DIGITALIZATION OF INTERNATIONAL ARBITRATION AND DISPUTE RESOLUTION BY ARTIFICIAL INTELLIGENCE

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Abstract:

In this article, we aim to provide an overview of the status of technological capabilities for arbitrage in relation to AI applications. We will focus on AI applications and bypass the common issues of digitization and blockchain technology.

Although there are blockchain applications for arbitrage, they are less relevant to our query than AI applications. The first (human) is focused on effective decision making. On the contrary, the latter seeks to help people make decisions or even to replace people as decision makers. This is the central part of the research question we are studying ("What is Arbitration?"). When it comes to artificial intelligence applications for arbitration, we especially look at applications that help arbitrators perform their arbitration functions or ultimately assume these functions. We are not primarily interested in AI applications for advice in arbitration and / or arbitral tribunals. Of course, there are similarities: some applications can be used by different participants in the arbitration process, for example, to search and review documents or to analyze decisions.

AI techniques and applications come in a variety of forms. The latest development of artificial intelligence is primarily related to "machine learning". The solution to this optimization problem is an inductively computational approach that is not pre-coded, but is based on data. The technique relies on the use of computing power for very large amounts of data - both have expanded in recent years.

The greatest practical success in machine learning in legal applications has been in the use of "controlled learning" methods. "Supervised learning" refers to a process that begins with a set of data labeled by people according to a measure of interest ("training data").[1] The system analyzes this data set and, based on other available properties of the data, determines the best way to predict the appropriate outcome variable.

Artificial intelligence-assisted arbitration does not cause conceptual problems and is more easily handled by the New York Convention than fully autonomous, artificial intelligence-based arbitration. Decisions made as a result of artificial intelligence-assisted arbitration are still the product of human beings helping to provide their services through technology. Therefore, there is no room for serious debate as to whether such decisions should be considered as decisions in the sense of the New York Convention.[2]

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[1] Saidakhrorovich G. S. REGULATORY LEGAL FRAMEWORK FOR THE REGULATION OF THE DIGITAL ECONOMY //Национальная ассоциация ученых. – 2020. – №. 58-1 (58). – С. 33-35.

https://cyberleninka.ru/article/n/regulatory-legal-framework-for-the-regulation-of-the-digital-economy
[2] Arkhipov, V. V., and V. B. Naumov. "Artificial intelligence and autonomous devices in legal context: on growth of the

However, fully autonomous, artificial intelligence-based arbitrations, as well as the decisions that result from them, require careful scrutiny for compliance with the relevant provisions of the New York Convention. They are therefore the main focus of our analysis in this section.

In our analysis, we focus on two general categories of AI applications. First, we will look at what AI applications are currently available in the legal technology market to help arbitrators perform their duties more efficiently in terms of time and accuracy.[3] Second, we will consider in which cases AI systems can replace human arbitrators. We note that while this is not currently possible, fully artificial intelligence arbitrators can be used in later years in cases involving ordinary matters and disputes.

The first category of interesting AI applications are applications designed to help arbitrators perform their duties. As noted above, with a focus on artificial intelligence applications rather than digitization solutions or blockchain products, existing applications primarily serve three broad ancillary purposes for arbitrators: (1) their work and/or in arbitration proceedings, (2) in the collection and analysis of facts, and (3) in decision-making functions by presenting predictive models.

1. Work management tools:

The tools available to manage the work are primarily non-AI-assisted digitization applications, such as online listening platforms. However, there are AI applications that are not specifically designed for arbitrators who use a machine with natural language processing (NLP) technology to help with workload planning and scheduling. For example, x.ai has developed a program for planning smart meetings. According to the developers, Amy@x.ai, a smart planning assistant, will interact with people via email and "... machine learning models ... help virtual agents plan meetings with minimal human involvement receives the appropriate time, place and people to provide information".

The intelligent scheduling system is connected to user calendars and is done through machine learning models to identify key components for a meeting in the user's email and then find the most appropriate time according to user-set parameters (including time, people, and location). In addition, the program allows integration with other platforms, as well as collaboration through planning networks consisting of multiple calendars.

The system can detect empty / busy slots and automatically schedule an appointment with any other network member. Other smart personal assistants (PAs) work in a similar way, allowing you to plan your workload easier, more accurately, and more efficiently. User input is not disabled, in some applications emails and scheduling are checked by "executive operators", i.e. by additional staff tasked with verifying the authenticity of the AI application.[4]

These types of applications are not for arbitrators, but more broadly, for anyone in the management team or anyone who needs to plan a workload with colleagues or business colleagues. However, they can be particularly useful as a support mechanism for planning and conducting business management conferences and hearings. This is more appropriate in complex arbitrations involving multiple parties and other stakeholders located in different parts of the world. All relevant parties to the arbitration can create a planning network that could potentially include the governing arbitration institution in the institutional arbitration. Smart assistants can be used to find appropriate meeting locations and to determine the possible dates of filing by arbitrators or parties in accordance with other workloads, as important in each individual case.

2. Tools for collecting and analyzing facts:

Other AI applications are designed to provide arbitrators and advisors with tools for collecting and analyzing facts. These include comprehensive document processing systems, data identification using NLP and optical character recognition (OCR) technologies, clustering or grouping data on pre-classified topics, and "smart" AI transcription services.[5] Arbitration is becoming more complex, and as consultants become more familiar with visual aids, the

first Russian law on robotics." *SPIIRAS Proceedings* 6.55 (2017): 46-62.

[3] Kashkin, S. Yu. "Artificial intelligence and robotics: the possibility of invasion of human rights and legal regulation of these processes in the EU and the world." *Lex Russica* 7 (2019): 151-159.

[4] Anna Ubaidullaeva Said Gulyamov Intelligenza artificiale e diritto d'autore, 2022/1/28, Gazzetta di Milano, https://www.gazzettadimilano.it/top-news/intelligenza-artificiale-e-diritto-dautore/

[5] Yusupov, Sardor ROBOT TEXNIKASINI TARTIBGA SOLISH MUAMMOLARI: HUQUQIY VA AXLOQIY MUAMMOLARNI HAL QILISH BO'YICHA BA'ZI KO'RSATMALAR // ORIENSS. 2022. №3. URL:https://cyberleninka.ru/article/n/robot-texnikasini-

amount of documents, presentations, and other multimedia information available to arbitrators is increasing dramatically.

This, in turn, increases the workload for arbitrators and their support teams in reviewing all documents and filtering the arguments and presentations of the parties. Below, we discuss a number of tools related to the study and analysis of documents that are of particular importance for document and contract review. These applications are primarily aimed at judicial counseling and advisory services, which are expanded in repetitive and extended operations of defendants. They can also assist arbitrators in their mandate - by changing similar or some interfaces.[6] First, eBrevia is an electronic tool for the document review process using machine learning to identify relevant parts of documents. According to the company's website, the program can analyze more than 50 documents in less than a minute and claims to be 10 percent more accurate than a manual review process.

Second, ROSS Intelligence is an artificial intelligence and natural language search program that allows users to ask questions and learn about recommended reading, relevant case law, and secondary resources. This application can allow arbitrators to quickly move through presentations, exhibitions, and case law, and easily recognize signs.

Third, the relevant document identification applications for the e-learning process include Everlaw and DISCO. The first uses predictive coding to review the content and metadata of documents provided by users, and then classifies other documents using that information. The second uses cloud technology to perform document searches on large data sets.[7] Like Everlaw, DISCO uses prediction technology to propose relevant documents, setting scores on the equation (-100 to +100) to improve prediction results. Fourth, Epic products include NexLP Story Engine and Brainspace Discovery, which, according to the company, incorporate advanced AI capabilities and analysis to provide customers with powerful prediction models and information management services.[8]

The NexLP Story Engine uses predictive coding to identify key people, locations, and topics in a particular data set (e.g., relevant presentations by the parties), and "... tells the story behind the data". The Brainspace Discovery AI concept divides documents into clusters and categories using a search engine and phrase extension.[9]

Brainspace notes that this combination allows for better document search results. Fifth, Kira Systems is a machine learning application that is able to identify, extract, and analyze contracts and other documents, including the evidence of the parties and the exhibits attached to them.

Regardless of the structure of the arbitrators, it may be useful to obtain relevant information from the contracts. Finally, by CasePoint, CaseAssist provides document review and analysis by identifying patterns and key topics without the need for labor-intensive search queries or creating user training kits. It places important documents and can help make business decisions in the line of business.

In addition to AI applications for document analysis and data acquisition, currently assisting arbitrators in party submissions, various forms of NLP, machine learning and speech recognition applications can assist arbitrators and management institutes in transcription services. However, these are not custom applications for arbitrators, but are more available for cases that require transcription. For example, Trint, Fireflies, and Otter are artificial intelligence-based, automated transcription programs that translate audio and video into text. This service, which is sold for video or audio recordings, can be used for meetings, especially for the ever-expanding online meetings during the COVID-19 era. Surprisingly, Otter has partnered with Zoom and created the Cisco Webex

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[6] Рустамбеков, И. и Гулямов, С. (2022) «Международное частное право в киберпространстве (коллизионное кибер право) », *Обзор законодательства Узбекистана*, 1(2), сс. 88–90. доступно на: https://inlibrary.uz/index.php/uzbek_law_review/article/view/1818

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[9] See for more details and full discussion: Berg. A. J. V. D. (2005) *New Horizons in International Commercial Arbitration and Beyond*; Kluwer Law International.

Assistant app for Cisco Webex Meetings, which allows you to record the event live, among other features.[10]

Another possible artificial intelligence application for arbitration assistance in document and fact processing is the involvement of intelligent document analysis and clustering applications in decision making. As far as we know, there is no dedicated AI application for decision making yet. However, the applications described above for reviewing and analyzing documents can be useful in producing "core" sections of decisions, such as procedural history, applicable legal rules, or the parties 'analysis of specific issues, thereby making the decision-making process acceleration.[11]

3. Decision-making tools:

The third category of tools to help arbitrators perform their duties is AI applications that focus on analyzing decisions and predicting outcomes. Although often intended for use by legal advisors, these applications are also useful for arbitrators. These tools allow arbitrators to make better decisions and increase the legitimacy and enforcement of their decisions. Such applications are primarily based on a set of predictive data analysis tools and decision data. Artificial intelligence prediction applications are particularly data-hungry "and require access to a large pool of carefully defined data.[12]

For forecasting applications to be successful, data must be large, diverse, and accurate. In addition, the available data should be relatively stable over time (low speed). As an example of a recently created, labeled data set, the United States has created a "standardized data set of 100,000 court cases to test artificial intelligence approaches to analyze court decisions and predict outcomes". Such data sets are important in providing original training material for controlled machine learning applications and allow the development of prediction models.[13] One important development in this context is that France enacted a law in 2019, which aims to preserve the personal data of stakeholders by expanding access to court decisions, including by editing parts of decisions that are now open to the public.[14] It is important to enhance the transparency of decisions to create a sufficiently wide range of original data to more accurately apply legal predictions.

Quantitative legal forecasting is at the heart of this analysis and identifies a large proportion of innovations and technologies in legal services. Several AI applications for legal prediction in arbitration have already been used in legal practice. For example, ArbiLex is a predictive data analysis tool that uses Bayesian machine learning. Market observers say that "... the main benefit of ArbiLex is to [assist] in assessing and calculating probabilities in identifying risk factors associated with arbitration." Another application, Ravel Law, claims that it has the ability to predict results based on the work of more than 400 law firms.

Solomonic notes that the artificial intelligence app, developed in collaboration with Herbert Smith Freehills, says their platform "allows for statistical analysis of cases we analyze, calculating future samples, and conducting results-oriented research."[15] Finally, Lex Machina's Legal AnalyticsPlatform has a "Time Analysis"[16] function that uses artificial intelligence to predict the estimated time of a case before a particular judge, among other features that help lawyers (and arbitrators) in legal strategy. This may also apply to individual arbitrators, provided that the application contains sufficient and accurate information to make accurate predictions about these arbitrators.

[10] Donahey, *Dispute Resolution in Cyberspace, Journal of International Arbitration*, 2018, p.20

[11] Юсупов, С., 2022. ЗАМОНАВИЙ ЖАМИЯТДА РОБОТОТЕХНИКА СОҲАСИНИ ФУҚАРОВИЙ-ҲУҚУҚИЙ ТАРТИБГА СОЛИШ МАСАЛАЛАРИ. *БАРҚАРОРЛИК ВА ЕТАКЧИ ТАДҚИҚОТЛАР ОНЛАЙН ИЛМИЙ ЖУРНАЛИ*, pp.99-110.
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[12] Рустамбеков, И. и Гулямов, С. (2022) «Международное частное право в киберпространстве (коллизионное кибер право) », *Обзор законодательства Узбекистана*, 1(2), сс. 88–90. доступно на:
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[13] Bakhramova, M., 2022. THE ORIGINS OF THE ODR SYSTEM AND ITS ADVANTAGES OVER OTHER ADR METHODS. *БАРҚАРОРЛИК ВА ЕТАКЧИ*

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http://sciencebox.uz/index.php/jars/article/view/1045

[14] Cortes, *Online Dispute Resolution for Consumers in the European Union,* 2017, pp. 54-55

[15] Schwartzenbacher, *Online Arbitration: A European and US Perspective, 10 Bocconi Legal Papers 387*, 2018, pp.389-391

[16] Yakubova I. B. A PERSONS RIGHT TO HEALTH, AS HIS NON-PROPERTY RIGHTS //Theoretical & Applied Science. – 2016. – №. 12. – С. 124-126.
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Such applications can therefore be more easily used in the context of investment arbitration, where the appointment of arbitrators is open.[17] Although commercial arbitrations do not have accurate data on appointments and confidentiality issues, there is some data set that includes information on arbitration judges. For example, Arbitrator Intelligence[18] collects information about arbitrator case management and decision-making through feedback questionnaires. Such information does not include the names of the parties or the names of law firms or attorneys, but rather basic information such as the date of filing, the area in which the dispute arose, the date of the decision, and the names of the arbitrators.

ARTIFICIAL INELLEX APPLICATIONS TO REPLACE ARBITRATORS

The applications discussed are intended to assist arbitrators in the performance of their judicial duties. Thus, they are limited in their scope - they are simply aimed at improving the speed, accuracy and quality of services provided by arbitrators. People are not excluded from the process, they remain in the first place, and are only expanded by AI applications in terms of their (repetitive and expandable) professional responsibilities and duties. A fully automated "robot" AI arbitrage system that replaces human arbitrators requires a variety of tasks.[19] These tasks, which include attributes such as social intelligence, cannot be fully accomplished by currently available machine learning applications. A full-service AI arbitration system requires a fully automated case management process to handle cases, conduct dispute investigations, and manage multiple meetings, cases, and court hearings without human intervention at the same time. In addition, it must perform factual analysis of a particular case, including electronic fact-finding and document analysis. It is also necessary to assess the reliability of witnesses during the interrogation, for example, facial

recognition applications that are able to detect micro expressions of the witness. Based on this analysis, the system should make a final and binding decision, as well as indicate the reasons for making that decision.

The artificial intelligence applications described in the previous section address these different functions of the arbitrator, but still require the participation of a human arbitrator.[20] The human element is especially important in the use of artificial intelligence-assisted application findings to reach a final decision. A fully autonomous, artificial intelligence-based system should be able to perform these tasks without human intervention.[21]

Given the decision-making processes that an AI arbitrator needs to study, it is only a matter of the amount and diversity of information needed to accurately predict a human decision. It is also a matter of analyzing the data, establishing the necessary connections, identifying existing patterns, making a decision based on a trained model, and justifying that decision as a human arbitrator. As far as we know, such a system does not currently exist.

In conclusion, we can say that the emergence and/or timing of an artificial intelligence-based arbitrator depends on a number of factors. Such as:

First, the type of dispute is important. The development of an arbitrator based on artificial intelligence depends only on the simplicity or complexity of the dispute. It also depends on the level of interaction of the people who are usually involved in the conflict.[22] Thus, the result will be easier to consider such systems that work for simple monetary claims or tax disputes based on the analysis of facts and the calculation of variables that can be easily identified. Conversely, cases involving "hidden variables" lead to a level of outcome-related uncertainty in litigation, where legal or factual information cannot be accurately calculated by existing

[17] Lavi, *Three Is Not a Crowd: Online Mediation-Arbitration in Business to Consumer Internet Disputes, 37 U. Pa. J. Int'l L. 871* ,2016, p.882

[18] N Muhammad, M Bakhramova The role and importance of odr in modern business society- ACADEMICIA: An International Multidisciplinary …, 2021, https://scholar.google.com/citations?view_op=view_citation&hl=en&user=oTxyzXYAAAAJ&citation_for_view=oTxyzXYAAAAJ:YsMSGLbcyi4C

[19] Marder, *Cyberjuries: A New Role as Online Juries, 38 U. Tol. L. Rev. 239,* 2006, p.239

[20] ЯКУБОВА, Ирода. "МУАЛЛИФЛИК ҲУҚУҚИ БЎЙИЧА МУЛКИЙ ҲУҚУҚЛАРНИ ЖАМОАВИЙ БОШҚАРУВ ТАШКИЛОТЛАРИНИ ТАКОМИЛЛАШТИРИШ БИЛАН БОҒЛИҚ АЙРИМ МАСАЛАЛАР." ЮРИСТ АХБОРОТНОМАСИ 1.1 (2022): 32-39. https://www.yuristjournal.uz/index.php/lawyer-herald/article/view/304

[21] Cortes, *Online small claims courts: the reform of the European small claims procedure, Computer and Telecommunications Law Review*, 2016, p.1

[22] Bahramovna, Bahramova Mohinur. "ONLAYN ARBITRAJDA NIZOLARNI HAL ETISH TARTIBI." *International Journal of Philosophical Studies and Social Sciences* (2022): 104-109. https://scholar.google.com/scholar?oi=bibs&hl=en&cluster=9342402534143575105

systems at the current stage of AI development (e.g., social or economic considerations are not clear).[23]

Second, combining different AI applications to create a fully autonomous, artificial intelligence-based arbiter poses serious interface problems. As with commercial software applications for different business functions, different applications need to be designed according to a common architecture that allows them to work together seamlessly - which is not an easy task.[24]

Third, the type of legal system in which an arbitrator based on artificial intelligence operates and the available data are relevant.[25] As we will discuss in the next section, there is more initial data for teaching AI systems based on controlled learning, in cases where the law is based on the development of the court, where cases are openly reported.

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