

## THE ROLE AND IMPORTANCE OF ARTIFICIAL INTELLIGENCE IN THE DEFENSE SYSTEM

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**Abstract:** This article analyzes the role and strategic importance of artificial intelligence (AI) technologies in modern defense systems. Technological advances in the military sphere in the 21st century have led to the widespread implementation of AI-based systems. In particular, the effectiveness of AI in reconnaissance, data analysis, drone control, cybersecurity, and automated decision-making processes is highly appreciated. With the help of AI, the ability to detect threats in real time, predict enemy actions, and make decisions quickly has significantly increased. This plays an important role in ensuring the accuracy, speed, and safety of military operations. At the same time, the use of AI technologies also raises ethical and legal issues. The article also discusses these issues and ways to address them. In conclusion, artificial intelligence is an integral part of modern defense strategies and is becoming an important tool in solving global security problems.

**Keywords:** artificial intelligence, cybersecurity, automated intelligence systems, drones, robotic weapons

### Introduction

In the age of rapid information, advancements in technological sphere giving much more opportunities in every field, especially, in national security and defense. In particular, artificial intelligence (AI) technologies are making fundamental turns not only in the civil sphere, but also in the military sphere. Modern combat strategies and defense systems are now based on algorithmic thinking and automated analysis, in addition to the human factor. Systems created using artificial intelligence are playing a decisive role in the process of tracking enemy movements, processing information quickly and accurately, predicting dangerous situations in advance, and making important decisions.

The developed countries, such as the United States, China, Russia and European countries, are achieving advanced results in applying AI to military strategies. Therefore, the use of artificial intelligence in defense systems is becoming not only a technological advantage, but also a means of achieving a strategic advantage in ensuring national security. This article will highlight the main functions of AI in the defense system, area of application, advantages, as well as the problems and their solutions.

### Literature analysis

A number of scientific studies and analytical works have been carried out in recent years on the use of artificial intelligence in military and defense systems. Among others, Russell and Norvig (2016), in their work "Artificial Intelligence: a modern approach", conducted an in-depth analysis of the role of AI Systems in decision-making, environmental modeling, and automated intelligence systems. In this work, it is noted that the cognitive model-based

performance of artificial intelligence, analytical capabilities based on real-time data are a convenient mechanism to apply in military fields.

Other sources, notably reports prepared by NATO and RAND corporation, have identified the applications of AI technologies in areas such as cybersecurity, drone management, threat detection based on artificial neural networks found out as an important issue. A scientific work which is done by Chinese and US military research institutes has studied experiments on the automation of combat actions through defense platforms also created on the basis of AI.

Literature analysis shows that AI technologies not only increase efficiency in the military sphere, but also play a vital role in reducing the human factor, minimizing errors, as well as accelerating strategic decisions. On the other hand, some studies have also focused on the ethical and legal problems that arise while applying AI.

### **Discussion**

The use of artificial intelligence (AI) in defense systems is today one of the most relevant and promising areas of the military sphere. The experience of advanced states shows that AI is taking the field as an important tool on improving efficiency in the military field, making quick decisions and reducing human factor-related errors. Especially the role of AI in conducting combat operations using intelligence, early detection of threats, drones and robotic techniques is incomparable. For example, the US Project Maven has achieved effective processing of intelligence data through automatic analysis of video images from artificial intelligence.

However, there are also risks and problems associated with the militarization of AI technologies. First of all, the problem of transparency and interpretation of decisions made by these systems is considered relevant. Handing over decisions affecting human life to AI is an ethically complex issue, and improper operation of automated weapons during military conflicts can lead to negative consequences. Artificial intelligence-based weapons can also boost the global arms race and increase the risk of cyberwarfare.

Another important aspect in the discussion process is the concentration of artificial intelligence technologies in the hands of developed countries in many ways. This could further deepen military inequality and threaten the security of less developed countries.

Nevertheless, by introducing AI on a moderate and legal basis, there is an opportunity to reduce its negative effects, to regulate it through international legal norms. In the future, the wider application of AI technologies in areas such as information security, Air Defense, Logistics and military medicine is planned. Therefore, AI is a force that brings about revolutionary changes in the military sphere, which is being formed as an important factor in scientific and technological progress and international security policy.

### **Methods and results**

This scientific work was carried out on the basis of a qualitative analytical approach to studying the role and importance of artificial intelligence in the defense system. First of all, existing scientific articles, international research reports and practical projects (e.g. Project

Maven, NATO AI Strategy, Chinese military technological programs) were studied through content analysis. Also, the analyzed sources systematically summarized how AI technologies affect the military sphere, in which directions they are actively used and what results they bring. Ethical, legal, and security concerns were also addressed on the basis of comparative analysis (comparative). In this, US, Chinese and European experiences were compared.

The results of the study showed that the use of artificial intelligence technologies in defense systems is an important tool in ensuring strategic superiority. In particular:

- **AI-based automated intelligence systems** allow real-time detection and analysis of enemy movements.
- **Drones and robotic weapons** can move semi-or fully autonomously using artificial intelligence, reducing the need for Human Resources.
- In the field of **cybersecurity**, mechanisms for pre-detection and elimination of complex attacks using AI are effectively working.
- While internationally, the introduction of AI is shaping new geopolitical imbalances, the military technological race is gaining momentum.

Also, the analyzed sources indicate that in the process of introducing AI, there are restrictions related to moral standards, international law and the human factor. All this means the need to apply AI technologies responsibly and under control.

### Conclusion

Based on the above analyzes, it can be concluded that artificial intelligence (AI) is becoming an integral component of modern defense systems. It serves not only to improve technical and operational efficiency, but also to achieve an advantage at the strategic level. With the help of AI technologies, it is possible to quickly and accurately analyze information, control autonomous weapons, ensure cybersecurity and achieve high efficiency in the field of intelligence.

At the same time, there are also ethical, legal and geopolitical problems associated with these technologies. In particular, the issues of transparency of decisions based on AI, its impact on human life and their regulation within the framework of international law are among the current tasks of today.

Thus, the introduction of AI technologies in the field of defense plays an important role in the formation of global security policies. In order to more effectively and safely apply these technologies in the future, it is necessary to strictly adhere to international cooperation, scientific research and ethical criteria.

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