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THE ROLE AND POSITION OF AI EVIDENCE IN CIVIL LITIGATION

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Abstract This article examines the role and position of AI evidence in civil litigation. Despite the sporadic appearance of such evidence in court proceedings, it has the potential to revolutionize the evidential field and change our understanding of the nature and evidential qualities of existing types of evidence. After a thorough examination of the key technical specifications of AI, different classifications of AI evidence and various approaches to treatment of AI evidence, the author suggests how AI evidence should be treated according to the Slovenian Civil Procedure law. It is inferred that standard evidence rules can be applied to AI evidence, if the probative value of such evidence does not depend on the AI involved. In cases where probative value of evidence depends on the involved AI system, AI evidence can nevertheless be treated as witness or expert evidence, or, precisely, as ex parte affidavit or private expert opinion depending on the level of human or AI contribution to the content of AI evidence. The author concludes that black box and bias problems of AI systems generating evidence have to be properly addressed in order for AI evidence to achieve full evidential value and reliability.

Keywords
artificial intelligence, AI evidence, electronic evidence, civil procedure, machine evidence

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1 Intrudaction

The forms that Artificial Intelligence (hereinafter – AI) evidence can take for their use in court proceedings are nearly boundless, limited only by the imagination. AI evidence presently is adduced mostly in criminal court proceedings and is usually obtained through the activities of law enforcement bodies. The use of AI evidence in civil court proceedings remains sporadic, despite the visible diversity of the cases deriving from the civil law relationships. In general, AI can revolutionize the evidential field in several directions:

a) AI can produce evidence that has never existed and been unimaginable before.

For instance, in November 2014, a law firm in Calgary (Alberta, Canada) used data on the physical activity of a plaintiff captured and analyzed by a fitness wristband (FitBit) as evidence in a personal injury case to demonstrate how the plaintiff's lifestyle and activities had been changed after an accident.[1] In May 2021, another plaintiff, claiming he suffers physical injuries from the implantation of an allegedly defective artificial hip, was ordered by a Missouri District Court (the USA) judge to provide the court with all data from Fitbit, from the time he began wearing the device. The judge's order stated that the extent of the plaintiff's physical activity is relevant to his claim of long-term injury since the data from the fitness tracker could reveal that the plaintiff is walking or jogging substantial distances (Bartis v. Biomet Inc., 2021).

Both cases mentioned above show very primitive examples of algorithmic generation of data, while modern models of fitness trackers applying machine-learning algorithms can offer sophisticated data of a user's activity and health. They can, for example, distinguish between different workout exercises, detect heart arrhythmia, type 2 diabetes, stress level, etc. (Amyx, 2014; Chen et al., 2020; Lam et al., 2021).

b) AI can facilitate the process of evidence taking.

[1] FitBit Data Now Being Used In The Courtroom https://www.forbes.com/sites/parmyolson/2014/11/16/fitbit-data-court-room-personal-injury-claim/?sh=29736a1c7379 (accessed 27 August 2022).

In May 2020, the Moscow City Court held a remote hearing via videoconferencing with an application of a face-recognition system.[2] That was a solution developed in response to COVID restrictions, which in fact paralyzed the administration of justice. According to Russian law, videoconferencing is possible on a 'court-court' basis. The reason behind this is the legislative requirement to verify the participants' identity, which otherwise cannot be ensured in a proper manner. The VCF with a facial-recognition system allows the litigators and witnesses to participate in the hearings from home or any other place.

In August 2022, Meta revealed their revolutionary AI-powered non-invasive technology[3] which decodes speech from brain activity without any kind of neurosurgical intervention. It has been shown to be up to 73 percent accurate (Défossez et al., 2022). Although not initially developed for the purposes of litigation, it is certainly feasible that in the future a witness that suffers from brain injury and is unable to speak and write could be able to testify by means of this technology.

c) AI can expand the nature and evidential qualities of existing types of evidence.

AI-powered 'probabilistic genotyping' changed the nature of DNA evidence. In comparison with the 'gold standard' random match probability (RMP) method, which works for uncomplicated DNA samples (for example, blood) in sufficient amounts, the probabilistic genotyping method extracts DNA from mixed, uncompleted samples and determines the probability of DNA belonging to a particular person (Presser & Robertson, 2021). Since DNA traces can be left in tiny amounts of few cells, for example a single hair or piece of saliva following sneezing, probabilistic genotyping opens new procedural possibilities for DNA analysis.

Current legislation across many jurisdictions, including those mentioned above, does not regulate issues of AI application in the justice system in general, and AI position as evidence in court proceedings, in particular; no binding legal act, whether that be an independent law or amendments to procedural law, has yet to be adopted.

[2] CROC Assisted the Moscow City Court in Holding of Remote Hearing with Face-Recognition System https://www.cnews.ru/news/line/2020-05-26_krok_pomogla_mosgorsudu (accessed August 28, 2022).
[3] Using AI to decode speech from brain activity https://ai.facebook.com/blog/ai-speech-brain-activity/ (accessed September 13, 2022).

Currently, the courts bear the burden of evaluating AI evidence and interpreting applicable evidence law. Considering the rapid deployment of AI in every sphere of human activities, within the next decade AI evidence will be widely adduced in court proceedings in civil matters. Therefore, the use of AI evidence requires more attention from the side of legislators, as well as a strong theoretical foundation provided by doctrinal research.

2 What is AI Evidence?

Because AI evidence inherently constitutes electronic evidence, discussions surrounding it refers to the existing concepts of electronic evidence, their taxonomy and treatment in civil court procedures. Electronic evidence is defined as 'data… that is generated, processed, stored or communicated by any digital device, computer or computer system or conveyed over a digital transmission system, that has a potential to make the factual account of either party more probable or less probable than it would be without the evidence' (Mason & Seng, 2021a, p. 41). The defining characteristic which distinguishes AI evidence from electronic evidence is the AI itself, that is, a set of the specific techniques and approaches AI encompasses, by means of which data is generated, processed, stored and communicated. Therefore, the AI evidence can be defined as 'data… that is generated, processed, stored or communicated by any AI-powered device or AI system, or conveyed over an AI system, that has a potential to make the factual account of either party more probable or less probable than it would be without the evidence.' Further discussion is pointless without insights into the essentials and key characteristics of AI.

2.1. Artificial Intelligence

The term AI generally refers to the study and development of a computer system that can copy intelligent human behaviour, that is, these systems have some qualities of the human mind in order to perform certain actions at the human level.[4] There is no universally accepted definition of AI within a legal context. The legal definition is assumed to be specific since it has to be useful either for legislators and for the courts and therefore to be precise and accurate, technology-neutral and broad enough not only to keep pace with the advantages of AI but also to reach a wide range of

[4] Artificial Intelligence. https://www.oxfordlearnersdictionaries.com/definition/english/artificial-intelligence?q=artificial+intelligence (accessed 24 August 2022); Artificial Intelligence https://dictionary.cambridge.org/dictionary/english/ai (accessed 24 August 2022).

applications thereof (Barfield & Pagallo, 2018, pp. 20-23). Following the EU legislators' proposal for an AI Act, which is yet non-binding, 'an AI system means software that is developed with one or more of the techniques and approaches listed in Annex I and can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with'. In general, techniques and approaches AI encompass to achieve desired outcomes can be roughly divided into two classes, which implicate different risks and, consequently, require different solutions.

The systems of the first class are based on pre-programmed hard rules. They are manually created by human programmers and are widely known as knowledge- and logic-based systems. Decisions, in turn, are made by evaluating all possible outcomes and choosing the most relevant option following the predetermined rules and logic (Bathaee, 2018, pp. 898-899).

In contrast, machine-learning algorithms do not rely on pre-programmed rules, but independently search for useful patterns in past data and automatically develop their own to reach the goals dynamically, experimentally and intuitively to some extent. A key attribute of machine-learning systems is their ability to flexibly change their behaviour to improve performance taking into account previous experience (Surden, 2014, pp. 89-93). Modern AI systems are commonly built on a machine-learning approach.The most accurate and breakthrough results are achieved by AI systems of this class.

The power and achievements of AI come at a price of certain specifications AI is burdened with, which raise serious concerns among scholars not only from the legal sphere but from non-legal spheres as well. The concerns addressed below are mostly relevant to AI systems developed on a machine-learning approach. Closed-rule systems, due to their independence from the training data sets, are to a lesser extent susceptible to biases. Manual programming of finite rules, in turn, preserves an ability to understand how the system arrives at its decision.

The first concern to address is a black box problem, which refers to the inability to understand, analyse, explain AI decision-making and predict AI decisions. Regardless of the fact that AI systems rely on mathematical models and therefore, *a priori*, fully are deterministic (Waltl & Vogl, 2018), certain factors lead to its factual opaqueness, such as complexity, non-intuitiveness (Nicholson Price & Ray, 2021, pp. 785-786),

deliberate secrecy for the protection of trade secrets of AI developers or the necessity of natural language processing for conversion of traditional legal texts into data (Lim, 2021, p. 287).

An independent research field called xAI (explainable AI) is dedicated to solving the technical problems leading to AI opacity, which, however, does not provide adequate solutions to date, at least for the legal sphere. The main reason is that the design of xAI usually requires much more effort than mere designing and implementing AI, which is contrary to the general idea of AI's power combined with its simplicity and democratization (Lim, 2021, pp. 289-290).

Another concern usually associated with AI systems is their dependence on past data, which is again relevant mostly to machine-learning systems. Most AI systems are trained on some dataset in which they search for the patterns which they will use to achieve results. If the dataset used for the training of the machine-learning system is burdened by bias or prejudice, the AI system preserves it. Scholars distinguish several biases, all of which refer to the process of AI creation, in particular the data AI is trained on. One is learned bias, resulting from the multiple following existing rules and norms, and from unrepresentative training data sets, as well as unconscious biases of the programmers that AI can encode (Müller, 2020; Schwartz et al., 2020). Arguably, rule-based systems can also suffer from biases embedded in systems by their designers.

In view of the foregoing, at the high level, there are two technical approaches AI stands on, with its own specifications implicating different concerns. They certainly can be combined in hybrid systems preserving the internal specifications of both approaches. Despite the fact that the knowledge-based systems are widely deployed, they to a lesser extent constitute interest for this article, because they do not implicate concerns typically associated with machine-learning systems. Moreover, in legal literature AI is often equated with machine-learning, or at least these terms are not explicitly distinguished. Therefore, further discussion will mostly address AI systems developed with one or more of the machine-learning approaches, but will also address closed-rule and hybrid systems to the extent similar concerns arise within their application.

2.2 AI Evidence Classification

There are several classifications offered by legal scholars for the testing of AI evidence in court proceedings. The classifications addressed below do not pretend to objectively cover and represent AI evidence in full, rather it is an attempt to make the field of AI evidence more comprehensible.

(a) The first classification of AI evidence for testing it in court proceedings can be distinguished from the taxonomy of the 'machine evidence' offered by Roth (Roth, 2017). The author states that the device producing output that is adduced as evidence in the court proceedings can suffer from certain infirmities caused by the very nature of the device, its design, or a number of other factors. These infirmities can affect the correctness or truthfulness of the output, which poses some risks to the litigants, the court and the fairness of the proceedings, etc. That should be a subject of special safeguards. However, the author argues that not all evidence admitted to the court implicates the credibility of its source. In other words, the probative value of the device's output does not always depend on the device, and, accordingly, the likelihood that risks caused by the infirmities of the device pose a significant danger in such cases is minimal. Dependence of the evidence on the credibility of the device for its probative value is offered by Roth as a distinctive criterion, while other characteristics such as complexity, type and opaqueness of the device are subordinate and matter only if the evidence depends on credibility.

(i) The first group is represented by the evidence, which does not depend on the credibility of its source. That occurs when the device assists the human in conveying their assertions, that is, it acts as a conduit. The same logic can be applied to a device which is used simply to facilitate scientific testing, for example, to multiply copies of a DNA sample or perform any other facilitating actions otherwise performed by human technicians. This category includes the device's output offered for a purpose other than the proof of the claim, and its probative value stems not from the communicable content, but from its perceptual content. The author refers to the example of the device's printout that is offered to prove that the device's ink toner was functional at the time of printing, that is, the 'trip into and out' of the device's analytical process is not required for the evidence to be credible.

(ii) Another group comprises evidence, which depends on the credibility of the device for its probative value. In this case, because the output is offered for the truth of the claim it conveys, the characteristics of the device's design are of crucial importance for the evidence to be credible. For instance, leaving aside an issue of their admissibility in civil litigation, there are photographs and videos the credibility of which substantially depends on the technical characteristics of the devices capturing the images. This is particularly relevant for the cameras which automatically make photos and videos without any kind of human involvement, and that can be admitted as evidence in court, such as surveillance cameras, ATM video footage, etc. In a similar vein, basic scientific instruments used in court proceedings for detecting various matters address credibility issues. Likewise, certain business records generated by the device are attributed to the category of credibility-dependent evidence, because their content substantially depends on the device's design and minimally on the human input. Specific position is placed by the evidence generated by devices created for the purposes of the litigation, that is, by devices programmed to produce certain output which is intended to be used only as evidence in trial. As this type of evidence is usually intentionally created to produce favourable information for the proponent, the output it delivers must be assessed with particular scrutiny. As mentioned earlier, characteristics of the device affecting its complexity, opacity, etc. are relevant only for evidence which does depend on the credibility of the device for its probative value.

(b) Seng & Mason offer another, revised classification, for the testing of electronic evidence under the hearsay rule, proposed by Seng in 1997 (Seng & Mason, 2021b, pp. 258-263). The classification is predicated on the 'content-creator' basis, that is, on a degree of human or device contribution to the creation of the electronic output that is admitted in courts as evidence. Initially, Seng differentiates three data processing devices and respectively three categories of the evidence produced. There are devices accepting human-supplied input and producing output, self-contained data processing devices, which take input or records from the environment without human intervention and a hybrid of the two (Seng & Boon, 1997, pp. 173-174). Later, the classification has been slightly amended (Mason & Seng, 2021a, pp. 118-124), and in the form offered for the testing of AI evidence addressed below (Seng &Mason, 2021b). A similar classification is provided by Gless (Gless, 2020).

(i) The first category is represented by AI used for the storage and transmission of the human statement or other human input, while the content of evidence is authored by a human. The main feature of this category is that the content of the human input can be clearly separated from the content of AI software, training data and algorithmic code, etc.; the content of the human input is not materially altered by the AI software. The most obvious example of the evidence fallen into this category is an oral witness testimony given via VCF with AI face recognition system.

(ii) The second category refers to the evidence generated solely by AI without human intervention. It can be data purely produced by devices independent from human input, but instead obtaining input from the environment, such as cameras records, temperature data taken by digital tools, etc. This category also can include data resulting from the passive human input, such as various digital trails - ISP logs, records of ATM transactions, telephone records, evidence generated by the Internet of things such as fitness trackers, etc. (Caruso et al., 2019, pp. 159-160). The authors refer to the example of an automatic plate number recognition system that works without any kind of human involvement, capturing plate numbers of the vehicles by means of machine learning systems that match the number with the owner. Under the same principle, various face-recognition systems are able to detect human faces and match them with the list of, for example, offenders wanted by law enforcement bodies.

(iii) The third category of electronic evidence comprises a hybrid of human input and AI-processed output of the device operated without human intervention. In contrast with the evidence falling into the first category where the content of evidence undoubtedly originated from humans and can be separate from the software content, in this category the genuine creator is not obvious. This, e.g., can be an oral witness testimony given by a witness via AI real-time translating system or testimony obtained by means of AI lip-reading algorithm. The authors state that the difference between the purely AI-generated evidence and hybrid evidence of the third category rests in the significance of the contribution to the output that is adduced as evidence. The issue is whether and to what extent the real creator of the evidence is a human or a device.

(c) Preliminary Observations

Classifications addressed above provide valuable insights into AI evidence. However, they were developed for the testing of AI evidence in common law jurisdictions and, crucially, for testing evidence in criminal trials, the rules of which sufficiently differ from the civil law jurisdictions. For example, the law of evidence in civil law jurisdictions does not recognize the concept of hearsay. Moreover, civil procedure rules used to assess admissibility of evidence are traditionally less demanding in contrast with the criminal law.

For the purposes of AI evidence assessment in courts in civil matters, the hybrid two-fold approach appears the most appropriate. This mainly follows the approach proposed by Roth, since 'if the probative value of the particular output admitted as the evidence does not depend on the AI system involved', neither AI technical specifications nor the degree of interaction with the human play any role. The evidence, the probative value of which does not depend on AI, does not implicate concerns typically associated with AI. Such evidence has to be assessed following the standard rules applicable to each particular piece of evidence.

Whenever the probative value of the evidence does depend on the involved AI system, such evidence can be further assessed based on the criteria similar to those authored by Seng & Mason, in particular, depending on 'the degree of a human or AI contribution to the creation and probative value of the output' that is adduced in courts as evidence.

There is evidence whose probative value without AI is very low if not zero. If we turn back to the example with the fitness tracker adduced to the court as evidence of the decreased activity of the injured plaintiff, it appears clear that without AI processing of data on the activity of the user the probative value of this data tends to zero. Only the AI algorithm, which is able to differentiate footsteps from cycling or moving with a car or any other kind of physical activity, grants probative value to the data. Otherwise, the data is useless and irrelevant, because it shows mere distances passed by its user by foot, car, bicycle, etc. In other words, purely AI evidence is evidence that would never exist without its involvement therein. The situation is slightly different with the hybrid evidence, which is produced by a synthesis of human input and AI-processed output, while the main contributor to the probative value of this synthetic evidence is ambiguous. The extent of AI or vice versa human

involvement can vary from marginal to decisive. However, it cannot be demarcated abstractly without case context. What is clear is that the greater the dependency that the probative value of the evidence has on the AI involved the greater the risks are to the reliability of that evidence. Consequently, in such cases the evidence in question must be scrupulously assessed.

3 Treatment of AI Evidence in Civil Proceedings

3.1 An Overview of Doctrinal Positions

The doctrinal positions addressed below should not be considered ultimate and indisputable concepts on the treatment of AI evidence in litigation. However, they provide objective frameworks to test the reliability of the evidence concerned through the prism of the legislative requirements, tests and safeguards of a similar sort for more traditional evidence. That is, each legal order develops its own rules in order to ensure the reliability of evidence or to 'catch' and exclude unreliable evidence, such as evidence that lacks relevance, trustworthiness, authenticity, etc. Other evidentiary safeguards include the right to cross-examine testifying witnesses and requirements for the qualification of experts, etc. However, there is a debate among legal scholars whether these safeguards adequately address specifications of AI evidence.

3.1.1 Common Law

(i) AI Evidence as a Witness

As can be inferred from one of the classifications mentioned above, AI evidence can be considered as a traditional witness. Accordingly, practices regulating witness testimony are helpful in determining the reliability of AI evidence. In particular, Seng & Mason propose a subsequent classification for testing AI evidence under the hearsay rule based on their distinction between the three types of AI evidence discussed above. They argue that, similar to a human witness who is typically examined as to his experience and qualifications, the hearsay rule allows isolating human assertions from the AI-produced result to be admitted as evidence. The scholars state that if the AI system is used simply to convey a human statement the output produced is hearsay, but that purely AI-generated evidence does not constitute hearsay but rather should be considered to be real evidence. Likewise, the

admissibility of hybrid evidence depends on the degree of human or AI contribution to its evidential content. (Seng & Mason, 2021a, pp. 259-262). Lord Sales takes a similar approach to the admissibility of AI evidence in court proceedings (Lord Sales, 2021).

Roth states that, in some cases, AI evidence resembles an *ex parte* affidavit in the sense that it is similar to witness testimony generated outside the court and in the absence of the other party and because it raises similar concerns: the absence of moral responsibility for the testimony, the inability of the party against whom the evidence is being offered to cross examine, and the failure to understand the gravity of consequences it can lead to (Roth, 2017, pp. 2040-2043).

(ii) AI Evidence as an Expert Witness

Roth, in turn, analyzing the position of machine evidence within the context of criminal trials, argues that it can appear in litigation in a position similar to an expert witness – AI generates and conveys information helpful for the court and that information is beyond the court's knowledge (Roth, 2017, p. 2027).

In a similar vein, Nutter also suggests that the most likely form of machine-learning evidence, that is AI evidence, that can appear in court proceedings is expert testimony (Nutter, 2019, p. 931). The author states that the court deciding on the reliability of proposed expert testimony focuses on 'a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue,' rather than on the conclusions obtained by means of these methods (Nutter, 2019, p. 932). In that regard, the US legal order provides certain criteria for assessing both the reliability and scientific validity of the expert testimony, which, under the author's analysis, instead must be met by machine-learning evidence. Other commentators hold similar views on the relevance of the application of expert witness rules to AI evidence (Karnow, 2017; Grimm et al., 2021, pp. 90-96).

3.1.2 Civil Law

Doctrinal approaches addressed above refer to the common law rules of evidence and due to significant differences can be perceived only theoretically in the discussion of the position of AI evidence in civil litigation. The most valuable comment relevant

to the jurisdictions of civil law tradition is provided by Gless (Gless, 2020). In the context of criminal law litigation, the author through a comparative perspective of the US and the German legal orders analyses positions AI evidence in existing evidentiary and procedural schemes. Since the position of AI evidence in common law was substantively presented earlier, the following discussion concerns only civil law jurisdictions.

(i) AI Evidence Presented as A Written Expert Report or as an Expert Witness. Gless argues that one of the likely forms of AI evidence that can be introduced in court proceedings is a written report submitted by a human expert, akin to the written report submitted by an expert presenting an output of a certified digital evidential tool, such as from a radar gun. This form is in principle acceptable as long as the parties to the proceeding trust the expert appointed by the court and have access to the report. In practice, however, these reports rely on certified evidential devices and usually do not contain information on raw data or design. As safeguards to this dilemma, the rules permit the parties to either summon the expert for an oral hearing or appoint another expert to generate another expert report.

According to Gless, it is doubtful the court would accept AI evidence as an expert witness. To be admissible, the court must understand which factors led to the expert's findings and how the expert arrived at a particular outcome, both of which are impossible to achieve in the case of AI since it is impossible to explain its internal processes leading to decisions. What is usually achieved through the direct contact between the court and the expert following the principle of immediacy, however, is unachievable in the case of AI evidence, because contact between the court and the AI device is objectively limited due to the very nature of AI, whether it is direct or through a human intermediary.

(ii) AI Evidence as An *Ex Parte* Affidavit

Gless also comments on an assumption that a written report produced by AI can be qualified as pre-recorded testimony offered for the truth of the matter asserted, that is by way of *ex parte* affidavit. This kind of evidence is allowed in civil law court proceedings under certain safeguarded conditions, depending on the jurisdiction, such as by permitting the party against whom the testimony in this form is being offered has the right to summon the witness-author of the *ex parte* affidavit to the hearing to conduct cross examination. This right cannot be exercised properly in the

case of AI evidence for several reasons. The primary reason is due to the number of individuals that are usually involved in the creation of the AI, if, in principle, the designers are considered as a source of particular testimony, that is not a fully correct statement. It is not feasible to summon so many persons to court. Moreover, even the designers' testimony, as well as that of the AI's testimony, cannot be presented adequately until AI remains opaque. Nevertheless, even in criminal trials, the law envisages some rare exceptions where the testimony of an absent witness can be admitted as evidence.

3.2 Treatment of AI evidence on the example of Slovenian Civil Procedure Law

Equipped with the indicative framework from various doctrinal positions on the treatment of AI evidence in court proceedings, there is a discussion on the status AI evidence theoretically can receive within the evidential rules of Slovenian civil procedure law. The aim here is not to delve into Slovenian evidential rules, but rather to discuss the issues that are the focus of the article precisely on the example of particular civil procedural law. Because the Slovenian Civil Procedure Act (Zakon o pravdnem postopku) regulating rules on types of evidence, gathering of evidence, adducing and assessment of the evidence in civil procedure does not contain strict blanket rules in comparison with other jurisdictions, they provide a significant level of freedom regarding production of AI evidence.

Before the discussion, the following key characteristics of AI evidence are presented below.

(a) AI evidence is defined as 'data… that is generated, processed, stored or communicated by any AI-powered device or AI system, or conveyed over an AI system, that has a potential to make the factual account of either party more probable or less probable than it would be without the evidence.'
(b) AI as a set of specific techniques and approaches has certain inherent specifications:
(i) AI can be programmed by humans as closed logic- or knowledge-based systems with a finite number of rules.
(ii) AI can be created without extensive pre-programming. AI is trained on data and can independently search for useful patterns in it, autonomously create its own

algorithms and flexibly change behaviour to improve performance taking into account previous experience.

(iii) AI can suffer from the black box, it is opaque, that is, it is impossible to understand, analyze, explain AI decision-making and predict AI decisions in a manner comprehensible for humans, even for AI developers.

(iv) AI can be biased because it can preserve biases from training data or even unconscious biases of its creators.

(c) Not all AI evidence raises concerns and requires specific analysis – if the probative value of data admitted as a piece of evidence does not depend on the AI system involved, the evidence has to be evaluated following the standard rules applicable to each particular evidence.

(d) If the probative value of evidence depends on the AI system involved, a further distinction can possibly be made based on a degree of a human or AI contribution to the creation and probative value of the evidence.

(i) AI evidence whose probative value depends on the AI involved can be treated as witness evidence in court proceedings, possibly in the form of an *ex parte* affidavit. Respectively, rules regulating the evidential position of witness testimonies are applied.

(ii) Alternatively, AI evidence can be treated as an expert witness or presented in the form of an expert report, with the respective application of corresponding procedural rules.

Bearing in mind the framework addressed above, and the four different examples of AI evidence described in the introductory chapter – data on the activity of the plaintiff generated by AI algorithm of the fitness bracelet, VCF with AI-powered face-recognition element, a non-invasive decoder of speech from brain activity (let's imagine it looks similar to an electroencephalography cap) and probabilistic genotyping DNA analysis – the following inferences are drawn.

First, it appears reasonable that if the probative value of evidence does not depend on the AI system involved, neither of the concerns associated with AI emerged. When VCF with AI face recognition is applied in civil proceedings for the identification of the participants, the content of the litigator or witness's testimony and respectively its evidential value is not altered by the algorithm and remains authentical. In this case, AI functions are limited to the verification of the participant's identity and transmittion of their testimony.

In all other examples, the probative value depends on the AI involved. As addressed earlier, the probative value of data captured by a fitness bracelet without processing it by an AI algorithm is zero. Under the same logic, the probative value of speech decoded from neuronal activity by an AI-powered decoder depends on the AI algorithm involved. Likewise, probabilistic genotyping DNA analysis is dependent on the algorithm which detects and determines the probability of its belonging to a certain person. However, one piece of evidence differs from another in a degree of a human or AI contribution to its creation and its probative value, which, apparently, is very contextual and has to be assessed on a case-by-case basis. Nevertheless, abstractly it is possible to make a distinction between different pieces of evidence.

AI-generated data on the physical activity of the fitness bracelet user is created mostly by the algorithm rather than by a human, since the human merely passively provides raw data to the algorithm. The human contribution to probabilistic genotyping DNA analysis is more significant because the probative value of the analysis is in direct correlation to the validity of the DNA sample, which is left, gathered and provided as an input to the AI algorithm by humans. That is to say, a human contributes to the content of evidence, though their role is rather subordinate, whereas the AI algorithm's role is a central one. In comparison, in the application of a non-invasive decoder of speech from brain activity the human contribution to the probative value of a statement is sufficient, since the human actively provides the input, formulates, and mentally utters their statement, that is, influences the evidential content. The role of AI algorithms is equally important; it is not merely a conduit for the human statement and its technical specifications, like training data and algorithmic code have a direct influence on the final content and the probative value of evidence.

In that regard, comparing the evidence described with traditional evidence envisages by civil procedure legislation, two options are possible:

(a) The evidence, which is independent or to a lesser extent is dependent on human contribution for its content and probative value, in civil procedural terms is more approximated to witness testimony. This AI evidence converges with witness testimony in its substantive characteristic: it is able to give data relevant to the facts to be established in civil proceedings, however, the reliability of this data per se is questionable. For this purpose, in relation to the human witness civil procedural legislation sets certain procedural safeguards, which, it is assumed, increase the reliability of the human testimony. These are formal requirements for the witness,

such as mental capability, age, as well as procedural means – a warning about criminal liability for perjury, the right of the court and the parties to examine the witness, etc. (Ivanc, 2015, pp. 47, 54) Part of these safeguards can be applied equally to AI, for example, akin to the human witness' capability to testify, in the AI setting the validation and verification of AI system can also be examined; examination can extend to the process of design, the training of AI, the volume and quality of training data, the accuracy of results, the risk of error, etc. However, in the case of AI evidence, the court and the parties are unable to directly examine the source of testimony, that is AI, and this is the main difference between data generated by AI and data given by a human. Therefore, the position of this type of evidence is closer to a written statement made by a witness *ex parte* – it is often adduced to the court 'as it is' without additional oral (cross) examination of the witness. Reasonably, the evidential value of this type of evidence is traditionally considered lower than testimony given orally by a witness in court (Ivanc, 2015, p. 30, Bolzanas & Tamošiuniene, 2016, pp. 165-166).

(b) The more humans contribute to the content and probative value of AI evidence, the more it tends to have a procedural position closer to that of an expert. Just as an expert, because of his expert knowledge, assists the court in clarifying a certain fact(s) in the dispute, AI by means of its power assists the court in clarifying certain objective facts. There are three possible options for the AI to do so:

(i) AI is a Court-Appointed Expert.

(ii)

The position of a court-appointed expert and an 'ordinary' witness in Slovenian law is similar in many aspects. The crucial difference lies in the subject matter of examination. The ordinary witness is examined as to certain facts that came to their knowledge outside of the proceedings, whereas the object of examination in the case of an expert is their professional knowledge (Ivanc, 2015, p. 63). Therefore, to ensure that expert testimony or an expert report is reliable, procedural legislation requires the expert to meet certain specific criteria for education, experience, clean criminal record, legal capacity and other factors (Voet, 2016, p. 184).

Presently, it is hard to imagine that an AI system would be appointed by the court to clarify certain facts. Were the court to do so, however, let's imagine the form an AI tool would take to provide instant expertise on a certain issue, for example, handwriting examination. Similar criteria regarding professional knowledge also

would be applicable to that AI system to ensure the quality of expertise. There are indeed general criteria available to help ensure the validity of AI systems, meaning the general reliability of AI systems, such as the process of design, training of AI, the volume and quality of training data, the accuracy of results, the risk of error, etc., as well as criteria specific for each particular domain and AI system.
As is true with an 'ordinary' witness, in the case of AI evidence, the court and the parties would be unable to directly examine the source of testimony. However, the position of a written expert report in civil proceedings is not sufficiently lower without expert oral testimony. The reason is that the court deciding on the reliability of proferred testimony focuses not on the conclusions but instead on formal criteria certifying witness credibility and methods of analysis.

(iii) AI is a Private Expert.

Traditionally, the parties to civil proceedings may submit to the court private opinions of academics, professionals or other specialists with relevant expertise clarifying certain facts in the dispute. In a similar vein, the litigants may adduce 'an opinion' – an output of AI concerning certain procedural facts, assuming that the materials and evidence of the dispute are accessible to them, and that the AI device is at their disposal. Such opinions are considered a part of the parties' arguments, not an expert opinion (Ivanc, 2015, p. 64). However, the court has no obligation to resolve contradictions between private and appointed court expert opinion. The evidential value of private experts is not high (Voet, 2016, p. 187). However, it is very likely that in the beginning AI evidence will be presented in this form.

(iv) AI is an Evidential Tool used by the Court-Appointed Human Expert.

In general, it is likely that the AI evidence will be presented in a written expert report, introduced by a human expert as an output of an AI evidential tool. As previously discussed, usually these reports rely on certified evidential devices and do not contain disclosure information on raw data or design. Therefore, it is assumed, that the AI device used within an expert analysis is previously certified, that is validated and verified, so that it produces reliable evidence. If not, the burden of establishing the reliability of the evidence produced with this AI device is shifted to the expert choosing to use the device in his analysis, or to the decision-maker (usually the judge) evaluating the piece of evidence.

In view of the foregoing, AI evidence can be introduced in civil proceedings in the form of evidence. However, it has a low-evidential value akin to written witness testimony or an opinion of a private expert. Another option is to submit AI evidence as an output of an evidential tool used by a court-appointed human expert. The court may refer to certain criteria addressing the general trustworthiness of AI systems, such as validation and verification of AI systems, which refer to the process of design, training of AI, volume and quality of training data, the accuracy of results, risk of error, etc. to 'increase' the evidential value of such evidence, that simultaneously addresses AI's potential bias concern. However, the main factor limiting the evidential value of AI evidence is its inability to explain how it arrived at the output adduced as evidence, that is, to explain how and which factors impacted particular output.

4 Conclusion

Undeniably, the further deployment of AI in every aspect of human lives is unavoidable despite all of its shortcomings. AI evidence opens new horizons for establishing the facts in civil proceedings, producing evidence that was unimaginable or unavailable before. Within the next decade litigants will start actively presenting such evidence in court proceedings. The following conclusions are inferred from the research:

a) If the probative value of evidence does not depend on the AI involved, the evidence has to be evaluated following the standard rules applicable to each particular piece of evidence.

b) If the probative value of evidence depends on the AI system involved, such evidence nevertheless can be evaluated by analogy to existing civil procedure rules, regulating evidential issues.

c) In that regard, AI evidence has similar characteristics to both ordinary and expert witness testimony, depending on the level of human or AI contribution to the content of the evidence. In particular, purely AI-generated evidence tends to more closely resemble ordinary witness testimony because it is able to identify some data relevant to the dispute. In turn, hybrid AI evidence more closely resembles expert opinion, since it assists the court in clarifying certain facts in the dispute by means of its 'knowledge' or power.

d) The inability of the court to directly examine the source of AI evidence and to understand the factors leading to AI testimony, resulting from the so-called "black box" phenomenon, means that AI evidence's probative value is approximately on a par with both written witness testimony and private expert written opinion, which in practice, have comparatively low evidential value.

e) To acquire higher or full evidential value or reliability, the inherent AI concerns – black box and potential bias - have to be properly addressed.

f) To some extent, the issue of potential bias can be resolved by reference to general AI trustworthiness methods, such as validation and verification of AI system, which refer to the process of design, training of AI, volume and quality of training data, the accuracy of results, risk of error and others. Unfortunately, currently there are no adequate solutions to the black box problem.

g) AI evidence unencumbered by bias and black box problems, that is, transparent or explainable AI evidence, has the potential to be even more reliable evidence than any traditional ones.

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Povzetek v slovenskem jeziku

Članek preučuje vlogo in položaj dokazov z umetno inteligenco (UI) v civilnih sodnih postopkih. Kljub občasnemu pojavljanju takšnih dokazov v sodnih postopkih, lahko le-ti povzročijo revolucijo na področju dokazovanja ter spremenijo naše razumevanje narave in dokaznih lastnosti obstoječih vrst dokazov. Po temeljiti preučitvi ključnih tehničnih specifikacij UI, različnih klasifikacij dokazov UI in različnih pristopov k obravnavi dokazov UI, avtor predlaga, kako bi bilo treba dokaze UI obravnavati v skladu s slovensko zakonodajo o civilnem postopku. Sklepamo, da se lahko za dokaze z UI uporabljajo standardna dokazna pravila, če dokazna vrednost teh dokazov ni odvisna od zadevne UI. V primerih, ko je dokazna vrednost dokazov odvisna od vključenega sistema UI, se lahko dokazi z UI kljub temu obravnavajo kot dokazi prič ali izvedencev, natančneje kot pisna izjava ex parte ali zasebno izvedensko mnenje, odvisno od stopnje prispevka človeka ali UI k vsebini dokazov z UI. Avtor ugotavlja, da je treba ustrezno obravnavati težave črne skrinjice in pristranskosti sistemov UI, ki ustvarjajo dokaze, da bi dokazi UI dosegli polno dokazno vrednost in zanesljivost.