Vita MOROZ[©]
D.Sc. in Law,
Professor
(Dnipropetrovsk
State University
of Internal
Affairs), Ukraine

Yernar BEGALIYEV[©]
D.Sc. in Law,
Professor
(Academy of Law Enforcement Agencies under the Prosecutor General's Office),
Republic
of Kazakhstan

MODERN ASPECTS OF THE USE OF ARTIFICIAL INTELLIGENCE BY THE ARMED FORCES OF UKRAINE UNDER MARTIAL LAW

Abstract. In today's globalized, technologized and, at the same time, unstructured world, the role of information and analytical activity is objectively growing. This is due to the martial law in Ukraine and the uncontrolled development of all processes and phenomena related to the war in Ukraine, both in the world economy and in politics around the world. The activities of any structures, and first of all the algorithm of conducting military operations by the Armed Forces of Ukraine and other militarized structures on the territory of Ukraine with the aim of liberation from the invading russia, require today the predictable development, protection from risks, dangers and challenges. Such universal tool in the information society is information-analytical activity, which is transformed into a close interaction with technical methods of supporting a full-fledged complex of conducting hostilities within the framework of a full-scale war, which is what our article focuses on.

Our research reveals the modern conditions of the technical activity of the Armed Forces, which is accompanied by the first and quick response to threats, as well as the adoption of management decisions at the command level and at the state level to ensure the stages of conducting hostilities. After all, effective decision-making, the personal life of every citizen of Ukraine, and the territorial integrity of the state, depend on the technical and predictable activity of the Armed Forces of Ukraine. Today, the state of management in the information activities of the Armed Forces of Ukraine under the conditions of martial law is characterized by an increase in specific activities that require the use of modern computer tools, the informatization of various components of their activities, the introduction of new information technologies in the collection and processing, taking into account the secret nature of this information, which requires the latest computer technology.

Keywords: information activity, informatization of technical support, legal regime of martial law, artificial intelligence, Armed Forces of Ukraine, administrative legal support, state regulation, military administration.

Introduction. The trend towards robotization, which has covered various aspects of human activity, is especially noticeable in the military sphere. The world's leading countries are making significant efforts to equip military units

with robotic systems for various purposes and improve the effectiveness of their combat use.

The experience of military-technical cooperation with NATO member states and relevant partner countries shows that military analysts consider artificial intelligence as a breakthrough technology for the development of military capabilities. The introduction of artificial intelligence is an important trend in the development of battlefield and weapons control systems, in connection with the maintenance of the legal regime of martial law in the territory of Ukraine (https://zakon.rada.gov.ua/).

Analysis of recent research and publications. AI researchers are concerned that people are using the technology to get legal, medical, psychological or financial advice. The power of generalized models opens up unlimited opportunities for their application, but seriously reduces the ability of a person to perceive information. According to the scientist who researched this issue, V. Hlushkov, the structure of information and analytical activity should contain information support, information and analytical work, creation of databases, which includes information search, goals, motives, methods and methods of their implementation (Encyclopedia of Cybernetics, p.134).

The purpose of the article is to explore the modern aspects of the use of artificial intelligence by the Armed Forces of Ukraine under the conditions of martial law.

Formulation of the main material. In the field of military management, artificial intelligence technology is considered an important complement to human resources in many aspects, including: expanding situational awareness and data sharing; command of the coordinate unit; targeted; coordinate the work of sensors and means of destruction; detect and identify threats, reduce reaction time to them; evaluate the intention; selection of semi-autonomous weapons; working with fewer resources, with partial removal of a person from the decision-making process, etc. In the future, the optimal choice of a combination of sensors and means of destruction, depending on the threats, should be carried out with the help of artificial intelligence, the role of which will constantly grow both in solving the tasks of forming a situational image and supporting decision-making.

From the diagnosis of diseases to the provision of business advice, from the automation of mechanical operations to the creation of works of art – the wide possibilities of artificial intelligence have permeated all spheres of life in the twenty-first century and until now. In a rapidly changing technology landscape, cautious researchers are paying attention to the potential risks behind the benign appearance of friendly chatbots. The creators of ChatGPT claim that the development of artificial intelligence cannot be stopped. They warn of dire consequences if the process is left unchecked. Governments of leading countries regulate the market so that artificial intelligence does not become a monopoly of technological giants, as well as to protect society from potential dangers (Brusakova et al., 2022).

The development of artificial intelligence has touched every aspect necessary to create and operate artificial intelligence technologies: for manufacturers of servers, cooling systems and cables, and even for real estate owners who rent out data centers. Every year, artificial intelligence will become more deeply integrated into people's everyday life. It will become not only a

source of practical knowledge, but also an important element of equipping the Armed Forces. During the war, artificial intelligence was used in completely different directions: from detecting cruise missiles to recognizing the faces of dead russians.

Conducting intelligence and information-analytical activities in the interest of preparing the state for defense is enshrined in Article 3 of the Law of Ukraine "On the Defense of Ukraine" of December 6, 1991 (https://ips.ligazakon.net/document/view/t193200). The activities of the bodies of the Armed Forces of Ukraine, which carry out intelligence activities in order to protect the national interests of Ukraine from external threats, the procedure for control and supervision of their activities, and also establish the legal status of employees of these bodies, their social guarantees are enshrined in the Law of Ukraine "On Intelligence Bodies of Ukraine" of March 22, 2001 (https://ips.ligazakon.net/document/view/t0123313).

Three major and effective AI systems are currently in use at the forefront: the Delta National Military Platform, Clearview AI software, and Zvook software and hardware.

First, we want to look at drones that use AI systems to track and disable enemy equipment. Now we have a national military platform "Delta" that meets NATO standards. It was transferred to the Ministry of Defense in the fall of 2022. With the help of such a platform, it is possible to determine the position of the enemy on a digital map.

On February 4, 2023, the Cabinet of Ministers of Ukraine officially allowed the Ukrainian army to use the Delta platform. It was used earlier, but only by individual units. Now all forces involved in the defense of Ukraine will be able to use it. A situational awareness platform is a system that provides insight into the tactical and operational situation on the battlefield at a specific moment in time. The information is primarily intended for commanders of the highest and middle ranks, writes the BBC (Moroz, 2022).

How it works – it's basically a web service with an interactive map. It displays processed data from dozens of sources: satellite images of reconnaissance UAVs, radio intercepts, etc. In addition, it meets all NATO standards, so it can exchange data with similar platforms serving the North Atlantic Alliance. Access can be obtained from a phone, tablet or computer.

That is, no special equipment is required – only an Internet connection. Delta is used to plan combat operations and missions, coordinate with other units, securely share information about enemy positions, and more. For example, this system was one of the elements of the operation to sink the flagship of the Black Sea Fleet of the russian federation "Moscow", and was also used in the operation to liberate Zmiiny Island.

The Delta development team has repeatedly become the winner of the Hackathon. Since the beginning of the full-scale invasion, she has not just participated in the competition, but has shared her experience in order to increase the contribution to the overall security (https://zakon.rada.gov.ua/laws/). Few people in the world have the experience of building and using such systems in the conditions of a full-scale war on the territory of Ukraine.

Another artificial intelligence that we want to look at and help in wartime is the facial recognition system developed by the American company ClearView AI. With its help, the dead russians are identified, then their families are notified

of their death. This system has access to 10 billion photos posted on social networks (https://zakon.rada.gov.ua/laws/). In addition, this technology is partially used at roadblocks or roadblocks.

In more detail, we would like to analyze some information about this technology, which is considered illegal in the world. Facebook, YouTube, LinkedIn and Twitter refuse to cooperate with the American startup Clearview AI. For what? The company collects millions of photos from social networks without permission and uses them for facial recognition. During the war, the startup gave its technology to Ukrainians for free, so although it helped the Ukrainian military a lot, so let's talk more about how dangerous is it.

The world first learned about the Clearview AI startup from an investigation by The New York Times in 2020. An unknown company founded by Australian developer Hoan Ton-To and American politician Richard Schwartz has created facial recognition technology used by police in the United States. To identify a person, the Clearview AI algorithm compares his image with photos in a database that contains more than 10 billion photos, the recognition accuracy is 99.6 %. Clearview AI software is usually used by law enforcement agencies in the US to identify criminals, but back in 2020, BuzzFeed News journalists learned about the company's plans to expand to 22 international markets, including Ukraine.

This artificial intelligence technology with Clear view AI software is used in many areas of life and has many uses for Clear view AI, but the company does not openly talk about it. But the exception for Ukraine is the use of technology by the Ministry of Internal Affairs to identify russian servicemen killed or captured in Ukraine, to reunite refugees separated from their families, to identify Russian servicemen and to expose fake posts about the war in social networks. Networks (http://www.uintei.kiev.ua/).

Although many global experts on digital security criticize this company and consider its use by the Armed Forces during a large-scale invasion of the territory of Ukraine an irreparable mistake that causes an error in the process of facial recognition and the police can arrest innocent people, since of course a soldier's face can be scanned incorrectly, but it is never used as a source of unique identification. Therefore, this artificial intelligence technology with the help of Clear view AI software still gives many advantages to the Armed Forces of Ukraine on the battlefield.

And finally, in our work, we want to look at artificial intelligence technologies that help detect cruise missiles, drones, helicopters and fighter jets. Today, this is possible thanks to the combination of Zvook hardware and software - a machine learning technology that allows you to recognize the engine sounds of enemy aerial targets. About 40 Zwook hardware and software complexes are currently operating in Ukraine. This system is used to interact with air defense systems and detect enemy air targets "in dead zones".

In the first days of the large-scale invasion, the Kyivstar team was involved in the operation of this hardware and software complex, which installed the first Zwook systems at its facilities and provided support, round-the-clock assistance in emergency situations. Therefore, in the future, it is very important that the flight of the cruise missile can be recorded 4 hours after the installation of the Zwook complex and inform the relevant military structures.

We currently have two divisions – hardware and software development.

A physical product (iron) is a physical system located in a certain place on the territory of Ukraine. The main task is to receive sound from a special device and focus it with a mirror. Then, with the help of artificial intelligence, this sound is amplified and transmitted for processing inside a secure data transmission network. There is no single data center, now they are served by several nodes, which makes the hub unbreakable, even if there is one. Such a network is difficult to destroy (http://www.uintei.kiev.ua/).

Then there is the process of recognizing the recorded signal, which goes through the artificial intelligence departments of this company, as well as product advertising.

Therefore, machine learning is the basis of the Zvook hardware and software complex. Thanks to ML, the Zvook can detect unfriendly aerial objects. The company has an audio stream in which certain sound objects exist in time, not in space. There are a lot of such objects. It is the wind, the noise of the road, small flies, the voices of engineers, the shine of cows, chainsaws felling the forest. These sounds account for 99.9 %. At the same time, this type of artificial intelligence separates a very small percentage (0.1 % of the time) of those objects that are really interesting to them – in fact, the sounds with which enemy air targets move.

The uniqueness of the Zvook hardware and software complex lies precisely in its ability to detect cruise missiles, where russia uses these missiles en masse. Even if another country goes to war against Ukraine, the Zvook hardware and software complex will still be able to detect air targets of this non-russian enemy. Cruise missiles are built on the same principle – each missile has a jet engine.

No system can guarantee one hundred percent. But one complements the other. It is very important to have a good air defense system – it is 90 % successful in destroying enemy air targets. And the remaining 10 % will be compensated by other, special technologies, such as the Zvook hardware-software combination.

Conclusions. Therefore, we would like to conclude that today, during the active phase of the war on the territory of Ukraine, in order to maintain at a high level all the work of technical activity and the coordinated work of all spheres and processes of intelligence of artificial weapons, it is constantly necessary to improve the qualifications of all workers in the technical field, because time passes, a large number of the latest technologies are introduced in our country, and for this we need qualified workers who will always follow it and constantly learn. Currently, artificial intelligence can both help optimize processes, brainstorm, detect enemy equipment, and harm. Many years of research await us, so that we can determine all the risks of using artificial intelligence in the territory of Ukraine, stop exposing ourselves to danger and protect artificial intelligence from fraudulent manipulations.

References
Pro vvedennya voyennoho stanu v Ukrayini: Ukaz Prezydenta Ukrayiny vid 24.02.2022 № 64/2022 [On the implementation of martial law in Ukraine: Decree of the President of Ukraine dated February 24, 2022 No. 64/2022]. URL : https://zakon.rada.gov.ua/laws/show/64/2022#Text. [in Ukr.].

Pro oboronu Ukrayiny: Zakon Ukrayiny vid 06.12.1991 №1932-КНII [On the defense of Ukraine: Law of Ukraine dated December 6, 1991 No. 1932-XII]. URL : https://ips.ligazakon.net/document/view/t193200?an=1&ed=2023_03_21. [in Ukr.].

Pro rozviduval'ni orhany Ukrayiny: Zakon Ukrayiny vid 22.03.2001 № 2331-III [On intelligence agencies of Ukraine: Law of Ukraine dated March 22, 2001 No. 2331-III]. URL : https://ips.ligazakon.net/document/view/t012331?an=ul-120&ed=2008_06_03. [in Ukr.].

Ukrayins'kyy instytut naukovo-tekhnichnoyi ekspertyzy ta informatsiyi: Derzhavna naukova ustanova [Ukrainian Institute of Scientific and Technical Expertise and Information: State Scientific Institution]. URL : http://www.uintei.kiev.ua/. [in Ukr.].

Encyclopedia of Cybernetics (1973) / resp. editor V. Glushkov, T.2 (M-Y). K. : URE Publishing House, 576 p.

Brusakova, O., Karmaza, O., Vasylenko, V. & Moroz, V. (2022). Public administration and the protection of private rights: questioning its recognition and application under Ukrainian law. *Ius Humany: Law Journal*, 11 (1), pp. 29-418.

Moroz, V. (2022). Modern tools for preventing self-destructive and suicidal behavior of minors using information technology. *Philosophy, Economics and Law Review*, 2 (1), pp. 212-222.

Leheza, Ye., Vlasenko, D., Shcherbyna, Ye. & Moroz, V. (2023). Service legal relations: international legal and administrative-criminal aspect. *DIXI*, 25 (1), January-June 2023, pp. 1-12. Doi : 10.16925/2357-5891.2023.01.09.

Віта МОРОЗ, Єрнар БЕГАЛІЄВ

СУЧАСНІ АСПЕКТИ ВИКОРИСТАННЯ ШТУЧНОГО ІНТЕЛЕКТУ ЗБРОЙНИМИ СИЛАМИ УКРАЇНІ В УМОВАХ ВОЄННОГО СТАНУ

Анотація. В сучасному глобалізованому, технологізованому і разом з тим неструктурованому світі роль інформаційно-аналітичної діяльності об'єктивно зростає. Це обумовлено на сам перед воєнним станом в Україні і неконтрольованим розвитком усіх процесів і явищ пов'язаних з війною в Україні, як в світовій економіці, так і в політиці в усьому світі. Діяльність будь-яких структур, а насамперед алгоритм ведення воєнних дій Збройними силами України та іншими мілітаризованими структурами на території України з метою звільнення від загарбницької росії сьогодні потребує прогнозованого розвитку, захисту від ризиків, небезпек і викликів. Саме таким універсальним засобом в інформаційному суспільстві є інформаційно-аналітична діяльність, яка трансформується в тісну взаємодію з технічними способами супроводження повноцінного комплексу ведення бойових дій в рамках повномасштабної війни на що зосереджена наша стаття.

Наше дослідження розкриває сучасні умови технічної діяльності ЗСУ, що супроводжується першим та швидким реагуванням на загрози, а також прийняттям управлінських рішень на рівні командування, та на рівні держави по забезпеченню етапів ведення бойових дій. Адже від технічної, прогнозованої діяльності Збройних сил України та кожного залежить ефективне прийняття рішень, особисте життя кожного громадянина України та територіальна цілісність всієї держави.

На сьогодні стан управління в інформаційній діяльності Збройних сил України в умовах дії воєнного стану, характеризується збільшенням специфічної діяльності, яка вимагає використання сучасних комп'ютерних засобів, інформатизації різноманітних складових їх діяльності, впровадження нових інформаційних технологій у зборі та обробці, враховуючи таємний характер даної інформації, що потребує новітньої комп'ютерної техніки.

Ключові слова: *інформаційна діяльність, інформатизація технічного забезпечення, правовий режим дії воєнного стану, штучний інтелект, Збройні сили України, адміністративно-правове забезпечення, державне регулювання, військове управління.*