Modern Aspects of Digitalization and Artificial Intelligence in Judicial Expertise

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In this article, the most top aspects of the modern world are discussed: digitalization and artificial intelligence, in terms of their application in the activity of judicial expertise. The digitalization of justice is a very current phenomenon, strongly accelerated lately, due to the extensive use of information technologies in the activity of public institutions to offer a diverse range of automated services to the public. The process of digitization in the field of law facilitates access to justice for different categories of persons (who have difficulty accessing physically for various reasons), contributing significantly to the defense of their rights in a timely manner. Currently, within several states, we observe the expansion of the area of digitalization in justice including judicial expertise services. More and more frequently, representatives of the legal and judicial sector are challenged by the application of informational possibilities, including to „substitute" human reasoning and formulate decisions that are much more „objective" and „impartial". To this day, humans are considered the only universally intelligent beings. The software systems that we call „intelligent" today do not come close to describing an intelligence with universal explanatory capacity, but are „intelligent" only in a narrow sense. However, people are making efforts to bring these two „systems" as close as possible: the human being and software. We believe it is important to provide some scientific clarification on the mentioned topics in relation to the current trends of IT transformation of justice, in the hope of professional understanding and application of digitalization and artificial intelligence, namely as it is conceived and used by forensic science and judicial expertise. This is necessary to exclude misinterpretations and contribute to the proper application of digitalisation and artificial intelligence in the technological process of judicial expertise.

Keywords*: digitalization of justice; artificial intelligence; judicial expertise; computer systems; judicial expertise technology.*

Сучасні аспекти цифровізації та штучного інтелекту в судовій експертизі

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Розглянуто найактуальніші аспекти сучасного світу: цифровізацію та штучний інтелект у контексті їх застосування в судовій експертизі. Сьогодні феномен цифровізації правосуддя є вельми актуальним, він значно поширився останнім часом завдяки активному застосуванню інформаційних технологій у діяльності державних установ для надання різноманітних автоматизованих послуг громадськості. Процес цифровізації в галузі права забезпечує легший доступ до правосуддя для різних категорій осіб (які з різних причин мають труднощі з фізичним доступом), що значно сприяє своєчасному захисту їхніх прав. Ми спостерігаємо розширення сфери цифровізації у правосудді, включно з послугами судової експертизи, у кількох країнах. Усе частіше представники правового та судового секторів стикаються з викликами у використанні інформаційних можливостей, здатних замінити людське мислення та формувати рішення, що є більш «об'єктивними» і «неупередженими». Сьогодні людей уважають єдиними істотами з універсальною розумовою здатністю. Програмні системи, які ми називаємо «інтелектуальними», досі не наблизилися до того, щоб підпадати під визначення інтелекту з універсальною пояснювальною здатністю. Вони є «інтелектуальними» лише у вузькому сенсі. Проте люди намагаються максимально зблизити ці дві «системи»: людину та програмне забезпечення. Ми вважаємо за доцільне надати наукове уточнення цих тем у контексті сучасних тенденцій IT-трансформації правосуддя, сподіваючись на професійне розуміння та застосування цифровізації і штучного інтелекту саме так, як це розглядають і застосовують у криміналістиці та судовій експертизі. Це необхідно для запобігання неправильним тлумаченням і сприяння правильному застосуванню цифровізації та штучного інтелекту в технологічному процесі судової експертизи.

Ключові слова: *цифровізація правосуддя; штучний інтелект; судова експертиза; комп'ютерні системи; технології судової експертизи.*

1. INTRODUCTION

In the life of modern society, artificial intelligence occupies a special place. AI technologies are being implemented in navigation, smartphone apps, advertising, smart homes and cars, security, surveillance, finance. Common words, such as „digital economy", „digital school",

„digital criminology" and others, have become more common. Words and combinations of words have become common in the field of justice: „e-file", „digitization of justice", „artificial intelligence". Already many procedural activities are being applied in the IT environment. The logic of events indicates to the field of judicial expertise the need for an IT transformation to align with the digital context of the judicial process, which it serves.

Within the states, including in the Republic of Moldova, the institutions of judicial expertise are an integral part of the justice system, as they represent the organizational form of the activity of judicial experts, which, in turn, contribute to improving judicial efficiency, providing the judicial bodies with clear and reasoned answers on the scientific problems they face in investigating cases and delivering justice. The quality and accuracy of the investigations carried out within the framework of judicial expertise have a significant impact on the quality of justice and the general perception of society regarding the given system. Despite their importance and place in the justice sector, the judicial expertise institutions in the Republic of Moldova have lagged behind in terms of modernization, compared to other systems within the justice sector, such as the judicial system – within which the Integrated Case Management Program (ICMS) was implemented, or the Prosecutor's Office – for which the Information System „Criminal Prosecution: E-Dossier".

Respectively, it was seen the need to implement solutions that would ensure a coherent coordination between the institutions in the justice sector, making efforts on the digitization of judicial expertise services, in order to promote the efficiency, transparency, fairness and accessibility of the justice sector. Only in this way, digitalisation will lead to a tailor-made administration of the justice sector, so that litigants can claim their rights and access justice equally and efficiently. In this regard, it was decided to implement the Information System „Management of Judicial Expertise Files" (hereinafter – IS MJEF). Although they are not identical, the process of digitizing the judicial expertise activity is often confused with the application of artificial intelligence in this activity. In general, in society, and even a good part of the world of lawyers, mistakenly believes that, with the implementation of digitalization and artificial intelligence in judicial expertise, we will not need judicial experts, but only data operators. In the following sense, we will try to show the delimitation between these two processes and to clarify the principles of their implementation in the judicial expertise activity, so as to point out certain particularities related to the specificity of the expert technologies.

2. RESULTS OBTAINED, DISCUSSIONS

The phenomenon of artificial intelligence has reached planetary proportions. The transition of society to a new technological level has led to the emergence of digital and justice platforms.

In addition to the obvious convenience and convenience of AI (artificial intelligence) technology, new types of crimes and new challenges are introduced for law enforcement agencies in different states; For forensic / forensic expertise, this indicates the emergence of new objects of research. On the other hand, the unity of the problem of integrating artificial intelligence technologies into different spheres of life gives reasons to affirm the existence of a common typical object of expert research both nationally and internationally.

With reference to the implementation of AI in the activity of judicial expertise, we consider it important to mention a few aspects.

It is known that the activity of judicial expertise (AEJ) is a separate practical area, which is developing dynamically from a methodological and production point of view, consolidating its positions in the field of law enforcement and the scientific knowledge system. Forensic science has generated forensic expertise — a science that integrates the provisions of the legal branches of gnoseology, other humanities and technical sciences, and the theory of expertise constitutes the foundation of practical activities in ensuring and protecting the rights, freedoms of citizens and state interests by conducting objective forensic / judicial examinations, based on scientific data. The rapid expansion of the frontiers of special knowledge, taking into account the digital transformations used in expertise, has allowed professional forensic expertise activities to reach the peak in its development, playing an essential, often decisive, role in modern judicial processes regarding the realization of the principle of the rule of law. How do we look at the status of AI in the activity of judicial expertise from an expert perspective: as a technical device or as an artificial reason?

The subject of AI in crime investigation, forensic / judicial expertise and, in general, in the AEJ is becoming more and more relevant. There are now significant changes in global practice regarding the understanding of the use and training of artificial intelligence in the practice of forensic expertise [1, sec. 3]. The expert literature indicates that AI is used, among others, for the following forensic tasks: processing large amounts of text data, such as social media messages; E-mail messages. decoding chat conversations; facial recognition systems, accelerated analysis of large data sets (e.g. DNA samples, fingerprints, gunshot marks and other ballistic objects), as well as data from various „smart" devices used in everyday life (trackers, speakers), browsers, detection of malicious software, traces of narcotic substances.

The expert literature indicates that We deduce that AI is a product of time, scientific and technical progress, competent use and study, which can be achieved by applying a set of techniques and technical means borrowed from the field of computers. We believe that in order to determine the optimal direction of development of the relevant forensic technologies, it is necessary, first of all, to define the basic concepts and status of AI.

In our opinion, related to judicial expertise, AI should be seen as an important technical support mechanism, which allows the optimization, acceleration, improvement of the experts' work. Some scholars warn of the risk of substituting an expert result or conclusions with an AI result or conclusion, expressing the view that AI in forensic expertise should always be a subsidiary means on the way to achieving a reliable and reasoned result in the form of an expert conclusion.

If we look at the practice of forensic expertise, including worldwide, we see that certain elements of AI have been used successfully by experts for a long time: automated means of comparing papillary prints taken from crimes with those in databases; bullet marks; of the external signals of man; DNA traces, siding simulators in cases of road accidents, etc., etc., which allow a rapid and reliable resolution of the corresponding identification and situational tasks. Currently, on the agenda are the challenges offered by the immense possibilities of AI mechanisms, which we can implement in the practice of judicial expertise, but not without the respective legal rigors, which are currently lacking [2].

Artificial intelligence makes it possible to simulate human cognitive functions and obtain results when solving concrete tasks, comparable, at least, to the results of human intellectual activity.

As we see, artificial intelligence is, first and foremost, a range of technological solutions, including Self Information and Communication Info structure, software (including using machine learning) processes and services for data processing and judicial activities [2].

In the initial period of development, AI relied on a high level of „human-readable" presentation of tasks using the logical scheme of „if" – „then" in their solution.

This scheme works easily at the stage of preparation and arrangement of judicial expertise. It is helpful for the authorizing officer to identify the specialty of judicial expertise, the circle of problems that he can solve, resulting from the objects, traces detected and removed from the scene of the deed, of other procedural activity, etc. The ability to learn and learn on its own allows artificial intelligence to act in a different way. In similar situations, relevant decisions are taken based on previous actions. However, the advantage given over ordinary computer algorithms is a problem, because, when it is necessary to solve a new task, a very large volume of data is needed, based on real examples of solving such situations.

It is known that similar situations are rarely encountered in judicial expertise, although the dispersion by segments of some investigations, even at the moment, gives the possibility of using some elements of AI. These, in turn, can be connected by the expert in the appropriate sequence to the concrete task of expertise and in this way to obtain the expected speed and reliability when performing the expertise. However, the central role, both for legal and technical reasons, is held by the

human being – the judicial expert, who guides and controls these processes.

With reference to the process of digitization of judicial expertise services, we note that it represents an IT solution, which sums up the totality of interdependent information resources and technologies, including software, hardware and user infrastructure, intended for the preservation, processing and provision of information and the formation of the information resource regarding to the judicial expertise files. The information system „Management of judicial expertise files" (ISMJEF) includes functional possibilities for managing workflows, information exchange, notification functions, data storage and online expertise request, necessary for the processing of judicial expertise files. From the perspective of implementing this system, we establish many advantages [3].

3. CONCLUZII

In conclusion, we would like to draw attention to the following aspects:

1. The digitization of expert services and the implementation of AI in the work of experts are two independent processes, both of which are intended to make expert work more efficient, ensuring the quality and veracity of the data provided to the judicial process — of the judicial expert reports;
2. At the same time, in both cases: the digitization of forensic expertise services and the implementation of AI in the process of conducting expertise, it is necessary to observe certain principles to ensure the accuracy and reliability of the expert's conclusions, which are recognized worldwide as a means of evidence in court cases;
3. None of the computer systems in question (AND the GDEJ, anyway it would not be called AI), in the expertise activity, can fully substitute human reasoning. This does not prevent the further development of computer systems, to bring them as close as possible to the mechanism of human reasoning in order to continuously improve the efficiency of forensic expertise;
4. It is logical that the normative framework, referring to these mechanisms, should comply with academic rigors, thus finding provisions based on scientific concepts, not on false, non-scientific opinions.

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