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Possibilities of applying artificial intelligence in the work of law enforcement agencies

Alina Chukaieva*

PhD in Law, Associate Professor
National Academy of Internal Affairs
03035, 1 Solomianska Square, Kyiv, Ukraine
<https://orcid.org/0000-0001-8251-5187>

Snieguolė Matulienė

Doctor of Law, Professor
Public Security Academy of the Mykolas Romeris University
LT-08303, 20 Ateities Str., Vilnius, Republic of Lithuania
<https://orcid.org/0000-0001-5379-4412>

■ **Abstract.** In the context of the development of neural networks and the legality of their use, the substantiated need to analyse the capabilities of artificial intelligence in the work of law enforcement agencies and to protect society from crime becomes increasingly relevant. The purpose of this study was to characterize the use of artificial intelligence in law enforcement, specifically, its impact on the level of crime, its detection and investigation, and the overall efficiency of law enforcement agencies. Using the comparative legal method, the author assesses various approaches to the use of artificial intelligence and analyses scientific representations of this issue based on the dialectical method. The terminological and normative-dogmatic methods helped to investigate the interpretation of the term “artificial intelligence” in modern scientific discussions and to give an axiological assessment of this phenomenon. The systemic-structural and formal-logical methods helped to consider the specific features of introducing artificial intelligence into law enforcement at the present stage. The study highlights the impact of artificial intelligence tools on the efficiency of law enforcement agencies, and substantiates the need to introduce regulations at the state level to avoid the risks of using artificial intelligence in law enforcement considering European integration. It is argued that the use of artificial intelligence to protect society from threats should follow the internationally established principles of its responsible use, which has not yet been prescribed in law. The risks of using artificial intelligence for human safety were highlighted. The study identified the main trends, problems, and prospects for the introduction of artificial intelligence in law enforcement. International practices in the use of artificial intelligence tools were updated. The results of this study can be used in the development of state policy in the field of artificial intelligence, development of legal regulation of its use, integration of artificial intelligence into the activities of state bodies, including law enforcement agencies

■ **Keywords:** information technology; crime prevention; risk avoidance; use of artificial intelligence; legal regulation; offences; digital technologies

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■ *Corresponding author

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■ Introduction

Improvements in digital technologies have facilitated their introduction into various areas of human life. Artificial intelligence has become one of the leading areas of their development. Robotics, the Internet of Things, big data, cloud infrastructure, augmented reality glasses, etc. are modern capabilities that help professionals solve their tasks quickly, efficiently, and functionally. Technical achievements in artificial intelligence are one of the most promising and undiscovered areas of development of information systems and technologies that successfully help law enforcement agencies around the world. Intelligent security systems controlled by command centres, combined with video surveillance systems, are effective in preventing crime and deterring acts of terrorism. The introduction of artificial neural networks in law enforcement naturally contributes to its efficiency and automation of routine law enforcement actions.

A review of recent studies shows that the introduction of artificial intelligence into law enforcement is a considerable tool for combating crime, a means of improving its efficiency and implementation. This was emphasised by M. Karchevskiy (2023), who noted the importance of classifying artificial intelligence and its legal regulation. Furthermore, the author examined the possibilities of using weak artificial intelligence and the prospects for a strong type of artificial intelligence. The characterisation of these technologies and their role in combating crime was the subject of a study by V.V. Holina & S.S. Shramko (2020), who noted that law enforcement agencies are tasked with monitoring many people potentially prone to commit crimes, which is why it is so important to introduce the latest technologies into law enforcement. M.I. Maietnyi (2021) analysed the evolution of AI and the introduction of artificial neural networks in law enforcement and the legality of their use, emphasising that they can become an effective tool for combating corruption and organised crime. The reverse side of this issue was considered by O. Radutnyi (2017), who noted that the achievements of artificial intelligence can be used to commit crimes in the field of information relations or directly threaten the interests of human and society. S. Matuliene *et al.* (2022) considered the use of digital technologies through the lens of European integration processes, highlighted gaps in the regulatory framework for their use, and outlined areas for its improvement. According to scientists who investigate and highlight the essence of artificial intelligence and its impact on all spheres of life, including law enforcement, it is increasingly capable of autonomously detecting suspicious activities (Rademacher, 2019), countering cyberattacks (Trifonov *et al.*, 2018), predicting crimes (Elsherif, 2021), and capturing a criminal at the crime scene (Becker *et al.*, 2022).

Despite a considerable number of scientific studies on the possibilities of artificial intelligence in law enforcement, which are of scientific and practical importance, the subject under study stays open for discussion of the effectiveness of artificial neural networks, investigation of the legality of their use and the need to introduce a legal framework that would regulate the legality of the use of digital technologies in law enforcement.

The purpose of this study was to analyse the effectiveness of artificial intelligence in law enforcement to solve and investigate crimes, to reduce the workload of law enforcement officers and minimise professional risks, and its impact on expanding the methods of combating crime. Tasks of this study: to formulate, based on scientific research, substantiated generalisations regarding the use of artificial neural networks in law enforcement; to provide recommendations on the legality of artificial intelligence in law enforcement.

■ Materials and Methods

The following scientific methods were used to investigate the topic: terminological, systemic and structural, dialectical, comparative legal, formal-logical, and regulatory and dogmatic. The term “artificial intelligence” was studied using the terminological method. The system-structural method was used to determine the classification of artificial intelligence and formulate a holistic approach to the totality of its means. The dialectical method was used to cover the discourse of scholars on the legality of the use of artificial intelligence in various spheres of life, including law enforcement, and to summarise the fundamentally important conclusions. That is why this method provided an opportunity to compare views and arguments for and against the use of artificial intelligence in law enforcement. The comparative legal method helped to assess different approaches to the use of artificial intelligence in Ukraine and internationally, and to formulate an opinion on the legal framework for the use of artificial intelligence in various countries, which will facilitate international cooperation in this area. Using the formal logical method, the study analysed the systematic approach to the introduction of artificial intelligence into law enforcement. The method helped to define the limits and criteria for the use of artificial intelligence, considering the prediction of negative consequences and the possibility of minimising them. The normative-dogmatic method helped to outline the importance of artificial intelligence for law enforcement in the detection and investigation of offences and provided arguments for the irreversible development of smart technologies.

The theoretical framework of this study included the research by such scholars as V.V. Holina & S.S. Shramko (2020), K. Blount (2022),

T. Rademacher (2019). In drafting this paper, the legal acts of Ukraine and the European Union that prescribe the development of artificial intelligence technologies were used, namely, the Order of the Cabinet of Ministers of Ukraine approving the Concept of Artificial Intelligence Development in Ukraine¹, EU Digital Europe Programme (2021-2027) (n.d.), which allows enterprises to introduce digital technologies, develop leading digital skills and expand digital infrastructure, to which Ukraine has also joined, the Civil Code of Ukraine², the Law of Ukraine “On the National Police”³, the Law of Ukraine “On Personal Data Protection”⁴, the Order of the Ministry of Internal Affairs of Ukraine No. 357 “On Approval of the Instruction on Organisation of Response to Applications and Reports of Criminal, Administrative Offences or Events and Prompt Informing in the Bodies (Units) of the National Police of Ukraine” dated 27.04.2020⁵, the Order of the Ministry of Internal Affairs of Ukraine No. 1026 “On Approval of the Instruction on the Use of Technical Devices and Technical Facilities with Photo and Film Filming and Video Recording Functions by Police Bodies and Units” dated 18.12.2018⁶.

■ Results

In the scientific community, the concept of artificial intelligence (AI) and the legitimacy of its use is a matter of debate not only in the EU but also in Ukraine. The Concept for the Development of Artificial Intelligence in Ukraine defines it as “an organised set of information technologies that can be used to perform complex tasks by using a system of scientific research methods and information processing algorithms”⁷. The main purpose of the entire security sector is to make society safer (Vermeeren *et al.*, 2021). For law enforcement agencies, digital technology programmes increase efficiency, facilitate data management processes, and enhance capabilities that deliver a range of benefits to public safety and criminal justice. For example, road safety systems detect violations and notify the authorities, identifying offenders. Facial recognition is becoming increasingly popular as an AI application. Its

technologies help law enforcement agencies to make decisions and perform tasks in general, increase efficiency or expand opportunities for certain actions or choices (Roksandic, *et al.* 2022). The use of such systems helps to improve law enforcement control over urban space, disciplines citizens, and increases their level of comfort. The overwhelming majority of all regional preparatory meetings for the 14th United Nations Congress on Crime Prevention and Criminal Justice (United Nations, 2021), which took place in Japan in 2020, stressed the importance of law enforcement officers’ skills in applying information and communication technologies, including big data, in the fight against crime.

V.V. Holina & S.S. Shramko (2020) emphasise the importance of five technologies that can be used by the police in combating crime. The first of these methods is to use big data in mapping to predict the geographical areas that have the highest crime rates. The Internet of Things helps law enforcement agencies collect data through video surveillance in public places. The police have access to massive amounts of data, which enables them to better understand social trends, predict potential crime, and act in a more targeted and rational manner. Regarding the use of drones, their effectiveness lies in constant surveillance and maintenance of law and order without the involvement of individuals, searching for missing persons, investigating fatal accidents, tracking suspected criminals, etc. Using just one drone can reduce crime rate by 10%.

Thanks to advances in high technology and the development of the infrastructure of large cities, systems are becoming smarter and can transmit information in real time. This helps to detect crimes instantly in hot pursuit, predict future crime scenes and increase patrolling. The use of facial recognition and number plate scanning to identify people and cars makes augmented reality glasses useful for law enforcement. This allows law enforcement agencies to easily identify and detain individuals they suspect of committing crimes. Although the use of this technology is still at an experimental stage, it is hoped that in the near future, smart augmented reality glasses

¹ Resolution of the Cabinet of Ministers of Ukraine No. 1556-p. “On Approval of the Concept of Artificial Intelligence Development in Ukraine”. (2020, December). Retrieved from <https://zakon.rada.gov.ua/laws/show/1556-2020-%D1%80#Text>.

² Civil Code of Ukraine. (2023, September). Retrieved from <https://zakon.rada.gov.ua/laws/show/435-15#Text>.

³ Law of Ukraine No. 580-VIII “On National Police”. (2015, July). Retrieved from <https://zakon.rada.gov.ua/laws/show/580-19#Text>.

⁴ Law of Ukraine No. 2297-VI “On the Protection of Personal Data”. (2010, June). Retrieved from <https://zakon.rada.gov.ua/laws/show/2297-17#Text>.

⁵ Order of Ministry of Internal Affairs of Ukraine No. 357 “On Approval of the Instruction on the Organization of Response to Applications and Reports of Criminal, Administrative Offences or Events and Prompt Informing in the Bodies (Units) of the National Police of Ukraine”. (2020, April). Retrieved from <https://zakon.rada.gov.ua/laws/show/z0443-20#Text>.

⁶ Order of Ministry of Internal Affairs No. 1026 “On Approval of the Instruction on the Use of Technical Devices and Technical Facilities with Photo and Video Recording Functions by Police Bodies and Units”. (2018, December). Retrieved from <https://zakon.rada.gov.ua/laws/show/z0028-19#Text>.

⁷ Order of the Cabinet of Ministers of Ukraine No. 1556-p. “On Approval of the Concept of Artificial Intelligence Development in Ukraine”. (2020, December). Retrieved from <https://zakon.rada.gov.ua/laws/show/1556-2020-%D1%80#Text>.

will become part of regular police equipment (Holina & Shramko, 2020).

Notably, the police, within its competence, applies preventive measures and coercive measures defined by the Law of Ukraine “On the National Police”¹ (Article 31, Item 9), and therefore, sometimes it may deviate from the norms of the Civil Code of Ukraine². According to this Article, a police officer is entitled to use preventive measures, including means that have the functions of photography, film, and video recording. For example, researchers at the University of Cambridge found that police officers wearing body cameras had 93% fewer complaints from the public, as video recording increases accountability on both sides (Holina & Shramko, 2020). It is also natural that the use of AI in today’s law enforcement activities to detect and investigate offences is one of the most promising and progressive areas of development of information management systems and technologies.

For example, the use of robots and drones in law enforcement helps law enforcement agencies around the world to more effectively detect crimes (e.g., illegal mining of natural resources and minerals; illegal logging; areas illegally sown with hemp); video recording of traffic violations, road accidents (Kaskad automatic road control system); face recognition and verification with a database; data collection during explosions, fires, natural disasters), simplifying their work, and protecting police officers from accidents and excessive aggression. An example of the use of neural networks in law enforcement is the information and telecommunication system “Information Portal of the National Police of Ukraine” (IPNP), a set of hardware and software tools designed to process information that is part of the unified information system of the Ministry of Internal Affairs of Ukraine³.

The 14th United Nations Congress on Crime Prevention and Criminal Justice emphasised the importance of intensifying the use of emerging digital technologies, such as AI and information and communication technologies, including the use of big data in the fight against crime. Departmental specialised intelligent information systems were created: for the police – automated fingerprint information systems (ADIS Sonda, Dacto-2000, Morpho – France, Printrak – USA, NEX – Japan, etc;) for the Border Guard Service – integrated information and telecommunication systems “Arkan” and “Hart”; for the Customs Service – multifunctional integrated information system “Electronic Customs” (Tvoroshenko, 2016). The introduction of programmes such as Kasandra and geographic information systems (GIS) into the work

of Ukraine’s law enforcement agencies enables them to meet international standards. In practice, law enforcement agencies are already actively using digital video surveillance technologies to search for offenders: face recognition, illegal mining, amber, deforestation; auto-fixation; automated hot pursuit systems; security systems that can recognise hacking threats, call emergency services, and carry out environmental design to create safer areas.

In 2020, the Ministry of Justice of Ukraine officially introduced Kasandra software with AI elements (Artificial intelligence will help..., 2020). Kasandra analyses the personality of the offender and determines the possibility of repeated violations of the law. Practitioners praise this software, which is one of the tabs of the unified register of convicts and detainees, which includes risk and needs assessment. Kasandra helps police officers to assess the probability of a new crime being committed, automates the description of criminals’ personalities, and assesses the probability of breaking the law. Over time, Kasandra will learn to analyse all the data available on the criminal.

Some countries have long been using automatic face recognition software systems. Scientific developments (Becker *et al.*, 2022) show that high accuracy of face recognition is achieved through biometric parameter index technologies. In 2019, only 18 such cameras operated in the Safe Kyiv Region (“Bezpechna Kyivshchyna”) system (Ukraine). As of 2023, there were 1,883 CCTV cameras in operation, of which 480 could recognise vehicle licence plates and 905 were view cameras. Spatial face recognition uses a 3D sensor to capture information about the shape of the face to detect characteristic features (A video surveillance system with..., 2023). Back in 2019, EUAM organised drone management training for 16 officers of the criminal support departments of the National Police of Ukraine (The police expand the..., 2019). Such special aerial reconnaissance groups were planned to be established in every region of Ukraine.

In 2023, police attention is focused on the growing need for a reliable criminal identification system that is efficient and cost-effective for mass use. N. Mittal & R. Singh (2022) propose a system consisting of advanced hardware and software that can considerably improve the accuracy and reliability of a criminal identification system by incorporating machine learning and artificial intelligence. Verification through AI-blockchain helps to achieve end-to-end encryption, timestamps, and legitimacy verification (Mittal & Singh, 2022).

¹ Law of Ukraine No. 580-VIII “On National Police”. (2015, July). Retrieved from <https://zakon.rada.gov.ua/laws/show/580-19#Text>.

² Civil Code of Ukraine. (2023, September). Retrieved from <https://zakon.rada.gov.ua/laws/show/435-15#Text>.

³ Order of the Ministry of Internal Affairs of Ukraine No. 676/БД “On Approval of the Regulation on the Information and Telecommunication System “Information Portal of the NP of Ukraine”. (2017, August). Retrieved from: <https://zakon.rada.gov.ua/laws/show/z1059-17#Text>.

Since the use of AI in the legal system provides a great opportunity to effectively detect, solve, and counteract offences, countries in North America, Europe, and East Asia are investing heavily in its development. This is becoming a key element of success in international markets. Detecting and tracking crimes contributes to the effectiveness of law enforcement agencies in preventing and investigating offences. A positive experience of using AI in law enforcement is the use of a geographic information system (GIS). These scientific developments allow not only tracking people and vehicles, but are also useful at customs, in preventing riots, terrorist attacks, and ensuring security at concerts or other crowded places (The role of GIS..., 2019).

The combination of model images of territories (space and aerial images of the earth's surface, electronic maps, diagrams) has become possible thanks to modern computer technology. This greatly simplified the search for the offender. AI is used in the fight against terrorism by locating criminals. Analysing social media posts, phone calls, and locations are commonly used methods of detecting and investigating crime. For example, Evolv Technology's AI-based security system, which operates through the Evolv Pinpoint app, uses face recognition and functions like a conventional metal detector. The capacity is 600-900 people per hour (Maietnyi, 2021). The built-in camera compares the visitor's face with the faces in the watch list uploaded to the system's databases. The information and photo of this person are displayed on the security tablet, marked in red. The yellow highlighting indicates an unverified threat, and the profile is verified in real time within seconds. According to M.I. Maietnyi (2021), to ensure centralised monitoring and surveillance in smart cities, it is necessary to use artificial neural system programs, cameras, and motion sensors to monitor order in crowded places, to predict dangerous situations, and to recognise the faces of criminals.

The use of artificial intelligence in the development of analytical tools helps to identify the characteristics of modern criminals, which contributes to their timely detection and prediction of criminal intentions. This makes it possible to effectively counteract them, and that is why it is appropriate to use the existing system of crime prevention through environmental design, which is a programme of manipulating built-up areas of cities to create safer areas. The Crime Prevention Through Environmental Design (CPTED) programme was invented in 1960 by criminologist C. Ray Jeffery. It is thanks to CPTED that modern research on burglary prevention has moved to a qualitatively new level (Monchuk *et al.*, 2019). Conventional conceptions of crime fighting, according to K. Blount (2022), often oppose the police to the person, known or unknown, who is responsible for the crime. However, due to the increasingly

rapid development of technology, police are prioritising crime prevention, making it necessary to identify who or what group of people might be the next likely offender before a crime is committed, which is known as predictive policing (Blount, 2022). This position of the scholar is well-reasoned, since the widespread use of various variants of this system has been observed in Western Europe and the United States since 2010. Notably, Time magazine proclaimed predictive policing as one of the 50 best inventions of 2011 (Wilson, 2018).

It is quite natural that to use "predictive policing" in modern law enforcement, the areas of this activity should be defined. G.G. Fuster (2020) believes that the effectiveness of this system will be to predict criminal offences and persons who commit or are likely to commit (or re-commit) them; to create profiles of such persons, considering the characteristics of already identified offenders; to predict the probability of victims of criminal offences. It can be argued that AI expands the possibilities of crime prediction, prevention, and detection. M.I. Maietnyi (2021) believes that for its effectiveness, radar, and laser location devices (e.g., LIDAR) should be used. The precision of this technology makes it possible to map large geographical areas with a level of detail that was previously possible only at excessive cost. M.I. Maietnyi (2021) provides several examples of the use of artificial neural networks in foreign countries. In Dubai, border guards have equipped airports with a system for detecting undeclared items. The UK has created its own system of preventive measures due to the considerable number of accidents caused by phone use while driving, while in Australia, such drivers are monitored by road cameras. The photograph is the basis for the charge of violation.

China is actively using the latest digital technologies as an effective tool in the fight against organised crime, including corruption. The Zero Trust functional system developed by the Chinese Academy of Sciences detects suspicious transactions involving the alienation or acquisition of property, illegal construction, and enrichment. Access to 150 secure databases makes it possible to analyse the behaviour of civil servants (Maietnyi, 2021). A robotic police officer has appeared at a railway station, and apart from controlling the order, it also communicates with passengers. They also use "smart glasses" that help to identify a criminal much faster. The Chinese political authorities plan to build an artificial intelligence industry with a turnover of USD 150 billion by 2030. The main function of AI should be to combat crime. The most ambitious development of Chinese scientists, according to V. Maietnyi (2021), is the Police Cloud system, which is supposed to collect information from shopping histories in retail chains, food delivery orders, and hospital visits during which DNA

samples are collected (Maietnyi, 2021). A “real-time forensic centre” that predicts the possibility of committing crimes and determines the “potential degree of threat” from individuals was opened in 2017 in California (Maietnyi, 2021).

Ukraine’s active involvement in the world’s best practices of implementing smart technologies by the national authorities is a positive indicator that gives hope for the introduction of advanced methods of crime prevention and combating in the country. In 2020, Ukraine established an expert committee on artificial intelligence under the Ministry of Digital Information and drafted a Concept for the Development of Artificial Intelligence¹. Due to the considerable increase in the impact of smart devices on people’s lives, the use of AI-based smart home applications is forecast to grow by 50%. Cisco drew attention to this². However, full automation of the home space is still a task for the future. To solve conventional crime problems, modern law enforcement practice uses the strategy of “Predictive policing” (Yurtaieva, 2020). The main idea is to use the ability to analyse and process substantial amounts of information using artificial intelligence technologies. This helps to create reasonable forecasts to optimise the use of available resources and perform police tasks.

■ Discussion

The recorded features of the specifics of the use of neural networks indicate that the collection and accumulation of large amounts of data are fundamental to the detection of offences and the detention of criminals. Therefore, it is only natural that the use of AI tools is caused by a special social need to protect the rights and freedoms of citizens. But its use has a common prerequisite – safety and legality. This is the legal approach followed by K. Yurtaieva (2020), M. Demura & D. Klepka (2022) and others, emphasising the legality and morality of AI application.

Over the past five years, cybersecurity has moved from the stage of cybercrime to the stage of cyberwarfare (Trifonov *et al.*, 2018). In response to the new challenges, the expert community has two main approaches: to adopt the philosophy and methods of military intelligence and to use artificial intelligence methods to counter cyberattacks. The Technical University of Sofia has implemented a project related to the use of intelligent methods to improve security in computer networks. The analysis of the feasibility of using various artificial intelligence methods showed that it is impossible to identify a method that would be equally effective for all stages of cyberintelligence. While a multi-agent system has been selected and

experimentally tested for tactical cyberthreat intelligence, recurrent neural networks are proposed to be used for operational cyberthreat intelligence (Trifonov *et al.*, 2018). International experience also proves that AI algorithms perform tasks more accurately, quickly, and cheaply. However, the modernity of this method has added some ambiguity in determining its legal nature and legality (Elsheerif, 2021).

Given the research conducted by scientists, one can agree that the impact of neural networks on humanity has been understudied. Therefore, in further development of AI and the development of a regulatory framework, priority should be given to avoiding the risks of its use. To this end, society must control all processes of development of these technologies and their legal framework. The use of mainly national technologies will ensure the independence of the state, considering the European integration trajectory of digital technology development and the prospects for its use in law enforcement (Matuliene *et al.*, 2022).

Given all the risks of using AI in human life, the European Parliament plans to adopt a common regulatory framework for AI as an element of its product regulation by the end of 2024 (Polikovska, 2023). The draft law is the world’s largest attempt to address the potentially harmful effects of artificial intelligence. Specifically, members of the European Parliament decided to classify the following systems as dangerous: biometric identification in public places; biometric classification systems based on socio-economic status; emotion recognition systems in law enforcement, border control, workplace and educational institutions; systems that can create databases of faces based on processing images from cameras in public places, etc. The search for a missing child, prevention of a terrorist threat, and detection or prosecution of a perpetrator or suspect in a criminal offence are defined as exceptions to the use of neural networks.

However, according to O. Etzioni (2016), it is still unclear how effective any regulation of AI can be. Modern technology capabilities are emerging faster than lawmakers can address them. Furthermore, according to the scientists, only a few researchers are concerned with the problem of controlling artificial intelligence, while hundreds of thousands are involved in its creation. Therefore, the question of how realistic it is to control AI risks stays open.

According to O. Karmaza & T. Fedorenko (2021), the use of neural networks is complicated by the fact that its concept, types (forms), principles, conditions, and rules of application are still undefined at the legislative level and are only the subject of theoretical discussions. International recommendations and

¹ Resolution of the Cabinet of Ministers of Ukraine No. 1556-p. “On Approval of the Concept of Artificial Intelligence Development in Ukraine”. (2020, December). Retrieved from <https://zakon.rada.gov.ua/laws/show/1556-2020-%D1%80#Text>.

² Ibidem, 2020.

legislation do not provide concrete answers to some important questions in the field of artificial intelligence. On the other hand, scholars emphasise that international law and foreign doctrines are also relevant. That is why the development of regulatory frameworks and laws that would regulate the use of AI in Ukraine is now a topical issue (Karmaza & Fedorenko, 2021). However, the creation of a legal framework in this area requires a unified approach to understanding the nature of artificial intelligence, which is not yet available. This creates uncertainty for AI in the legal, social, and moral and ethical spheres. This leads to the existence of diverse opinions on the legal aspects of AI, its benefits, threats, and risks among legal experts. There are also discussions about the recognition of legal personality of artificial intelligence robots. More importantly, scientists and practitioners have not reached a consensus on the need to develop effective mechanisms for the implementation of legal liability in the context of AI use.

However, according to M. Demura & D. Klepka (2022), scientists and practitioners express consolidated opinions on the use of artificial technologies in the legal environment at scientific and practical conferences in the form of recommendations and protocols of intent. Therefore, the regulatory and conceptual uncertainty of AI requires their approval at the state level, as its potential is used for complex priority legal tasks in law enforcement. The principal areas of its implementation are various software, including databases, registries, and smart contracts. But the main thing is that AI should be socially oriented, meeting the interests of human security, preserving personal space, will, and consciousness. Rapid changes in public life have a fundamental impact on the modernisation of the neural systems of domestic law enforcement agencies. This includes, for instance, the Integrated Interagency Information and Telecommunication System for Controlling Persons, Vehicles, and Cargo Crossing the State Border (Maietnyi, 2021). Now, artificial neural networks are not without their drawbacks. M. Demura & D. Klepka (2022) believe that since artificial intelligence operates only with information that is known in advance, in some cases its work may be incomplete. If the offender has not previously had any contact with law enforcement agencies, their data will not be included in the database. As a result, the programme may underestimate its threat to society. It is reasonable to believe that the powerful development of neural systems also leads to the transformation of crime and its use of these technologies to commit cyberattacks (Demura & Klepka, 2022). Technology is increasingly being used by criminals in the field of information relations, producing growth and new types of crime.

S. Matuliene *et al.* (2022) also notes the use of digital technologies in criminal activities, emphasising the

need for “close” attention to the security needs of AI: its reliability, transparency, and fairness. Especially when the effects of innovative technologies are unpredictable (Matuliene *et al.*, 2022). Modern researchers believe that one of the tasks of criminology is to understand how artificial intelligence is related to crime. It is becoming part of various aspects of criminal, police, and security strategies (Hayward & Maas, 2020). The key issue is to ensure that no innocent person is accused or convicted because of the misuse of artificial neural networks. NATO’s AI Strategy, adopted in October 2021 (NATO Meetings..., 2021), considers AI as an opportunity to achieve technological advantage, but also as a source of threats from malicious use. That is why the world has developed universal principles for the responsible use of artificial intelligence as a defence against threats: legality, responsibility, and accountability, explicability, and traceability.

■ Conclusions

The analysis of the types, methods and classification of AI and its application in law enforcement makes it possible to summarise and characterise the use of modern technical neural information networks in this area of activity. The study examined the experience of using digital technologies in law enforcement activities of foreign countries. They are most effectively used in the US, Japan, China, and Germany. These are the countries that are actively using artificial neural technologies to fight crime and terrorism, improve cybersecurity, and ensure the inviolability of citizens’ privacy and freedoms. It is important that their activities in this area are also aimed at raising public awareness of the legal and ethical standards of these media. International experience in the use of neural networks proves that their algorithms process big data more accurately, can analyse a large amount of information in the shortest possible time, and can achieve highly accurate results with less risk to system employees. This makes it possible to argue for the importance of expanding European cooperation to improve the application of these technologies. At the same time, the findings of this study strongly suggest that artificial intelligence tools not only increase the operational efficiency of the police, but also have risks in their use. Therefore, the issue of developing a regulatory framework for the use of artificial neural networks that would ensure the legitimacy of AI and prevent its adverse impact on humans stays urgent. Specifically, it is necessary to define the legal status of artificial intelligence, the regulatory framework for its application in various industries, the system of control over its creation, operation, and use, and outline strategic directions for the development of AI. All of these rulemaking areas are based on European standards, rules, and recommendations.

New unique developments in artificial neural networks require in-depth cooperation between practitioners and research centres, modernisation of the information system of all law enforcement agencies to enable them to use advanced digital technologies to process large amounts of data, improve the efficiency of law enforcement and ensure the safety of citizens, and minimise the risks of adverse consequences. Scientific conflicts are also caused by the lack of specificity in the definition of artificial intelligence in the legal sphere, since the different interpretations do not always consider modern achievements, challenges, opportunities,

and prospects for the development of digital technologies. This violates legal relations in the government.

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■ Conflict of Interest

None.

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Можливості застосування штучного інтелекту в роботі правоохоронних органів

Аліна Чукаєва

Кандидат юридичних наук, доцент
Національна академія внутрішніх справ
03035, пл. Солом'янська, 1, м. Київ, Україна
<https://orcid.org/0000-0001-8251-5187>

Снегуоле Матулене

Доктор юридичних наук, професор
Академія громадської безпеки Університету Миколаса Ромеріса
LT-08303, вул. Атейтіс, 20, м. Вільнюс, Литовська Республіка
<https://orcid.org/0000-0001-5379-4412>

■ **Анотація.** В умовах розвитку нейронних мереж і законності їх застосування актуальності набуває обґрунтована необхідність аналізу можливостей штучного інтелекту в роботі правоохоронних органів та забезпечення суспільства від злочинності. Мета статті – схарактеризувати застосування штучного інтелекту в правоохоронній діяльності, зокрема його вплив на рівень злочинності, її викриття та розслідування, загальну ефективність правоохоронних органів. За допомогою порівняльно-правового методу надано оцінку різним підходам до застосування штучного інтелекту, на підставі діалектичного проаналізовано наукові репрезентації цієї проблематики. Термінологічний та нормативно-догматичний методи дали змогу дослідити тлумачення поняття «штучний інтелект» у сучасних наукових дискусіях, дати аксіологічну оцінку такому явищу. Системно-структурний та формально-логічні методи допомогли розглянути особливості впровадження штучного інтелекту в правоохоронну діяльність на сучасному етапі. За результатами дослідження висвітлено вплив засобів штучного інтелекту на ефективність діяльності органів правопорядку, а також обґрунтовано необхідність упровадження на державному рівні нормативних документів для уникнення ризиків застосування штучного інтелекту в правоохоронній діяльності з огляду на євроінтеграцію. Аргументовано, що застосування штучного інтелекту як захисту суспільства від загроз має відповідати сформованим на міжнародному рівні принципам його відповідального використання, яке досі нормативно не закріплено. Виокремлено ризики застосування штучного інтелекту для безпеки людей. Визначено основні тенденції, проблеми й перспективи впровадження штучного інтелекту в правоохоронну діяльність. Актуалізовано міжнародний досвід застосування засобів штучного інтелекту. Результати дослідження може бути використано під час формування державної політики у сфері застосування штучного інтелекту, розроблення правової регламентації його використання, інтеграції штучного інтелекту в діяльність державних органів, зокрема правоохоронних

■ **Ключові слова:** інформаційні технології; протидія злочинності; уникнення ризиків; використання штучного інтелекту; правове регулювання; правопорушення; цифрові технології