The Use of Artificial Intelligence in Judicial Proceedings, the Challenge of Transparency and its Solutions

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Keywords	Abstract
Judicial Proceedings Transparency Surveillance Artificial Intelligence Speed Accuracy	Today, artificial intelligence is effective in most aspects of human life. The reason for this can be attributed to the impressive speed and accuracy of artificial intelligence in processing a large volume of data in a short time and, consequently, the increase in speed and accuracy in performing various human tasks. One of these aspects is the use of artificial intelligence as a consultant in judicial proceedings. The speed and accuracy of artificial intelligence, while eliminating the delay of the trial, minimizes the damage caused by human error in the trial process. However, aside from these advantages, the special nature of artificial intelligence and the high volume of data have caused artificial intelligence to not enjoy sufficient transparency in its performance. Therefore, the entry of artificial intelligence into the judicial arena, despite its many desirable benefits, can lead to deterioration in transparency in trials, creating a fundamental challenge: how can the adverse effects of a lack of transparency be minimized while benefiting from the benefits of artificial intelligence in judicial proceedings? Taking all aspects into account, this article considers "supervision" at various stages of design, training, and use of artificial intelligence as the best solution in this regard; Surveillance that can be carried out from different dimensions, at different stages and by competent institutions.

INTRODUCTION

Artificial intelligence can be defined as the ability of intelligent machines to perform tasks, such as learning and problem-solving, those are typically only possible using human intelligence (Moore, 2020). The remarkable capabilities of artificial intelligence, including its high speed and accuracy in processing large volumes of data and reducing the time required to perform human tasks, have led to the attention of researchers around the world (Cioffi, 2020: 16) and the idea of using it in various areas of human life (Poola, 2017: 98).

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One of these areas is judicial proceedings. In a way, some advanced countries are using artificial intelligence-equipped tools in judicial proceedings, as assistants and advisors to judges. This has led to an increase in the speed and accuracy of judicial proceedings and a reduction in the adverse effects of human error.

The transparency referred to in the article is not intended to provide artificial intelligence with a special transparency to judicial proceedings that did not exist before, but rather, considering the specific characteristics of artificial intelligence algorithms, one of the problems arising from the use of artificial intelligence in judicial proceedings could be that transparency in judicial proceedings is compromised, which is the main challenge examined and efforts made in the article to prevent this problem. If these approaches are successful, AI will provide a proper explanation for all the results it has obtained, which will be tantamount to transparency in its operation.

The present paper attempts to answer the question of how to use intelligent tools in judicial proceedings while minimizing the challenge of transparency in AI. For this purpose, the concept of transparency in judicial proceedings will first be examined. Then, transparency in artificial intelligence and the challenges surrounding it will be examined.

1. TRANSPARENCY IN JUDICIAL PROCEEDINGS

It may seem that the author intends to initiate a debate that will ultimately institutionalize a new concept called "transparency and explainability" in the judicial process of the courts and lead to the development of new laws or the amendment of existing laws. However, it can be argued that the concept of transparency is not alien to the legal and criminal proceedings system in Iran.

In fact, although the legislators have not explicitly addressed the aforementioned concepts, a brief look at the existing laws and court procedures shows that these concepts have not been hidden from the eyes of the legislator and the courts. The emphasis of some jurists (Shamas, 2012: 113) on the public impact of the trial in establishing justice and providing guarantees to the accused can be considered a result of their view of the issue of transparency.

Basically, society's expectation of the legislator and the judicial system based on respect for justice and rights requires that the trial process in the courts be highly transparent and that there be the ability to provide explanations to the litigants regarding the course of the trial and the outcome; an explanation that must, of course, be in a specific format and while maintaining the position and dignity of the judicial system. We will continue to mention examples of transparency in legal and criminal proceedings:

1-1. Legal Proceedings

The Code of Civil Procedure, as the mother law in explaining the dos and don'ts governing the legal proceedings process, contains numerous provisions that implicitly indicate the legislator's attention to the need to observe transparency and explainability in court proceedings. In the following, the issue of transparency in judicial proceedings is addressed from two perspectives: transparency in the information provided to the judicial authority and transparency in the way the judicial authority conducts its proceedings.

1-1-1.1 Transparency in Information Provided to the Judicial Reference

In Article 51 of the aforementioned law, in the place of stating the conditions of the preliminary petition, obligations have been imposed on the petitioners, the non-compliance with which has a guarantee of important execution and can lead to the termination of the case (Shamas, 2012:280). Also, if an event occurs during the trial that takes the continuation of the proceedings outside the framework of the law, it will cause the trial to be suspended until the necessary conditions are met to return to the legal way is (Shamas, 2012:57). In this article, the legislator obliges the claimant to provide transparent and clear information about his name, surname, residence and that of the claimant, as well as to specify the claim and commitments, aspects and evidence based on which he considers himself justified. The legislator has even gone further in the article and, if the testimony of witnesses is part of the claimant's evidence, has also obliged him to mention the names, characteristics and residence of the witnesses. The high sensitivity of the legislator is since the information provided by the plaintiffs forms the basis and foundation of the lawsuit and is also fully effective in the continuation of the judicial process. In fact, a transparent hearing can be expected from the court if the information on the lawsuit is made available to it in a transparent manner.

1-1-2. Transparency in the Manner of Judicial Review

The requirements related to transparency and explainability are not only aimed at the petitioners. The court is also obliged to conduct the proceedings from beginning to end in a transparent manner with due regard for the law. Respect for justice and the realization of rights are part of the correct application of the law. The implementation of the law by the court can be ensured if the supervisory tools are effective, and this supervision is possible if the supervisory authorities know what path the court has taken, through what stages and on what basis to reach the verdict; this is precisely the concept of transparency in judicial proceedings.

Therefore, in Article 296 of the Code of Civil Procedure, the legislator has obliged the court to refer in its decision to the aspects, reasons, documents, principles and legal articles on the basis of which the decision was issued.

In this case, it will be clear to everyone on what basis the court has reached the result. Article 403 of the aforementioned law, in explaining the actions of the Supreme Court of the country as the highest judicial authority, states: "If the court's decision is issued in the form of a ruling, but its reasoning and conclusion are consistent with the ruling and do not contain any other errors, the Supreme Court of the country shall consider it a ruling and confirm it." The above would not be possible unless the court observed the necessary transparency in its deliberations and in issuing the ruling. In such a way that the Supreme Court of the country can identify the path taken by the court and then ensure that it complies with the legal provisions.

From these brief references, it is clear that although the legislator has not explicitly mentioned the obligation of the courts of law to observe transparency in judicial proceedings, he considers the requirements related to it to be one of the main elements of a fair and lawful trial.

1-2. Criminal proceedings

Transparency in this type of proceedings is more important than in legal proceedings due to the specific nature of criminal proceedings and their outcome, which is often corporal punishment or deprivation of liberty. As in legal proceedings, transparency in criminal proceedings can be examined from two perspectives: transparency in the information provided to the judicial authority and transparency in the manner in which the judicial authority conducts its proceedings.

1-2-1. Transparency in Information Provided to the Judicial Reference

The legislator has stated in Article 5 of the Code of Criminal Procedure: "The accused must be informed promptly of the subject of the accusation and the evidence of the accusation and enjoy the right of access to a lawyer and other defense rights mentioned in this law."

In addition to the need to respect the rights of individuals, the colorful role of the accused in criminal proceedings and the need for transparency in the processing of judicial appeals have led the legislator to take action regarding the above article, because until the accused is transparently informed of his accusation and the relevant evidence, he cannot present his defenses to the judicial authority in a transparent and effective manner, and naturally, transparency in the proceedings will not be achieved.

1-2-2.2 Transparency in the Manner of Handling a Judicial Appeal

Like legal proceedings, the requirements related to transparency will also govern the manner of handling a criminal appeal. As Article 239 of the Code of Criminal Procedure has deemed the issuer of the temporary detention order to be obliged to state the reasons and legal basis for his decision and considers justification to be a requirement of this decision.

This is while the temporary detention order is not the final outcome of the criminal proceedings. In fact, the great importance of transparency and explainability in criminal proceedings is one of the reasons for the above regulation, so that the accused and the supervisory authorities know for what reasons and through what stages the detention was carried out. The requirements related to transparency have been of such importance to the legislator that in Article 100 of the aforementioned law, it has formally recognized the right of the complainant to access the contents of the file and has considered the only exception to it to be interests necessary to discover the truth. Then, in Commentary 1 of the same article, it has stipulated that in the event of the rejection of the complainant's request for access to the contents of the file by the investigator, this decision must be communicated to the complainant with written reasons, and he will have the right to object to the aforementioned decision. In addition, apparently this limitation is only in the judiciary. (Khaleghi, 2016:146).

In addition, the legislator has explicitly stipulated in Article 374 of the Code of Criminal Procedure: "The court's decision must be substantiated, based on and documented in the articles of the law and the principles on which it was issued. In such a way, persons involved in the trial and also supervisory authorities can be well informed of what happened in the trial and led to the court's ruling.

It is noted that, like legal proceedings, transparency in criminal proceedings has also been a necessary and legislatively considered matter. Finally, it should be noted that the explainability of court decisions does not mean that any person at any time and place is allowed to ask the court about the reason and method of issuing the relevant rulings. Rather, by complying with the above requirements, the court has in fact fulfilled both of its duties, because if the course of the proceedings and the confiscation rulings are transparent, the explanation and explanation of the reason for their issuance will not be out of reach.

However, it is necessary to see what the status of intelligent systems themselves is in terms of transparency and what transparency essentially means in these systems in order to be able to find the advantages and disadvantages of the possible use of these systems in judicial proceedings and to judge their use in judicial matters. To this end, the following section briefly presents an overview of the concept of transparency in artificial intelligence and the challenges facing it.

2. TRANSPARENCY IN AI-POWERED DEVICES

In the previous section, a brief definition of transparency was provided, but the concept of transparency can be observed in various fields of science. (Larsson, 2020: 3). To the extent that some have explicitly acknowledged the multifaceted nature of this concept. (Margetts, 2011: 581). The definition of this concept in relation to artificial intelligence is not agreed upon by scientists, and multiple definitions have been provided in this regard.

For example, some have defined transparency in AI as a combination of the clarity and comprehensibility of the AI's performance and the ability to explain this performance because it is non-confidential (Leslie, 2019: 34). Others have defined transparency as the extent to which ordinary people understand the AI's performance and the ability to assess their relationship with the system (Larsson, 2020: 7). Others, focusing on machine learning, have defined transparency as the degree to which the functioning of systems equipped with artificial intelligence is clear and obvious (Carvalho, 2019: 832).

Regardless of the differences in the definitions provided and while acknowledging the difficulty of providing a comprehensive definition that prevents transparency, in simple terms, transparency in artificial intelligence can be understood as the clarity and comprehensibility of how artificial intelligence functions and the presentation of related outputs. Transparency is sometimes referred to as data transparency, which refers to what data is being provided to AI (GDPR, para. 58).

This meaning is emphasized in Article 12(1) of the General Data Protection Regulation. Sometimes transparency is also referred to as the process followed by AI, which is referred to as algorithmic transparency (GDPR, para. 39). On the other hand, some believe that a distinction should be made between the concepts of transparency and explainability; In this sense, transparency is only considered in the technical field and refers to the clarity of how artificial intelligence works for the designers of the aforementioned systems. While explainability is intended to make the reason for providing a particular output clear to ordinary users.

The author believes that regardless of the scientific evidence of such a distinction, it does not have much effect on it, because in practice these two concepts are necessary and necessary for each other; In other words, if the algorithm and input data to the intelligent system do not have sufficient transparency, it cannot be expected that there will be proper explainability for the user, and if the system does not have proper explainability, the reason should be sought in the lack of transparency of the data or the algorithm. Therefore, the content of this section is presented based on the division of transparency into transparency in data and algorithm.

2-1. Data Transparency

Considering some of the challenges in using artificial intelligence, including the emergence of discriminatory behaviors, violation of individuals' autonomy, bias, and the impact of data input to the system on the emergence of such adverse effects, reflects the importance of data transparency, because for example, if the data input to the system is presented transparently, bias in the operation of artificial intelligence can be prevented to some extent by timely monitoring and setting appropriate rules. Some view data transparency as the disclosure of all information related to the performance of AI (Bertino, 2019: 3). Of course, a definition so broad as to include algorithmic transparency would likely undermine the intellectual property rights of AI algorithm designers (Asia's AI Agenda, 2019: 4).

To the extent that some countries have seen the solution as granting the material and moral rights of algorithm designers and have refrained from forcing the creators of intelligent systems to disclose their programming codes (Roy, 2018: 86). Therefore, it can be said that the purpose of data transparency is the specificity of the input data to artificial intelligence. In fact, if we think of the process followed by artificial intelligence systems as a factory production line, data is like the raw materials that enter the factory to produce a product.

In other words, AI decision-making and reaching a specific result are based on data; whether this data is initially entered into the system or the machine learns during the user's interaction with the system. Either the individual enters the system in any way, or, based on the system's security weaknesses, it is entered by third parties who gain access to the system.

Therefore, if the data input to the system is transparent, meaning the user knows what data the system has made available to him, to whom the system will make this data available, and ultimately what uses it will be made of, in the event of a violation, timely monitoring can prevent to some extent the bias of artificial intelligence in the effect of data containing directional content. Data input to intelligent systems occurs in two general cases: during machine learning and in interaction with users and its environment. Accordingly, data transparency can be examined in these two stages.

2-1-1.1 Transparency in Data Used for Machine Learning

Machine learning is one of the important capabilities of artificial intelligence and one of its distinguishing characteristics from other digital technologies. The access of machines with this capability to huge data resources (Big Data) will lead to extensive changes in data processing and knowledge generation, bringing numerous benefits. The question is whether the data resources available to machines for learning are sufficiently transparent? It is difficult to answer this question positively, because the large volume of Big Data and the abundance of relationships and dependencies between data make it difficult for humans to control and monitor them precisely. It is very difficult. In fact, machine learning in such a situation is a completely unsupervised learning. (Office of the Victorian Information Comissioner: 2018: 5). Because the high volume of data will prevent the complete supervision of the machine learning process. For example, the data on which the machine is trained may be biased and lead to biased results. (Yavuz, 2019: 27).

This is in addition to the increasing development of artificial intelligence and The tools associated with it have led to concerns about the transparency of AI performance (Delponte, 2018: 9). Especially since the maximum efficiency of AI is more likely to be achieved when its algorithms are trained using big data.

In such circumstances, one must either overly focus on the requirements of transparency, ignore the significant benefits of artificial intelligence, and set it aside, or take a balanced approach that uses oversight strategies to minimize the harms of lack of transparency while benefiting from the benefits of artificial intelligence.

2-1-2. Transparency in the Data Received by the Intelligent Machine in Interaction with the User and the Environment

In order to provide the best possible services, the intelligent machine needs to receive and process information from users and the surrounding environment. This can enable the aforementioned algorithms to provide personalized services (for example, providing personalized educational services tailored to the

individual characteristics of the student). (Unesco. Education Sector, 2019: 12). Today, the Internet is considered one of the main sources of data for artificial intelligence. (Parveen, 2018: 30).

In such a space, monitoring the data received by an intelligent machine can naturally become a serious challenge. In this regard, it is necessary to clarify as much as possible from what sources and for what purposes the information received by artificial intelligence was collected. (Information & Public Policy Division of the Software Industry Association: 2017: 12).

Because transparency in the data received at the stage of intelligent machine operation is also very important. In addition, intelligent systems, like many software, may be subject to cyberattacks and unauthorized interference from others. (Giuffrida, 2018: 776). For example, individuals outside the system may attempt to hack it and enter incorrect information into the system. (High Level Expert Group on Artificial Intelligence, 2018: 16).

In such circumstances, even if there is confidence in the transparency of the data input to the system by the user or the data acquired by artificial intelligence in interaction with the environment, due to the possibility of such attacks occurring and their effects remaining hidden from the user and system observers, it is not possible to speak with confidence about the transparency of the data provided to the system during its operation. It should also be noted that inappropriate interaction with the environment and lack of supervision over the information received can This can cause problems in the maintenance of intelligent machines. In this regard, we can refer to the Tay chatbot on Twitter. This bot was placed on Twitter to show that artificial intelligence can interact with the environment to improve its capabilities, but about 24 hours after the start of activity and as a result of the provision of racist information by users, it practically turned into a racist bot and was therefore removed from Twitter.

However, the need to pay more attention to transparency and explainability in artificial intelligence and the importance of the issue makes it impossible to abandon efforts to increase transparency and explainability in intelligent systems and reduce the adverse effects of its lack, simply because of the existence of the aforementioned obstacles.

2-2. Transparency in Algorithms it was Previously Mentioned that the Process Undergone by Artificial Intelligence can be Likened to a Factory Production Line

Indeed, if the raw materials that go into this factory are completely specific and clear, but it is impossible to determine exactly what happened to them to produce the product, then the transparency and explainability of the whole thing is blurred. Therefore, in explaining transparency in the algorithm, it is also said that users want to know how a particular output or decision made or prediction made by the artificial intelligence came about. Accordingly, authors are required to "explain how the advanced models they use produce the output." (Information &Public Policy Division of the Software Industry Association: 2018: 12.)

Obviously, to achieve this important goal, it must be clear what process is followed in artificial intelligence to produce a specific output, and only then can adequate explanations be provided to the user. Like transparency in data, transparency in algorithms also comes with simplicity. It cannot, because it finds obstacles in its path. For example, one of the dimensions of using artificial intelligence in deep learning is which is usually done using artificial neural networks.

In this type of machine learning, the existence of multiple processing layers, inspired by the neural networks of the human brain, and considering the output of each layer of processing as the input to the next layer, makes it very difficult to provide an explanation for the machine's actions. As a result, the operation of AI is not sufficiently clear and transparent to the user and even the person designing the relevant algorithms. (Office of the Victorian Information Commissioner, 2018: 6)

All these factors, together, have made transparency and explainability in AI a challenge. The term "black box" is used to describe the ambiguities in how AI works (Zednik, 2018: 2). However, it must be admitted that a definitive and certain solution to this problem has not yet been presented, because it is still not possible to explain in a fully understandable way what artificial intelligence goes through to reach a specific result (including prediction, automatic decision-making).

But in any case, it seems that, like any other phenomenon, the advantages and disadvantages of using intelligent systems in judicial proceedings should be weighed against each other and then a judgment made. For this purpose, in the next section, brief references will be made to the benefits of using artificial intelligence in judicial proceedings.

3. USING ARTIFICIAL INTELLIGENCE IN JUDICIAL PROCEEDINGS

Today, the complexity of human relationships in various dimensions of life has caused disputes and disagreements between individuals to not be as simple as they were in the past. Some judicial proceedings last for months and even years due to the high volume of information in the file.

Specialization has also had an impact on judicial proceedings, and in addition to the creation of specialized courts to deal with specific cases, it has also increased the amount of specialized information required to deal with common cases.

In addition, especially in our country, the density of laws and regulations and the number of competent authorities for their development have led to the fact that fair and lawful proceedings in the courts require the judge to have control over a very large volume of laws and regulations, with a large dispersion. On the other hand, the striking capabilities of artificial intelligence in processing and managing abundant data with high speed and remarkable accuracy are not hidden from anyone. (Wischmeyer, 2020: 225).

Considering these two issues side by side and the desire to achieve justice as quickly and as much as possible, the idea of using artificial intelligence in judicial proceedings has become a threat to human minds. In fact, the judicial process can be likened to an algorithm, and the data related to previous cases and other sources used for machine learning can be considered the same training data as previously mentioned.

Naturally, the information related to each specific case that is made available to the artificial intelligence to process and provide an output related to that case in the form of advice to the judge should be considered as input data to the system in its interaction with the environment and the user.

Of course, judicial proceedings are not like mathematical data, but when the case information is given to an intelligent machine, the machine, like much other data in other fields, organizes it into mathematical concepts and subjects it to analysis and synthesis.

However, this does not change the essential nature of the data and its content. The speed of AI in analyzing and analyzing data has nothing to do with the type of data received, but rather with the specific ability of the algorithm it uses and the benefits of the computer's features.

The experience of some countries (Wischmeyer, 2020: 180-181) indicates the use of artificial intelligence in the judiciary for consultation and not as an independent substitute for the judge and the term "robot judge."

In fact, it cannot be claimed that artificial intelligence is currently available to replace the judge, therefore, it is necessary for the judge to remain at the helm and supervise all stages of the trial, because it is acknowledged that artificial intelligence with capabilities beyond Humans are not able to comprehend in all dimensions, even if they can perform all sensory functions, which is called strong artificial intelligence..(Shabbir& Anwer ,2015: 1-2).

Therefore, what is discussed in this article is the use of artificial intelligence alongside the judge and in the role of an auxiliary agent. Continuing and based on the division of judicial proceedings into civil and criminal, we will examine the application of artificial intelligence in these two types of proceedings.

3-1 Legal Proceedings

Articles 257 to 269 of the Code of Civil Procedure are dedicated to the discussion of expertise, and based on that, the court can refer the matter to expertise upon the request of one of the parties or the principal.

However, referring a matter to an expert has its own limitations, including the fact that in some jurisdictions, especially in underdeveloped and underserved areas, there may not be a sufficient number of specialists and experts available; the selected experts may be slow in performing their duties and may not comply with the deadlines set by the court; the selected expert may lose his or her impartiality for any reason and express a biased opinion; the selected expert may be dismissed due to the high volume of cases; Information

Requesting a long deadline from the court is difficult, and although the legislator has established remedies for some of these cases, such as declaring the expert's misconduct, in many cases,harms such as delay in proceedings are unavoidable.

Provided that the AI is provided with appropriate data during the training phase of the intelligent machine, and that there is appropriate monitoring of the data received by the intelligent machine during its operation, it can be expected that the AI will have a realistic and appropriate analysis of the subject of the case and the issues related to it. Therefore, the use of AI can be an appropriate solution for improving the safety and speed of judicial proceedings. In this way, artificial intelligence minimizes the risk of losing impartiality; eliminates geographical limitations; has high speed and accuracy in processing data for each file and is able to perform the work of several weeks or months of experts in a few minutes; eliminates the assumption of sloppiness in performing tasks and raises such challenges. For example, in cases of accidental damage claims, where expert opinions sometimes take months to arrive, artificial intelligence, by receiving information related to the accident, allows the court to conclude the case in a very short period of time.

3-2. Criminal Proceedings

In criminal proceedings in most legal systems, unlike legal proceedings, the personality and behavior of the perpetrator of the crime and the effect of punishment on them have always been the subject of attention of the legislator and, consequently, of the judges of the courts.

The domestic legislator is no exception to this case. For example, in Clause "T" of Article 18 of the Islamic Penal Code, the legislator has considered the impact of the punishment on the accused as one of the

components that the court must consider in determining ta'zir, and in addition, he has taken into account his personal, social, and family situation.

However, correctly assessing these components will not be an easy task. Therefore, in the United States, an effort has been made to use software called COMPAS to assess the likelihood of a defendant reoffending as one of the factors determining the amount of punishment.(Wischmeyer, 2020:. 302)

This software is equipped with artificial intelligence and, by receiving information from the defendant and evaluating it based on previous training data, announces the probability of the defendant reoffending to the judge, and the judge takes action based on the result of the announcement in determining the punishment for the defendant. It increases the accuracy of such decisions. Similar software is also used in the UK criminal justice system under the name HART. (Scantamburlo, 2019: 57-58).

In this way, concerns arising from human error in the assessment of the behavior and personality of the accused are minimized and, in addition, the speed of the assessment is also significantly increased. As mentioned at the beginning of this section, the role of artificial intelligence In judicial proceedings, it is not limited to the analysis of factual data in cases, but in both legal and criminal proceedings, the use of artificial intelligence allows the judge to receive useful advice from intelligent machines in terms of judgment and legal analysis, because in many legal issues, ambiguity in the text of legal articles and other legal sources makes it difficult to understand them correctly and in accordance with the principles of justice. It can be difficult, and in such circumstances, artificial intelligence can play the role of an advisor. In fact, it must be accepted that the nature of the judiciary is such that judicial authorities always need to consult with others.

The organization of weekly and monthly meetings in judicial communities across the country and its transformation into a procedure is a confirmation of the validity of this claim. However, holding these meetings has always been accompanied by multiple time and communication limitations. It seems that the use of artificial intelligence, while removing these limitations, will increase the speed and accuracy of judicial proceedings and will continuously benefit judges from the presence of an authoritative and accurate advisor.

In the first part of this article, it was observed that the court's obligation to make informed and reasoned decisions leads to a reasonable degree of transparency in the proceedings. It seems that with appropriate training, it is possible to create in systems equipped with artificial intelligence the ability to make informed and reasoned decisions at the level of the human agent. Simply put, the ability of intelligent machines to learn to reason and reason, along with increased speed and accuracy, are considered the main advantages of artificial intelligence and have led to the idea of using them in judicial matters.

However, it is natural that this use will face specific challenges in this area, which, if ignored, can have harmful and irreparable effects. Therefore, in the next section, as the final section, while referring to the specific challenges arising from the use of artificial intelligence in judicial systems, an attempt is made to present, as far as possible, an appropriate solution to reduce the adverse effects arising from them.

4. CHALLENGES AND SOLUTIONS

As noted in the second section, achieving transparency, whether in algorithms or in data, is not an easy task and can even be interpreted as a transparency challenge. On the other hand, transparency in judicial proceedings is necessary to achieve a fair and lawful trial, and the use of intelligent systems should not jeopardize transparency in judicial proceedings.

Therefore, in this section, while considering the issue of using artificial intelligence in judicial proceedings, the authors try to explain this challenge from the aforementioned angle and provide a solution to the extent possible.

4-1 The Challenge of Data Transparency

The large volume of data available to artificial intelligence and the fact that machine learning is unsupervised learning to provide maximum capabilities are two key factors that make data transparency a challenge. In the following, considering the division of data transparency into transparency in training data and transparency in data received during operation, this challenge is also examined in the same order.

4-1-1.1 The Challenge of Transparency in Training Data

In the second section, it was observed that artificial intelligence, by accessing a large amount of data and processing it, and discovering the relationships and dependencies between the data, is trained and then, in the performance phase, itself benefits from this training.

The disadvantage of training data in the access of artificial intelligence is regulations (in the general sense, including laws, approvals, regulations, grants, and anything that has a guarantee of implementation). (Jafari, 2017:679).

Court decisions in similar cases (judicial proceedings), principles and rules and legal theories proposed by legal thinkers, and authoritative sources and fatwas in the case of silence of the law. Lack of transparency in any of these data sources can lead to lack of transparency in the functioning of artificial intelligence.

The author considers himself to be enriched by the explanation of the density of regulations in the domestic legal system, the direct influence of regulations on jurisprudence (Emami, 2011:16), and the high breadth of jurisprudential sources; something that is observed in fewer legal systems. The existence of some ambiguous legal texts in the Iranian legal system cannot be denied. This is despite the fact that "the status of the law should be such that its meaning can be understood and understood with the least effort." (Moezinzadegan and Varehdarpour, 2018:195).

The sensitivity of the matter requires that the issue of transparency in training data for systems equipped with artificial intelligence be considered more seriously, because an intelligent machine can be expected to perform transparently and provide explainable outputs if a human observer knows exactly what data the artificial intelligence has been trained on. If this need cannot be met, then the principle of using artificial intelligence in judicial proceedings will be questioned, because transparency cannot be sacrificed under the pretext of increasing the speed and accuracy of judicial proceedings. However, assuming that AI-equipped tools play the role of advisors to judges, the impact of the lack of transparency in the functioning of AI on the functioning of the judicial system cannot be ignored. To make the matter clearer, it would be useless to mention an empty example.

In the third section, it was observed that one of the useful functions of artificial intelligence in legal proceedings is that in cases of accidental damage claims, it reduces the time of trial with its speed and accuracy of performance. However, in this case, if the initial training data of the machine is not transparent and this data is available to the intelligent machine in such a way that the number of cases in which the person at fault in the accident is a woman is greater than the number of cases in which the person at fault is a man. If there is more perception, then it is not far-fetched that artificial intelligence will perceive that

"being a woman" is one of the effective components in determining the fault of an accident and, as a result, will include a factor in its judgments that has no legal or legitimate basis.

In such a case, although the issue of bias in the performance of artificial intelligence, which is an independent challenge and is beyond the scope of this article, is also raised, it should be noted that in fact, it is due to the lack of transparency in the training data that this bias is not detectable at the outset and will ultimately lead to a lack of transparency in judicial proceedings. Simply put, there are factors that interfere with AI decision-making that are not accepted by judges and legislators and cannot be discovered due to the lack of transparency of training data.

4-1-2. The challenge of Transparency in Data Received During Operation

In the second section, it was observed that artificial intelligence's access to data is not limited to the training time, but artificial intelligence is constantly interacting with the environment and receives multiple data.

On the other hand, the nature of judicial proceedings is such that the information related to each case is unique to the individual, and it is difficult to find two cases whose content and data are identical in all details and differ only in the parties to the lawsuit.

Therefore, in order to use artificial intelligence in judicial proceedings, it is necessary for the information of each case to be available to an intelligent machine. As noted in the first section, except in exceptional cases otherwise provided by law, this information must be completely clear and transparent to the judge and the litigants.

Naturally, if it is decided that artificial intelligence will serve as an advisor to the court, this information must also be presented transparently to the intelligent machine and, to the extent possible, its accuracy must be verified before being presented to the intelligent machine.

Lack of transparency in the input information to the intelligent system will have the same result as lack of transparency in educational data. Attention to legal requirements and observance of relevant procedures, especially in legal proceedings, requires that any data, other than the content of the file and documents provided by the applicant, should not be made available to artificial intelligence for decision-making. That is, the data must be provided within the framework of the law and with due regard to the maximum legal limits of artificial intelligence. To illustrate the point, an example is given in this context:

"A" files a lawsuit against "B", demanding the price of the sales contract between himself and "B". This is while "A" has a history of multiple criminal convictions and is currently on parole from prison.

In such circumstances, there is no reason for the court to examine the criminal record of the plaintiff, because an individual who is not in a socially desirable position and has a history of multiple criminal convictions may have fulfilled all his obligations as a seller in the present contract and be entitled to receive the price.

In fact, from a legal point of view, there is no connection between the criminal record of individuals and their entitlement in such a lawsuit, and the court of law is not looking to punish individuals. However, it is possible that AI, with access to information related to the applicant's criminal record and the order in which it is applied in the case at hand, may not find the applicant justified and may recommend a verdict of his/her innocence. In such a case, AI considers a factor that has no legal or legitimate basis to be influential in its decision-making.

Of course, even with regard to the information provided by the applicant or complainant, legal limits must be observed, and no order will be given to any data he has provided, and this issue can be resolved through appropriate intelligent machine design, in addition to random inspections by the judge.

The problem mentioned in the above example is caused by the lack of transparency in the input data to the artificial intelligence, because the lack of transparency of the input information to the system causes irrelevant factors to affect the decision-making of the artificial intelligence. If it is clear what information is in the possession of the intelligent machine, naturally, further investigations will be possible and damages such as those mentioned can be prevented. In addition, during the judicial process and as a result of the intervention of third parties (such as hacking systems and providing incorrect information), information may become available to artificial intelligence that has no legal basis for access and can have the same adverse consequences.

Therefore, it is observed that transparency in the data received by artificial intelligence during its operation is of great importance, and like training data, it has also become a serious challenge due to the dynamics of artificial intelligence systems in interacting with the environment and accessing multiple data sources.(Emami,2011)

4-2. The Challenge of Transparency in Algorithms

"Argument" and "citation" are two essential elements of judicial proceedings and decision-making. In a simple definition, it can be said that the purpose of reasoning is to provide evidence for something. Citation also means referring to documents and evidence that prove the correctness of the statements made by the citation maker. Now, the important question is whether artificial intelligence is capable of reasoning and citation? If so, can you provide details about how you make your decisions and explain the process you followed to reach your decision? This seems to be closely related to the "transparency and explainability" mentioned earlier, since reasoning and attribution can be seen as a way of answering important questions about why a decision was made.

In the case of the human factor, like many other abilities and skills, the power of reasoning is developed by repetition and practice in presenting evidence regarding external statements and events, and it creates the ability to reason in future cases. The situation will be the same in relation to the matter of judgment.

Therefore, in each case, the judge, using previous knowledge and experience, attempts to present reasoning appropriate to the circumstances of that case. It is obvious that experienced judges have a comparative advantage in this matter compared to younger judges, and the reason must be sought in this matter. Artificial intelligence is also capable of acquiring reasoning abilities in this way.

In relation to "citation", we will also face less complexity because the matter depends on the documents in the case on the one hand and on the authority over legal texts and sources of rulings on the other. Therefore, the authors believe that, considering the ability of artificial intelligence to imitate human abilities, the answer to the first question should be considered positive.

However, in the case of the second question, the challenge of transparency in the algorithm is well-represented. It was previously mentioned that due to the ambiguity of the actions and interactions taken within artificial intelligence systems to provide an output, the term "black box" is used to explain its nature.

Regarding the performance of artificial intelligence in judicial proceedings, the problem is that we do not know how the artificial intelligence arrived at the proposal presented to the judge. This is while considering

the legal requirements for court decisions to be reasoned and documented, the lack of transparency in the way AI operates becomes an obstacle to their use in judicial proceedings, because, simply put, it is not clear whether AI has followed the legal path to provide the relevant output? Has it taken into account all the factors that it should? Is there any assurance that irrelevant factors will not interfere with the output? Has any factor been considered in its decision to the extent that the law requires? And such ambiguities, all stem from the lack of transparency in the algorithm and, consequently, the lack of proper explainability.(Montavon, et al.2018)

4-3. The Author's Research Shows that all the Suggestions Presented to Solve this Challenge are Subject to "Supervision"

In fact, other issues such as data tracking and monitoring of AI-powered systems are also mentioned in this context (High Level Expert Group on Artificial Intelligence, 2018: 13), but they all seem to revolve around the theme of "surveillance". Of course, it must be acknowledged that, especially in the legal field, a definitive and certain solution to this issue and other challenges has not yet been provided (Wischmeyer, preface: para2), and many countries are still unable to adopt appropriate regulations, even in general terms, for The management of issues arising from artificial intelligence and its use in various fields (including in judicial proceedings) has not been resolved. The reason should be considered the ambiguity of the nature of artificial intelligence (of which the lack of transparency is one of its important dimensions).

However, in any case, taking into account all the circumstances, conditions and limitations, "supervision" can currently be considered an appropriate solution. This supervision is carried out by the human agent and at various stages of the design, training and subsequent activities of the intelligent machine.

Accordingly, at the design stage, the relevant engineers should be required to adhere to standards to ensure transparency in the algorithm, to the extent possible. It will be important to consider the influence of designers in the selection and definition of ethical standards for artificial intelligence (Baum, 2017: 4) on the one hand, and the influence and interaction of law and ethics on each other on the other.

In addition, although machine learning from training data has been introduced as a completely unsupervised learning, it should strive to provide AI with appropriate and useful information as much as possible. This requires interdisciplinary cooperation between lawyers and computer engineers. At the stage of AI activity in judicial proceedings, it seems that the judge will play the main supervisory role.

The role of the government in this regard, in addition to providing appropriate supervisory infrastructure and training a sufficient number of technical specialists (Unesco. Education Sector, 2019: 27), is to provide appropriate training to judges, lawyers, police (Carly, 2017: 26) and other actors of the criminal and legal justice system, to prepare them for the optimal use of artificial intelligence to achieve as much justice as possible, and to have appropriate interaction with actors in the fields of science, technology and business in general. (German Federal Government, 2018: 12).

CONCLUSION

On the one hand, transparency in the trial, although not explicitly mentioned by the legislator, is an certain and necessary principle in judicial proceedings. On the other hand, systems and tools equipped with artificial intelligence, despite their many advantages, do not automatically demonstrate a completely transparent performance due to the lack of transparency in data and algorithms.

This is while the high speed and accuracy of artificial intelligence systems in processing large volumes of data has led to the idea of using artificial intelligence in judicial proceedings being proposed and even implemented in some countries, because artificial intelligence is capable of preventing delays in proceedings with its high speed and accuracy, while reducing damages caused by human error and increasing the accuracy of judicial proceedings.

Despite the above advantages, the use of artificial intelligence in judicial proceedings can lead to a threat to transparency in the trial, given the lack of transparency in it; a problem that arises from the lack of transparency in the training data and the data provided to the artificial intelligence during its operation, as well as the lack of transparency in its algorithms. It seems that taking into account all aspects, appropriate supervision in the design, training, and operation stages of artificial intelligence is the best way to optimally use artificial intelligence in judicial proceedings, and only in this way can we hope that the use of artificial intelligence in judicial proceedings will lead to an improvement in the quality of these proceedings, including their transparency.

To achieve this, it is necessary to first properly train the human resources of the judiciary so that they can have a proper understanding of the concept of artificial intelligence, its capabilities, and the challenges of using it. In this regard, creating in-service training courses, as well as adding related units to the master's degree program, and creating interdisciplinary branches in higher departments in universities will be useful.

In the second phase, consideration will be given to providing the necessary infrastructure and facilities for the use of artificial intelligence in the judicial system. Then, in cooperation with academic experts and experienced judges, steps will be taken to examine court cases, classify them, and create a comprehensive and appropriate data bank so that the necessary data sources can be provided and used for the appropriate training of intelligent machines. During all stages of using the smart machine, the judge will also be responsible for verifying the information and monitoring the performance and output of the smart machine to prevent any undesirable effects.

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