that require human creativity and logic. The term can also be applied to any technology that exhibits characteristics associated with the human mind, such as the ability to learn and solve problems. The ideal characteristic of artificial intelligence is its ability to evaluate and execute actions that offer the best chance of achieving a specific goal. Currently, artificial intelligence consists of algorithms and software systems designed to perform various operations, and it is capable of handling many tasks that the human mind can perform [7].

In our country, extensive work is being conducted within the sphere of military education regarding the challenges associated with the application of artificial intelligence in the military domain. Therefore, it is essential that we provide future officers with a thorough understanding of the issues related to artificial intelligence during their military training. A key challenge concerning artificial intelligence lies in creating a "superintelligence" that is beneficial to humanity, while simultaneously ensuring that we do not inadvertently create one that is harmful.

It is particularly crucial to prevent scenarios where artificial intelligence might seize control and render itself impossible to shut down. In the context of today's globalization, humans maintain their dominance over other living organisms solely due to the superiority of their brains. Some scholars, such as philosopher Nick Bostrom and artificial intelligence researcher Stuart Russell, argue that if artificial intelligence were to surpass humanity in general intelligence, it could become difficult to control this new superintelligence, potentially leaving humanity dependent upon it.

Managing artificial intelligence in education involves a system for leveraging these technologies effectively while simultaneously curbing and regulating their negative consequences. As AI rapidly integrates into the educational sphere, its systematic management is becoming an essential requirement of the times.

2-Table

Key directions, challenges, and solutions for managing artificial intelligence in education

Management	Key Challenges and Risks	Systemic solutions and measures
Academic Integrity	Students using AI to copy essays and assignments (plagiarism), leading to a decline in independent thinking	Reforming the assessment system and implementing advanced software capable of detecting AI-generated text
Ethical Standards and Legislation	Leakage of personal data belonging to students and teachers; bias within algorithms	Developing national and institutional regulations on AI ethics in education, and ensuring strict data encryption
Digital Inequality	Unequal access to advanced, paid versions of AI; lack of internet connectivity and technology in remote areas	Creating free, state-provided AI-based educational platforms and ensuring equitable access to modern technology across schools
Professional Development	Teachers' lack of proficiency in using AI tools; traditional pedagogical methods falling behind in the new era	Organizing specialized AI literacy courses for educators and integrating AI into teaching methodologies

Superintelligence may give rise to a qualitatively new problem regarding flawed implementation: the more intelligent and capable a system is, the higher the likelihood that it will discover an unexpected solution—one that technically aligns with the goal set by its developers, yet deviates from their true intent. One of the primary challenges associated with artificial intelligence technologies concerns data privacy and security. Systems incorporating artificial intelligence are essentially "data-hungry" machines; they require data to function, even more data to operate efficiently, and yet more data to improve.

"A nation that embraces new thinking, fresh ideas, and innovation will succeed. If we are to begin building our great future today, we must do so precisely on the foundation of innovative ideas and approaches," stated Shavkat Miromonovich Mirziyoyev, President of the Republic of Uzbekistan and Supreme Commander-in-Chief of the Armed Forces [2]. In particular, a key priority of our state policy is to provide dedicated support and care to ensure that future officers acquire a solid education, master their military specializations, and develop in a spirit of respect for our national traditions and values. In this regard, the significant efforts of our educators—their hard work in the realms of upbringing and instruction—deserve high recognition. Scientific research is also being conducted to foster a sense of patriotism and develop a national and combat spirit among future officers—who represent the present and future of the state—ensuring they possess a clear personal stance on global developments. This research focuses on enabling them to address challenges related to the application of artificial intelligence (AI) in the military sphere, to

rapidly implement AI technologies, to care deeply for the future of their country, and to enhance their ability to make prompt, independent, and unconventional decisions in complex situations.

According to Resolution No. PP-4996 of the President of the Republic of Uzbekistan, dated February 17, 2021, "On Measures to Create Conditions for the Accelerated Implementation of Artificial Intelligence Technologies" [3], the following are defined as the primary tasks of the institute: organizing scientific research aimed at the comprehensive implementation of the "Digital Uzbekistan – 2030" Strategy, and introducing artificial intelligence technologies across economic sectors, the social sphere, and the public administration system. Conducting fundamental and applied scientific research in the field of artificial intelligence and establishing a scientific ecosystem for the development of digital technologies; developing innovative products—along with their underlying models, algorithms, and software—designed to automate management and production processes through artificial intelligence technologies; and establishing partnerships with leading foreign innovation and scientific institutions to advance artificial intelligence technologies and implement joint projects.

Just as in all other sectors of the Republic, numerous reforms are being implemented within the sphere of military education, aimed at introducing and widely applying artificial intelligence technologies, expanding the use of digital data, and advancing the field to meet global standards. Efforts to further develop this sector are gaining momentum. In particular, initiatives such as the expanding "IT Parks," the "One Million Programmers" project, and "Youth Technoparks" offer great promise for the sustainable development of this field. More than 30 countries—including the United States, Germany, Japan, France, South Korea, and Canada—have already adopted strategies for the development of artificial intelligence and its application within the military sector. The term "artificial intelligence" is frequently encountered in our daily lives, and its application is expanding globally. Recently, artificial intelligence has been integrated into various sectors and social infrastructures. For instance, an increasing number of companies are adopting Robotic Process Automation (RPA) to automate tasks and boost productivity as part of efforts to reform work practices. While RPA is not artificial intelligence in itself, it enables computers to handle routine tasks—such as those involving spreadsheet software or basic business systems—that would otherwise require human judgment; in other words, it manages repetitive operations performed on a personal computer.

Looking ahead, we aim to leverage artificial intelligence—through applications such as handwritten character recognition, voice recognition, and response systems—to transform the military sphere; specifically, we intend to facilitate the resolution of military conflicts and automate various tactical operations.

Decree No. 158 of the President of the Republic of Uzbekistan, dated September 11, 2023, regarding the "Uzbekistan – 2030" Strategy [6], highlights the experience gained during the implementation of the development strategy for a "New Uzbekistan," as well as the outcomes of public discussions. These efforts are aimed at realizing the aspirations of our people to build a free, prosperous, and powerful "New Uzbekistan"; creating all necessary conditions for individuals to develop their full potential; fostering a healthy, educated, and spiritually well-rounded generation; establishing a robust economy that serves as a vital link in global production; and ensuring the rule of justice, security, and stability.

The distinct character of the current era in our country is defined, first and foremost, by the state's sovereignty and complete independence, the modernization of the entire state apparatus and social life—including the higher education system—and a focused effort to address existing challenges. Our goal is to ensure that individuals develop into competitive professionals who meet the demands of the modern age [5]. The "Strategy for the Development of New Uzbekistan for 2022–2026" outlines objectives such as "nurturing the youth in a spirit of patriotism, civic consciousness, and tolerance—with respect for the law, as well as for national and universal human values—so that they become individuals capable of resisting harmful influences and ideologies, and possess firm convictions and a clear outlook on life..." [4]. This mandate necessitates that future officers also engage in an in-depth study of issues related to artificial intelligence. To achieve this, it is essential to further strengthen the foundations of a national army capable of effectively countering today's serious challenges and unpredictable threats.

In general, artificial intelligence and its learning algorithms extrapolate from the data provided to them. If developers fail to provide representative data, the resulting artificial intelligence systems will inevitably become biased and unfair.

In conclusion, artificial intelligence is a powerful force with the potential to elevate education to an entirely new level. However, its application must be guided by the principle that "technology exists for the sake of humanity." Successfully managing AI in education means more than just banning these technologies; it involves establishing clear ethical and legal boundaries for their use, upholding academic integrity, and transforming artificial intelligence into an effective assistant for educators rather than a threat. The future of education must be built upon a rational symbiosis between artificial intelligence and human intelligence.

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