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**ALGORITHMIZATION AND DIGITALIZATION OF CRIMINAL
AND PENAL ENFORCEMENT LAW: PROBLEM STATEMENT**

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Abstract

The community of scholars does not always understand the opportunities that digital technologies can bring to law enforcement, and what their limitations are. Of particular interest is the analysis of possible directions for the development of intellectual legal systems based on technologies of weak artificial intelligence. In the article, the authors focused on the legal problems that hinder the development of such systems. These problems include gaps in laws, shortcomings of legal techniques in describing the rules of law, incorrect description of the conditions under which the rules of law can be applied, logical relations between these conditions, etc. A significant difficulty is associated with serious limits of judicial review and the presence of a large number of evaluative legal categories, according to which courts can make opposite decisions under similar conditions. Under such conditions, the process of training intellectual legal systems based on weak artificial intelligence technologies seems to be an unsolvable task. On the basis of the above, general recommendations are formulated for the improvement and unification of legal norms related to various branches of law. The authors make a conclusion that most likely spheres of application of intellectual legal systems are consulting services and support for legal decision-making.

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1. Introduction

The trend for digital transformation of society (Putin Said about the..., 2020) will allow the country to increase the competitiveness of economy and labour productivity, work out new technologies, create products with previously unattainable properties, and improve services for the population. The accumulation of huge amounts of information and their analysis make it possible to identify unknown patterns in the interests of theoretical research, economics, and production.

For legal theory, the digital transformation of society is a serious challenge. It creates situations that are not regulated by the existing laws, raises questions about possible ways of using modern intellectual legal systems in the process of law enforcement, about the legal status of decisions made with their help, and so forth.

2. Problem Statement

The use of artificial intelligence in law enforcement is a new sphere for lawyers, though they do not always understand the issues discussed and the terminology used. The possibilities of using systems based on artificial intelligence, as well as the limitations associated with the quality of the legislative description of legal norms, the evolving judicial practice of their application are not always clear to them. It is also unclear, whether it is possible to automate completely these processes and what place such systems can take in law enforcement activities. Therefore, in this article, we would like to consider and specify those aspects of the digital transformation of society that are associated with the creation of intelligent legal systems of a new generation, discuss problematic issues of automatization of law enforcement in the field of criminal and penal enforcement law, and analyse the concept of artificial intelligence.

3. Research Questions

The subject of the article is the consideration of the norms of the current Russian legislation, possibilities and limitations of intellectual legal systems based on weak artificial intelligence technologies.

4. Purpose of the Study

The purpose of the paper is to specify the limits of the capabilities of intelligent legal systems based on weak artificial intelligence technologies, as well as their place in the law enforcement process.

5. Research Methods

The methods used in the paper are as follows: the dialectical method of cognition of phenomena and processes in their interrelation and interdependence, the method of content analysis, systemic, structural and functional, formal and logical methods.

6. Findings

In accordance with paragraph “a” of Article 5 of the “National Strategy for the Development of Artificial Intelligence for the Period up to 2030” (hereinafter referred to as the National Strategy), the concept of “artificial intelligence” implies a set of technological solutions that allow simulating human cognitive functions and obtaining results comparable to the results of human intellectual activity (National Strategy..., 2019).

Scholars distinguish between weak and strong artificial intelligence. The weak artificial intelligence involves the use of computer neural networks that implement the functions of computer vision, natural language processing, speech recognition and its synthesis.

Strong artificial intelligence, in accordance with Article 9 of the National Strategy, is universal in nature and is expected to think independently, interact and adapt to changing conditions. The possibility of its development is unclear. Thus, practical efforts for automation in the field of law enforcement should be directed to the use of solutions concerning the weak intelligence and traditional algorithms.

Systems based on neural networks require prior training. To understand the essence of training, it is necessary to describe the principle of neural networks.

In a very rough approximation, a neural network can be described as a mathematical model in which the main element is a “neuron” – an element that has several inputs and one output. Several neurons are combined into a number of layers: the input layer which receives signals that require processing; the output layer which forms the output signal with the solution of the problem, as well as one or more intermediate or hidden layers. Each input of a neuron is assigned its own weight, i.e. the coefficient by which the signal from the corresponding input is multiplied. The signals from all inputs of the neuron are summed up taking into account the weights assigned to them, and if the final signal reaches a threshold value, a certain value is formed at the output of the neuron. The outputs of neurons of one layer are transmitted to the inputs of the neurons of the intermediate layer. The task of training a neural network is to select the weights of all neurons in such a way as to minimize the error at the output of the network.

The training is performed in the following way: a training example is transmitted to the input of the neural network, and then the value at the output of the neural network is analyzed. If the result obtained differs from the required one, the weights of all neurons in all layers are adjusted. Then this procedure is repeated until the probability of error decreases to an acceptable value.

At the same time, the quality of the training sample also determines the accuracy of solving recognition problems. The program compares the incoming information with the samples that were used for training, and if the training sample contains errors (e.g., incorrect court decisions), then the results will not be correct either. In fact, a neural network can be trained to make both just and unjust decisions.

There are reports in the press that systems based on artificial intelligence show better results when reviewing certain types of cases as compared to live lawyers (Kostalgin, 2018; Kuznetsov, 2017).

However, such results are demonstrated, first, when solving very narrow tasks and, secondly, after very time-consuming training, the main difficulty of which consists in the preliminary selection of

training materials and their processing, in which the text of a judicial act is transformed into a data set with which the program can interact.

Despite good results obtained in solving highly specialized problems, such systems also have serious limitations that prevent their wide dissemination, because as we have already noted, the quality of the training sample also depends on the quality of the solutions obtained. This fact creates the problem of confidence in the results obtained.

In practice, there are cases when using similar initial data the courts make quite opposite decisions. The situation is complicated by the presence of many evaluative legal concepts and abstract wordings of norms, which allow the courts to make any decisions.

A good illustration of the problem is the situation with the realization of the right of convicts to parole, when under similar conditions the same rules are applied differently (Bayarkina, 2010). It is quite unclear, whether in such cases it is possible to form at least some useful training sample, what criteria for making a decision should be laid down in the training model, since even for legal experts the motives that guided the court in each particular case are not always obvious.

The results generated by the neural network are not based on the rules of logic and are probabilistic in nature, so one can check the result only by analyzing the legal situation in the traditional way. However, in this case, the possibility of automatic decision-making loses its relevance.

In some cases, the judicial practice with a stable law can change dramatically. For example, in accordance with the position of the Supreme Court of the Russian Federation, the transfer of narcotic drugs or psychotropic substances in the course of a controlled purchases conducted by law enforcement officials for a long time required qualification of crime with reference to Part 3 of Article 30 of the Criminal Code of the Russian Federation as an attempt to sell, which led to mitigating of criminal repression against drug dealers in accordance with Part 3 of Article 66 of the Criminal Code of the Russian Federation.

It was only in 2015 that the judicial practice was brought into compliance with the letter of the law, and such an act was recognized by the courts as a completed crime (On Amendments to the Resolution of the Plenum..., 2015).

It is obvious that in such situations, developers of legal intellectual systems are forced to focus not so much on the Criminal Code of the Russian Federation, but on judicial practice, and to retrain intellectual systems not only when legislation changes, but also when the Supreme Court of the Russian Federation clarifies the norms of law.

Judicial practice also has regional peculiarities. Thus, according to Articles 7.2, 7.3, 7.27, 10.3, Part 1 of Article 13.19.3, Part 2 of Article 13.21 of the Administrative Code of the Russian Federation courts apply a one-year statute of limitations, while others apply a general one (The Statute of Limitations..., 2021).

In other cases, the quality of the legislative description does not allow courts to determine accurately the individual conditions for the application of the law. Thus, the disposition of Article 246 of the Criminal Code of the Russian Federation “Violation of the rules of environmental protection during the production of works” does not contain an indication of the form of guilt, which in accordance with Part 2 of Article 24 of the Criminal Code of the Russian Federation indicates that this crime is intentional.

However, the analysis of the disposition shows that the legislator meant, most likely, a careless form of guilt, since the deliberate introduction of errors into the draft documents with intent to cause damage must be qualified according to other articles of the Criminal Code of the Russian Federation. Proof of intent to cause damage that occurred during the design phase is unlikely. Thus, understanding the form of guilt in strict accordance with the Criminal Code of the Russian Federation leads to the inability to apply this article in practice.

The negligent attitude of the legislator to the description of the *corpus delicti* was aggravated by the position of the Supreme Court of the Russian Federation, according to which the encroachment provided for in Article 246 of the Criminal Code of the Russian Federation can be committed both intentionally and negligently (On the Application by Courts of Legislation..., 2012).

Moreover it is necessary to note that the Russian language is difficult for automatic text parsing. In some cases, word order is important for understanding the meaning of the text; in other cases, word order does not change the meaning of the text. This circumstance is of critical importance insofar as national law does not have strict rules for constructing dispositions of legal norms, describing the logical conditions under which they can be applied. Individual regulations differ significantly from the point of view of the legal technique used. Therefore, the understanding of their meaning is possible only after a thorough analysis of the legal context.

Another obstacle to the introduction of intelligent legal systems based on neural networks is the need to retrain them when changing legislation.

As we pointed out above, training should take place with the help of a special training sample. However, for intellectual legal systems, such a sample can be developed only on the basis of an array of court decisions taken after the entry into force of the relevant rule. However, it takes a long time to get an appropriate number of court decisions. Thus, intelligent legal systems based on neural networks are fundamentally unable to respond quickly to constant changes in legislation, which dramatically reduces practical value of such systems.

Intelligent systems based on algorithmic approaches do not have such a disadvantage. For example, the system “Dragon-law”, developed by S.Y. Bytko and S.B. Mitkin, a demo version of which is available in the Internet (Dragon-Law. Automatic legal system, n.d.), is based on the ideas of the visual programming language “Dragon” and can be quickly modified in accordance with changes in legislation. At the same time, the visual representation of legal algorithms in the form of diagrams in the “Dragon” language provides the ability to verify quickly the solutions issued by the system.

7. Conclusion

Taking into account the above mentioned comments it can be concluded that intelligent legal systems based on the technologies of weak artificial intelligence cannot be used to make independent decisions. At the current level of development, we have the right to expect them to provide consulting services, or possible solutions to legal situations at the request of the user. Automatic preparation of legal documents on narrow legal issues may be a possible direction of their application.

The State should facilitate the implementation of intelligent legal systems by:

- minimizing the number of evaluative legal concepts and abstract wordings;

- uniformity of the application of the norms containing evaluative notions;
- inclusion into the rules containing the expressions like “in exceptional cases”, “under exceptional circumstances”, and so forth of specific lists of such circumstances;
- unification of descriptions of logical conditions;
- organization of systematic work for identification and elimination of gaps in legislation.

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