Using predictive analytics systems to resolve a legal dispute*

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Abstract: Increasingly, in the mass media, we hear about examples of using predictive analytics systems to obtain solutions to legal disputes. However, from the viewpoint of legal regulation, the question arises: Can we consider a solution proposed by the system to be final and legally significant, or just one of a possible set of solutions? A parallel with legal principles is drawn in the scientific literature analyzing the prospects for such systems application. Researchers come to disappointing predictions about possible risks to human rights and freedoms if the solutions proposed by predictive systems are approved without human participation. In our study, we came to the following conclusions. Firstly, at the moment of technological development, intelligent systems cannot explain why they make certain decisions. Secondly, because the system's decision-making is not transparent, it is incorrect to assume that programmers or developers replace the judge. The role of programmers and developers of an intelligent system model is very important but purely technical. Thirdly, the problem of inaccuracy in the system's decisions refers only to the stage of system training. The higher the quality of the datasets and the more data sets there are, the more accurate the decision made by this technology will be. That is why forming correct datasets is an independent and challenging technological task.

Keywords: Formalization of natural language constructions. Inaccuracy of solutions. Algorithms. Self-learning.

Summary: **1** Introduction – **2** Algorithmization and predictive modeling for judicial and alternative dispute resolution – **3** Risks of using predictive systems for modeling legal disputes – **4** Conclusion – References

1 Introduction

Disputes have accompanied humanity throughout its existence. However, over time, people have formed models of dispute resolution – from the independent search for a compromise to the model of appealing to the courts or resorting to a mediator, which led to the emergence of the legal model of legal dispute resolution. Currently, the development of mathematical methods, algorithms, and information technologies allows the development of services that can act as mediators in

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resolving legal disputes or as judge assistants. A literature review suggests that such information systems have already been developed and applied in some situations. Such information systems include intelligent systems based on predictive modeling techniques and neural network language models. Although these intelligent systems are an auxiliary tool in the hands of a judge or a service used by stakeholders to obtain a prediction about a dispute, their use raises questions about the balance between ethical risks and benefits to society.[1] Research shows that scholars are concerned about possible situations where the system would make a decision instead of a judge, or the prediction provided by such information systems would implicitly influence the final decision made by a judge. In addition, other issues are also discussed in the academic literature, such as how trustworthy such technological solutions can be and whether they are correct and accurate. Can the system make a mistake by offering an incorrect prediction of the dispute resolution, which could then lead to judgment errors and affect the dispute outcome?

The literature review has shown that such concerns are not unfounded, as indeed the system developers' choice of algorithms and the accuracy of the intelligent systems training determine the accuracy of making a decision – the very decision that the legal dispute parties wish to obtain by turning to the system. In turn, the consequences of this inaccurate decision can be legally significant decisions. The roots of this problem lie in the complexity of natural language constructs. The choice of the necessary mathematical model requires preliminary formalization of natural-language constructs, which is a separate and very complex mathematical and technical task. Some authors associate the risks of making inaccurate or incorrect decisions with the presence of strong and weak artificial intelligence in these systems. However, such a position has a particular inaccuracy, which we will show in this paper.

Because of such risks, some researchers propose limiting the use of these technologies. In our opinion, such proposals seem to be a struggle against technological evolution and its takeover of the humanitarian spheres. We should emphasize that there is no way to counteract this technological process. Using such information systems is a stage in the evolution of human life automation. Drawing a parallel with past technological revolutions, we see a definite pattern: humans mechanized their activity at the beginning of their existence; later, with technological development, they automated it. Then came informatization, not only of human labor but also of their life and social relations. In other words, applying various information technologies, creating information systems on their basis, and using these in human

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[1] ERAHTINA O. S. Approaches to Regulating Relations in the Sphere of Developing and Using the Artificial Intelligence Technologies: Features and Practical Applicability, *Journal of Digital Technologies and Law*, *1*(2), P. 421–437, 2023. https://doi.org/10.21202/jdtl.2023.17.

life are natural stages of humanity's development. The main goal of humans at all stages of mechanization and automation of their work was to outsource routine or labor-intensive and complex tasks to technologies. Nowadays, one such task is predictive analytics of dispute matters. The result of predictive systems is a reduction in court workload. If such intelligent systems are used, the time of litigation is reduced and the court system is relieved. In case of an alternative way of dispute resolution, the parties receiving the case assessment can decide whether to apply to the judicial authorities. This, in turn, indirectly reduces the burden on the judiciary.

Thus, the article aims to study public relations in the sphere of artificial intelligence algorithms applied in predictive modeling for judicial and alternative dispute resolution. The author also identifies and analyzes risks to human rights arising from using such systems.

2 Algorithmization and predictive modeling for judicial and alternative dispute resolution

2.1 Algorithmization as an initial step in the development of a predictive modeling system

Algorithmization has touched the area of social relations and legal regulation that some scholars have long believed can never be algorithmized. We proceed from the fact that any resolution of legal disputes is subject to a specific algorithm, a sequence of actions that leads to obtaining the result – the decision on the dispute. In this case, we can assume that such a sequence of actions can be programmed.

There are various legal models of dispute resolution that the parties can choose. For example, the parties may select a judicial or alternative dispute resolution model, but their goal is to get an answer to the legal conflict that has arisen. Often, such legal disputes are accompanied by a lot of legal documents that need to be analyzed with a single legally relevant detail. This goal can be achieved with the help of algorithmization of the said processes and through developing technological solutions based on the algorithms, which may take up the search for an answer to the conflict. This informatization of human activity is a natural step of technological evolution.

However, the development of these technologies affects the technological problem of algorithmization of the decision-making process and formalization of natural-language constructs – those case materials that the parties submit for evaluation and analysis. The main difficulty in evaluating the case materials is that they are presented in natural language, which the technology must analyze. In fact,

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the challenge in this case is to formalize natural language constructs, which refer to complex dynamic systems.

Despite this difficulty, scientists have managed to find a solution to this problem. The most effective tool at this stage of information technology development is the artificial intelligence (AI) model – neural network language model, which uses various types of neural networks to model natural language. An example of a neural network language model implementation is the GPT chatbot.

An example of Russian legal scientists' attention to the algorithmization of natural-language constructs is the technology of machine-readable law.[2] In 2021, the Concept of Machine Readable Law was approved in the Russian Federation. According to this Concept, machine-readable law is a technology that "to a greater or lesser extent will be applied in all branches of legislation of the Russian Federation, to supplement, but not to replace, the norms written in natural language".[3] In the future, the development of machine-readable law may lead to its predominance over the norms set forth in natural language in the legislative sphere. In turn, the norms in natural language may become a derivative statement of the norms in formal language.[4]

Thus, the interest in formalizing natural language constructs is a step in the development of predictive analytics for dispute resolution. However, it should be noted that despite the demand for these technologies, there are currently few such technological solutions for predictive analytics of dispute resolution.

2.2 Predictive modeling for judicial and alternative dispute resolution

Predictive modeling uses statistical models to predict future events or outcomes based on available data. Predictive modeling can be applied in various fields, such as medicine, economics, weather, and others, to make better-informed decisions based on likely scenarios of events. Different methods, such as regression analysis, machine learning, time series and others, are used to build models.

The alternative dispute resolution system using predictive modeling involves unique algorithms and technologies to predict and prevent conflicts between

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[2] For an in-depth examination of the concept and status of digital sovereignty in BRICS+ countries, refer to: GROMOVA E., BRANTES FERREIRA D. On the Way to BRICS+ Digital Sovereignty: Opportunities and Challenges of a New Era. *BRICS Law Journal*, 11(3), P. 54-69, 2024. https://doi.org/10.21684/2412-2343-2024-11-3-54-69.

[3] Concept of development of machine-readable law technologies (approved by the Government Commission on digital development and the use of information technologies for improving the quality of life and business environment, Minutes of 15.09.2021 No. 31) (The document was not published). SPS "ConsultantPlus".

[4] Concept of development of machine-readable law technologies (approved by the Government Commission on digital development and the use of information technologies for improving the quality of life and business environment, Minutes of 15.09.2021 No. 31) (The document was not published). SPS "ConsultantPlus".

parties. The basic idea of this system is to use data and analytics to anticipate possible situations that may lead to disagreements and disputes between parties or to offer a possible solution to parties in an existing conflict. In all cases, these technologies are supportive tools that can help proactively identify potential problems and resolve them before the issues lead to severe consequences. On the one hand, predictive analytics technologies for legal disputes may relieve the burden on the judicial system; however, scholars note risks to the human rights that may arise from these technologies. Such concerns are indeed unfounded.

In the case of an alternative way of resolving legal disputes, predictive modeling technology may be the mediator to which the disputing parties are ready to turn to find a compromise solution. This technology can be chosen as a mediator of disputes because any method of dispute resolution other than judicial can be selected for alternative ways of resolving legal disputes; hence, technological means may perform this function. In this regard, predictive modeling systems can be used for alternative dispute resolution. For example, analytical algorithms can help predict possible dispute outcomes based on the data and facts in the dispute file. This allows the disputing parties to obtain more objective and informed decisions, reducing the likelihood of conflicts and improving the dispute resolution process.

In the Russian Federation, the development of theoretical foundations of predictive modeling and optimization is carried out by the Institute for Information Transmission Issues named after A.A. Kharkevich of the Russian Academy of Sciences (IITI RAS) together with DATADVANCE company.[5] DATADVANCE is engaged in their practical realization. Such cooperation allows the creation of innovative technologies in data analysis, predictive modeling and process optimization. At the end of 2010, DATADVANCE became one of the first participants of the Skolkovo Innovation Center project.[6]

However, despite the social need for such technological solutions, we must admit they are few. This is true not only for the Russian Federation but also for other technologically developed countries. However, researchers provide examples of using such information systems in the media and scientific literature. For instance, in the US, such a system was developed by Ravel Law. However, as

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[5] A leading global software company developing software to automate and accelerate the design and optimization of products and processes. Their product, the Seven platform, combines advanced machine learning, optimization and data analysis algorithms to enable users to efficiently solve complex optimization and decision-making problems. DATADVANCE's predictive modeling and optimization technology and its engineering applications are widely used by the world's largest high-tech companies such as Airbus and IHI. One of the co-founders of DATADVANCE is EADS, Europe's largest aerospace corporation with an annual turnover of about 43 billion euros.

[6] Scientific and technological innovation complex for the development and commercialization of new technologies.

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the article shows,[7] this system is used not to build a forecast of the legal dispute resolution but to search for arguments that most often affect the judge's decision-making, or factors that irritate the judge, as well as the most cited precedents in court decisions. However, there are also examples of more advanced intellectual systems in the United States,[8] such as Lex Machina,[9] which is designed to analyze data and find patterns to help predict dispute resolution.

In the Russian Federation, there have been no examples so far of systems providing advice on judgments. At the moment, intelligent systems are used only as an auxiliary tool in the evaluation of evidence, for example, for the judge to obtain information necessary for the case. Since 2024, the intelligent system "Justice Online" is available.[10] The main task of this system is the automated drafting of judicial acts based on the analysis of the procedural appeal and case materials; it also transcribes audio protocols and provides an intelligent search engine able to analyze and systematize judicial practice. This system serves only as an auxiliary tool for the judge since the constitutional principle stipulates the realization of justice only by the court. In other words, within the framework of this legal principle, only a human judge has the right to make a decision.

The Casebook system is also used in Russia. This is a service that allows users to track and control court cases. Its functionality includes tools for managing documents and analyzing them practically. Still, simultaneously, the system allows for the prediction of the outcomes of cases.[11]

However, the technological development of such systems and their application in the public sphere in the Russian Federation is underway. For example, in 2022 the Chairman of the Government instructed the Federal Antimonopoly Service of Russia to apply predictive analytics methods more actively. Still, this instruction was given in order to identify risks associated with prices.[12] The task was to develop a sub-technology, "Recommendation Systems and Intelligent Decision Support Systems", to provide predictive modeling of performance/learning without testing in the real environment and to obtain by the end of 2023 the prototypes of products capable of performing predictive modeling.[13]

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[7] *AL Interview: Ravel and the AI Revolution in Legal Research.* https://www.artificiallawyer.com/2017/01/23/al-interview-ravel-and-the-ai-revolution-in-legal-research.

[8] *Algorithm Helps New York Decide Who Goes Free Before Trial.* https://www.wsj.com/articles/algorithm-helps-new-york-decide-who-goes-free-before-trial-11600 610400?mod=searchresults&page=1&pos=1.

[9] *Why Lex Machina's Legal Analytics Are the Best.* https://lexmachina.com.

[10] *Courts plan to use artificial intelligence in drafting decisions.* https://rg.ru/2023/05/25/robot-pomozhet-rassudit.html.

[11] Predictive analytics in civil litigation. https://pro-sud-123.ru/news/prediktivnaya-analitika-v-grazhdanskom-sudoproizvodstve.

[12] Meeting between Mikhail Mishustin and Maksim Shaskolsky, Head of the Federal Antimonopoly Service. URL: http://government.ru/news/44429/ (access date: 26.07.2022).

[13] Roadmap for the development of "end-to-end" digital technology "Neurotechnologies and Artificial Intelligence" (The document was not published). https://digital.gov.ru.

Thus, we can note that in the Russian Federation, the development and application of predictive modeling technologies in various social relations are not only included in the plan of measures controlled by the state to form a modern information and telecommunication infrastructure to ensure a high level of its availability and provision of quality services on its basis but also such systems are actually being developed. Despite these technologies being considered promising,[14] predictive systems of legal dispute analytics are not widespread in the Russian Federation.

Exploring the potential risks of using these technologies, scholars express their concern about possible violations of human rights and freedoms.[15] Such risks and threats are summarized in the next section.

3 Risks of using predictive systems for modeling legal disputes

3.1 Modeling the process of finding solutions

For decision-making, an intelligent predictive dispute resolution system must learn on a large amount of data,[16] [17] also called datasets. These datasets are case files that have already been adjudicated. During training, the system learns to identify patterns and build causal relationships. After training, the system is presented with new case files for which it must propose a decision. Based on the relationships it has formed during training, the system searches for similar patterns in the latest case materials and concludes them. In fact, the training of the intelligent system is based on analyzing and searching for patterns in statistical data.

From the viewpoint of modeling the process of searching for solutions, the only correct sequence of actions is to identify regularities and construct cause-and-effect relations. However, from the perspective of making legally significant decisions, lawyers do not accept this learning algorithm. For example, Russian lawyers explain their concern in the following way. Since the Russian legal system belongs to the Romano-Germanic (continental) legal family, the predictive system training through analysis of existing statistics on dispute resolution contradicts the legal model of continental law and this tool cannot be a means of administering justice.[18]

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[14] SAMSONOVA M.V., STRELTSOVA E.G., CHAIKINA A.V. et al. *Digital technologies in civil and administrative court proceedings: practice, analytics, perspectives.* Moscow: Infotropic Media, 2022.

[15] STILGOE J. Who Killed Elaine Herzberg? In *Who's Driving Innovation?* P. 1–6, 2020. Springer International Publishing. https://doi.org/10.1007/978-3-030-32320-2_1.

[16] KOVALEV S.M., OLGEIZER I.A., SUKHANOV A.V., KORNIENKO K.I. Identification of Critical States of Technological Processes Based on Predictive Analytics Methods, *Automation and Remote Control,* Vol. 84, No. 4, P. 424–433, 2023. DOI 10.1134/S0005117923040100. EDN QRJWPX.

[17] Shaping the future of business marketing: unveiling the potential of predictive analytics and predictive intelligence. *International Research Journal of Modernization in Engineering Technology and Science,* 2023. DOI 10.56726/irjmets46344. EDN EQXCDO.

[18] KONSTANTINOV P.D. *Influence of information technologies on principles of civil process (Comparative legal research on the example of Russia and France),* major 5.1.3 – Private-legal (civilistic) sciences (legal sciences). Abstract of Cand. Sci. (Law) thesis. Ekaterinburg, 2022. https://урґюу.рф/science/dissovet/file/base/5/561/dissert_dl.pdf.

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We can agree with this position, as one of the major drawbacks of technology that analyzes statistics alone is that it does not consider a situation's contextual and qualitative aspects. Systems trained on statistical information may not consider a particular situation's unique circumstances, people's behavioral patterns, motivations, and goals. This, in turn, may lead to incorrect or suboptimal decision-making. In addition, such models may be unsuitable for predicting people's behavior in complex and non-standard situations, which almost always arise when it comes to assessing social relations. When analyzing materials related to a legal dispute, it is essential to consider many factors, since each situation is unique, and the limitations that are defined by statistics cannot take into account all the specifics of the relations that have arisen. However, if the decision proposed by the system does not take into account all the specifics, it can lead to legally significant consequences only if procedural acts are adopted based on this decision. For example, a judge bases her decision on the conclusion proposed by the artificial intelligence system. In this case, we can conclude that the judge made a procedural error, because "a procedural error is the incorrect procedural action (inaction) of an investigator, a prosecutor, or a judge, which is manifested in incomplete study of the case circumstances, significant violation of the criminal procedural law requirements, its incorrect application, and adoption of an incorrect procedural decision".[19]

B.V. Lesiv agrees with the existence of this problem; studying the works by O. Holmes, he showed the importance of the judge taking into account the perpetrator's attitude to the deed and due diligence. He gives an example of a worker throwing a heavy beam from the roof into the street. In one case, the worker was sure that there was no one beneath, and in the other, he did not check whether there was somebody. According to the law, the punishment will be different for the same action of the worker and the same consequences because the judge will take into account all the factors surrounding the situation.[20]

To prove the slowing down of predictive modeling systems, representatives of states with legal systems based on common law, such as the United States, cite the contradiction between two opposing ways of thinking about judicial decision-making: legal formalism and legal realism.[21]

Proponents of legal formalism argue that, based on the law wording, it is possible to give an unambiguous interpretation and correctly apply it to a particular

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[19] STEPANOVA N.A. Classification of errors made in criminal proceedings, *Legal Science and Law Enforcement Practice*, No. 1(35), P. 23–30, 2016. EDN XBIAPR.

[20] LESIV B.V. Predictability of law and prediction of judicial decisions in the doctrine of O. Holmes, *Justice*, Vol. 5, No. 2, P. 43–66, 2023. DOI 10.37399/2686-9241.2023.2.43-66. EDN TNJGSG.

[21] FERREIRA D.B., GROMOVA E.A. Hyperrealistic Jurisprudence: The Digital Age and the (Un)Certainty of Judge Analytics. Int J Semiot Law 36, 2261–2281 (2023). https://doi.org/10.1007/s11196-023-10015-0; Algorithmic Realism: Expanding the Boundaries of Algorithmic Thought. In *Conference on Fairness, Accountability, and Transparency (FAT* '20)*, January 27–30, 2020, Barcelona, Spain.

situation. This position allows formalizing the text of the law. According to this theory, the task of a lawyer is to find a correspondence between the facts and the law and, based on this, to make the right decision.[22]

Legal formalism has advantages, such as clarity and strictness of legal regulation, which avoids arbitrariness and subjectivity in legal decisions. However, it also has its disadvantages, such as the inability to take into account contextual features and changing social conditions. The basic idea of legal realism is that judicial decisions are formed on the basis of not only laws and norms but also non-legal factors. Legal realists reject the traditional view of justice as a neutral and objective activity of judges. They believe that personal beliefs, the social environment, and political, economic and social factors influence judicial decisions.

Adherents of legal realism distinguish two main strands in this approach: empirical and normative. Empirical legal realism argues that judicial decision-making should be based on evidence and empirical research. Normative legal realism, in contrast, recognizes that judicial decision-making can be influenced by norms and values that are not always legitimate.

The goal of legal analysis is to create a clear, consistent, and fair system of laws and a code of conduct that is understandable and accepted by all.[23] However, making such a system of rules is a task beyond human capabilities. However, everyone can do their part in trying to create such a system.

3.2 The right to be heard by a judge

Russian scholars believe that in the case of predictive analytics applied by the court, the right to be heard may be violated. In their opinion, if predictive analytics systems replace the judge, the right to be heard by the judge will be replaced by the right to be heard by the machine, "which will take the form of informing the parties that the decision was made using a predictive justice system, the possibility to familiarize themselves with the results of this analytics and to challenge them".[24]

For our part, the risk noted by P. D. Konstantinov is still in the realm of fiction. For this risk to occur, the system must make a decision instead of the judge. However, as we said, the development of algorithms has yet to reach the level where systems become entirely autonomous and can explain the logic of their decision. In the future, this risk could become real in predictive technologies. But, in such a

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[22] TAMANAHA B.Z. Introduction. In *Beyond the Formalist-Realist Divide: The Role of Politics in Judging,* P. 1–10, 2010. Princeton University Press. http://www.jstor.org/stable/j.ctt7rm95.4.

[23] HART H.L.A. *Punishment and responsibility.* Oxford University Press, 1968.

[24] KONSTANTINOV P.D. *Influence of information technologies on principles of civil process (Comparative legal research on the example of Russia and France),* major 5.1.3 – Private-legal (civilistic) sciences (legal sciences). Abstract of Cand. Sci. (Law) thesis. Ekaterinburg, 2022. EDN QVOVHT.

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case, we would suggest formulating a legal principle related to the right of a human to communicate with a human and to receive legally significant decisions from a human.

3.3 Inaccuracy of the system in making its decision

As we have already mentioned, the currently used predictive analytics systems for legal disputes are trained on a large volume of datasets.[25] Without this training stage, the system's functioning will not make sense. However, this mandatory stage carries risks associated with possible inaccuracies in the dataset. For the system's accuracy, datasets must be accurate; if they are inaccurate, inaccuracy will occur in the decisions made by artificial intelligence. The conclusion from this premise is obvious – further erroneous legally significant consequences will follow an incorrect decision.

Errors made by artificial intelligence[26] and incorrect information generation are noted by scientists, including the GPT chatbot.[27] Scientists emphasize the possibility of generating incorrect, harmful, and biased information: "This is the biggest problem today, and it mainly depends on the quality of the datasets".[28]

The use of datasets, without which it is impossible to train an intelligent system, may also lead to another risk – the risk of personal data privacy breaches, since the dataset for training (in our case the dataset of previous judgments) contains personal data, sensitive information and other information related to an individual.[29]

3.4 Data privacy violations

A possible solution to the problem of privacy breaches is to extend the legal requirements for personal data security to include relationships in intelligent systems training. For example, we propose to recognize the dataset system operator to be a personal data operator. However, this proposal is feasible only

[25] A set of data used in various types of analysis and machine learning. The success of the latter directly depends on the amount of raw data: the more information there is, the better AI will develop.

[26] MATTHIAS A. The responsibility gap: Ascribing responsibility for the actions of learning automata, *Ethics and Information Technology*, 6(3), P. 175–183, 2004. https://doi.org/10.1007/ s10676-004-3422-1.

[27] OBAID O.I., ALI A.H., YASEEN M.G. Impact of Chat GPT on Scientific Research: Opportunities, Risks, Limitations, and Ethical Issues, *Iraqi Journal for Computer Science and Mathematics* 4(4), 2023. DOI: 10.52866/ijcsm.2023.04.04.002.

[28] FERREIRA D. B., GROMOVA E. A. Hyperrealistic Jurisprudence: The Digital Age and the (Un)Certainty of Judge Analytics, *International Journal for the Semiotics of Law*, 36(6), P. 2261-2281, 2023.

[29] ZHAROVA A. Ensuring the information security of information communication technology users in Russia, *International Journal of Cyber Criminology,* Vol. 13, No. 2, P. 255–269, 2019. DOI 10.5281/zenodo.3698141. EDN LTMESV.

for training datasets containing personal data. In other cases, when datasets do not contain personal data, it would be illogical to recognize the dataset system operator to be a personal data operator.

As in cases arising from the use of information technologies that process personal data, in case of failure to ensure data confidentiality in dataset training, risks occur for all parties – the state, judges, plaintiffs and other participants in the process.[30] However, the main consequence of this situation is the lack of public confidence in justice.

All the analyzed risks associated with the application of predictive analytics systems arise in the case of systems with weak artificial intelligence. These systems can perform an analysis of the submitted documents and estimate the outcome of the case. Hence, the following risk is the inability of the system to explain the logic of its decision.

3.5 Failure of the system to explain its decision logic

The inability of the system to explain the logic of its decision-making leads scientists to the conclusion that the programmer, i.e., the system developer, sets the algorithm, thus becoming a judge.[31] [32] [33]

We cannot agree with this thesis since in the relations we analyze, namely those of the predictive systems' application in legal disputes, there is no formal replacement of the judge; technologies do not make legally binding decisions.

An algorithm is a sequence of specific steps the programmer sets that leads to some result. The result of the system can be obvious if the formalized system is linear. In computer science, this algorithm is called a deterministic algorithm. However, the result may need clarification, even for the developer, because the system may search for a solution according to the algorithms it created in the self-learning process. In computer science, this is called a nondeterministic algorithm. This situation occurs when complex, dynamic systems are formalized. For example, during training the system derives a causal relationship from the algorithm, with the dependency determined in the relationship. Thus, if situation "X" occurs, the system decides to act on situation "Y". However, the developer cannot explain why

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[30]   CALO R. Robotics and the lessons of cyberlaw, *California Law Review*, 103(3), P. 513–563, 2015. https://doi.org/10.2139/ssrn.2402972.

[31]   DORAN D., SCHULZ S., BESOLD T.R. *What does explainable AI really mean? A new conceptualization of perspectives,* 2017. arXiv preprint arXiv:1710.00794.

[32]   PASQUALE F. *The Black Box Society*. Harvard University Press, 2015. https://doi.org/10.4159/harvard.9780674736061.

[33]   STILGOE J. Machine learning, social learning and the governance of self-driving cars, *Social Studies of Science*, 030631271774168, 2017. https://doi.org/10.1177/0306312717741687.

the system has chosen these particular relationships and solution algorithms from all the possible ones.

Therefore, we conclude that in complex systems, the choice of algorithm and the creation of cause-and-effect relationships by the system is not influenced by either the programmer or the intelligent system developer.[34] In addition, the models and algorithms of these systems cannot replace humans because they cannot explain the logic of their decisions. There are examples from judicial practice in the USA, such as when the developer was summoned to court and could not explain why the intellectual system made the decision.[35] This fact can be confirmed at the theoretical level. Any artificial intelligence models, including neural network language models, exactly copy human capabilities, but they are not able to think. Humans do not learn to create correct phrases but learn to express their thoughts and emotions with phrases.[36]

Scientists are working towards a strong AI that models the behavior of thinking beings based on the interaction of agents who are given external constraints and opportunities to use any tools, and then the agents learn by trial and error.[37] However, their creation is a very complex process that is likely to take decades.

The representatives of common law also emphasize the importance of explaining the decision. They believe that in arbitral tribunals and national courts, one of the critical features of the decision-making process is the reasoning behind the decision.[38] [39] [40] Justification helps the losing party to understand why it lost, thus making the decision understandable and the decision-making process transparent. Understanding the reasons helps the parties adjust their behavior for the future, and making the reasoned decision public allows other arbitrators to use the reasoning or to explain their differences with the precedent.[41] Intelligent predictive analytics

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[34] ZHAROVA A., ELIN V., PANFILOV P. (2019). Introducing artificial intelligence into law enforcement practice: The case of Russia, *Annals of DAAAM and Proceedings of the International DAAAM Symposium*, Zadar, Vol. 30, P. 688-692, October 23–26, 2019. Zadar. DOI 10.2507/30th.daaam.proceedings.094. EDN OSFIVO.

[35] SANTONI de SIO F., MECACCI, G. Four Responsibility Gaps with Artificial Intelligence: Why they Matter and How to Address them, *Philos. Technol.,* 34, P. 1057-1084, 2021. https://doi.org/10.1007/s13347-021-00450-x.

[36] SLAVIN B. Prospects of creating a strong artificial intelligence, *Open Systems. DBMS*, No. 1, P. 13–17, 2024. DOI 10.51793/OS.2024.25.57.003. EDN LSLOEN.

[37] SLAVIN B. Prospects of creating a strong artificial intelligence, *Open Systems. DBMS*, No. 1, P. 13–17, 2024. DOI 10.51793/OS.2024.25.57.003. EDN LSLOEN.

[38] O'NEIL C. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy.* Broadway Books, 2017.

[39] MOATS D., SEAVER N. "You Social Scientists Love Mind Games": Experimenting in the "divide" between data science and critical algorithm studies, *Big Data & Society* 6, 1, 2019, 2053951719833404. https://doi.org/10. 1177/2053951719833404.

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technologies can quickly analyze a situation, but the solution proposed by these technologies must be reasonable and understandable to all participants in the process. However, such systems still need to be developed during mathematical modeling. This means that existing intelligent systems can only be a tool in the hands of a judge or other procedural parties. The conclusions or solutions proposed by the systems are not binding and can only be recommendations on an issue.

However, the fact that the system cannot explain its decision does not imply that the dispute resolution becomes non-transparent.[42] This is because the decision-making algorithms are clearly defined and provide for the system's self-learning based on the sequence of actions set by the programmer. During self-learning, the system builds cause-and-effect relationships, subsequently making a decision based on them. It is not possible to explain this second stage, i.e., why the system has built this particular cause-and-effect relationship.

Therefore, predictive analytics technologies can only be recognized as a tool to be used by a judge or other procedural parties in case of alternative dispute resolution. In this case, the possible risks to human rights that we have analyzed will have a minimal probability of occurrence.

4 Conclusion

Thus, if we had to decide whether predictive modeling systems for legal decisions could be used, what arguments could we provide?

First, in the period when intelligent systems cannot explain why they make a particular decision, they can only be a tool. This is a temporary problem,[43] and for the time being this criterion is only relevant for dividing intelligent systems into those with strong and those with weak artificial intelligence. In a few years, theoretical mathematical models and algorithms will be developed to serve as the basis for designing systems that can explain their decisions.

From the legal viewpoint, the risks associated with the inability of the system to explain its decision are relevant only if the system's decision is used as a basis for a legally significant decision without its preliminary analysis by a judge. If, for example, a court decision is formed on the basis of the solution offered by the technology without its preliminary analysis by a judge, then we can talk about a procedural error.

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Therefore, until systems are developed that can explain their decision, they should only be a tool in the hands of a judge or a service that can be used by the parties to obtain a possible solution from the many potential solutions to their dispute. The mere fact that we assume the existence of multiple solutions is not contrary to legal reality. The existence of a single correct solution would negate the existing legal reality where we find that solutions are challenged, judgments are overturned and others are made in their place. In other words, at present, when a predictive system forms a decision, the parties are only given the probability of the possible outcome of the dispute.

Second, it is incorrect to assume that programmers or developers replace the judge because the system's decision-making process is non-transparent. The role of programmers and developers of the intelligent system model is very important but purely technical. They participate only in the development of the intelligent system algorithm. Further, as we have already noted, based on self-learning, the system independently forms cause-and-effect relationships and then offers a solution using them.

Third, the problem of inaccuracy of decisions made by the system is related only to the training stage of the system. The better the datasets are[44] [45] and the more of them there are, the more accurate the decision made by this technology. That is why forming correct datasets is a separate and very complex technological task.

Usando sistemas de análise preditiva para resolver uma disputa legal

Resumo: Cada vez mais, nos meios de comunicação de massa, ouvimos falar sobre exemplos de uso de sistemas de análise preditiva para obter soluções em disputas legais. No entanto, do ponto de vista da regulação jurídica, surge a questão: podemos considerar uma solução proposta pelo sistema como final e juridicamente significativa ou apenas uma de um possível conjunto de soluções? Um paralelo com os princípios jurídicos é traçado na literatura científica que analisa as perspectivas de aplicação desses sistemas. Pesquisadores chegam a previsões desanimadoras sobre os possíveis riscos para os direitos humanos e liberdades se as soluções propostas por sistemas preditivos forem aprovadas sem a participação humana. Em nosso estudo, chegamos às seguintes conclusões. Em primeiro lugar, no momento atual de desenvolvimento tecnológico, sistemas inteligentes não conseguem explicar por que tomam certas decisões. Em segundo lugar, devido à falta de transparência na tomada de decisões do sistema, é incorreto presumir que programadores ou desenvolvedores substituem o juiz. O papel dos programadores e desenvolvedores do modelo de sistema inteligente é muito importante, mas puramente técnico. Em terceiro lugar, o problema da imprecisão nas decisões do sistema refere-se apenas à fase de treinamento do sistema. Quanto maior a qualidade dos conjuntos de dados e quanto mais conjuntos de dados houver, mais precisa será a decisão tomada por essa tecnologia. É por isso que a formação de conjuntos de dados corretos é uma tarefa tecnológica independente e desafiadora.

Palavras-chave: Formalização de construções em linguagem natural. Imprecisão de soluções. Algoritmos. Autoaprendizado.

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