Artificial Intelligence (AI) and judicial independence: Balancing transparency and control

Gina Gioia[*]

Abstract. The integration of Artificial Intelligence (AI) into civil litigation presents both opportunities and challenges, especially regarding judicial independence. AI, particularly machine learning (ML), has evolved from simple logic systems to sophisticated and autonomous decision-makers. AI helps streamline processes, predict outcomes, and improve access to justice. However, concerns arise about AI's potential to affect judicial independence, especially due to biases in the data it processes. Open data initiatives have increased judicial transparency, but AI systems trained on this data require strict oversight by the judiciary. The opacity of ML, particularly deep learning, complicates the legal reasoning process, which depends on clear, rational explanations. Until AI systems can fully align with these legal principles, their role in judicial decision-making must be regulated to safeguard judicial independence.

Key words: Artificial Intelligence, AI, judicial independence, judicial transparency, machine learning, oversight.

Riassunto. L'integrazione dell'intelligenza artificiale (*Artificial Intelligence* [AI]) nel contenzioso civile presenta sia opportunità che sfide, soprattutto per quanto riguarda l'indipendenza giudiziaria. L'AI e in particolare l'apprendimento automatico (*Machine Learning* [ML]), si è evoluta da semplici sistemi logici a sofisticati e autonomi sistemi decisionali. L'AI snellisce i processi, prevede i risultati e migliora l'accesso alla giustizia. Tuttavia, emergono preoccupazioni circa il potenziale dell'AI di influenzare l'indipendenza giudiziaria, soprattutto a causa di pregiudizi nei dati che elabora. Le iniziative di open data hanno aumentato la trasparenza giudiziaria, ma i sistemi di AI addestrati su questi dati richiedono una rigorosa supervisione da parte della magistratura. L'opacità del ML, in particolare dell'apprendimento profondo, complica il processo di ragionamento giuridico, che dipende da spiegazioni chiare e razionali. Finché i sistemi di intelligenza artificiale non saranno pienamente in linea con questi principi giuridici, il loro ruolo nel processo decisionale giudiziario dovrà essere regolamentato per salvaguardare l'indipendenza della magistratura.

Parole chiave: Intelligenza artificiale, apprendimento automatico, indipendenza giudiziaria, trasparenza giudiziaria, regolamentazione.

Introduction

AI, in one of the most ancient explanations, means *making a machine behave in ways that would be called intelligent if a human were so behaving.*[1] The discussion on artificial intelligence (AI) in the field of civil procedural law already started a few decades ago[2]. Meanwhile, we have gone from human-programmed AI to do things using 'if then' logic to AI capable of learning from experience.[3] After a relatively long apprenticeship trough a training algorithm, the machinery is no longer dependent on the instructions of a human and are capable of predicting future needs and can adopt new skills. This trend also affects the law, from inside.[4]

[*] Università degli Studi della Tuscia. *Address:* Via S. Carlo 32, 01100 Viterbo, Italy, e-mail <gina.gioia@unitus.it>.

[1] McCarthy, J., Minsky, L.M., Rochester, N., and Shannon, C.E. (31st August 1955). A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence. *AI Magazine*, Internet: http://www-formal.stanford.edu/jmc/history/dartmouth/dartmouth.html.

[2] Taruffo, M. (1998). Judicial Decisions and Artificial Intelligence. In G. Sartor and L. K. Branting. (Eds.), *Artificial Intelligence and Law* (pp. 311-324). Springer.

[3] The definition of AI has shifted over time as technologies continue to evolve and accomplish tasks previously thought to be impossible. Today, there is no agreement as to what constitutes the concept of AI among experts in the field: Scherer, M. U. (2016). Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies. *Harv. J.L. & Tech, 29,* 354 - 400.

[4] 'We are now living with creatures of our own making that can anticipate our behaviours and pre-empt our intent. They inform our actions even if we don't know it and their inner workings seem as opaque as our own unconscious.": Hildebrandt, M. (2018). Law as Computation in the Era of Artificial Legal Intelligence: Speaking Law to the Power of Statistis. *Suppl. Univ. of Toronto L.J., 68,* 12-34. See also Jabotinsky, H. Y. and Lavi, M. (2022). The Eye in the Sky Delivers (and Influences) What You Buy. *Uni Pennsylvania J. Const. L., 24* (6), 1329-1400; Pasquale, F. and Cashwell, G. (2018). Prediction, Persuasion, and the Jurisprudence of Behaviourism. *Univ. of Toronto L.J., 68,* 63-81.

Like the human being, the machine is capable of learning from experience, therefore it is called machine learning (ML) and is characterized by the automatic adaptation of the algorithm to the processed data[5]. Deep learning algorithms, a branch of machine learning, feed large amounts of data and use multiple layers of human-like neural networks. It is based on artificial neural networks organized in different layers, where each layer calculates the input for the following one, so that the information is processed in an increasingly complete way. This allows the machine to classify unstructured data, capture concepts, define criteria, determine correlations, and make decisions without human supervision.[6]

There are three approaches on machine learning. In the supervised ML a data scientist acts as a guide and teaches the algorithm the results to generate. An unsupervised ML learns to identify complex processes and patterns without careful and constant guidance of an expert. A reinforcement ML learns to solve a multi-level problem by trial and error. It is trained on real-life scenarios to make a sequence of decisions. For the actions it performs the machine receives either rewards or penalties.

The current era of deep learning is mainly characterized by scaling the size of models and training them with self-supervision and more recently, adding fine tuning with reinforcement learning from human feedback.[7]

The enormous doubts raised by AI[8] and the now massive use of it require the rule of law to take charge of the epochal change[9]. Precise limits to AI need to be set so that it can improve the lives of people and the planet and not create new inequalities and injustices or reinforce the ancient ones, with prejudices[10] or with expensive tools only for rich litigants.[11]

This epochal change could also affect the civil procedure.[12] Above all, deep learning has a great fascination among many of those who deal with civil litigation every day. They have long fantasised about robolawyers and robojudges, both with an intention of assisting and with one even of replacing the judiciary with the machine.[13]

---

[5] Shalev-Schwartz, S. and Ben-David, S. (2014). *Understanding Machine-Learning: from Theory to Algorithms.* Cambridge University Press.

[6] LeCun, Y., Bengio, Y. and Hinton, G. (2015). Deep Learning, *Nature, 521*, 436-444: "Deep learning allows computational models that are composed of multiple processing layers to learn representations of data with multiple levels of abstraction". See also Nicholson C., *Artificial Intelligence (AI) vs. Machine Learning vs. Deep Learning.* Pathmind. https://wiki.pathmind.com/ai-vs-machine-learning-vs-deep-learning.

[7] Nay, J. J. (2023). Law Informs Code: A Legal Informatics Approach to Aligning Artificial Intelligence with Humans*, Nw. J. Tech. & Intell. Prop., 20,* 309-392.

[8] Someone even believes that they are not intelligent, as the computer scientist Domingos, P. (2017). *The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World.* Penguin. which says: 'People worry that computers will get too smart and take over the world, but the real problem is that they're too stupid and they've already taken over the world'.

[9] Schwab, K. (2017). *The Fourth Industrial Revolution.* Penguin.

"AI capabilities emerge that could radically transform welfare, wealth, or power, to an extent comparable to the nuclear revolution or even the industrial revolution. These possibilities are strikingly neglected, in part because they involve massive global and intergenerational externalities. There is thus a high leverage opportunity to address what may be the most important global issue of the 21st century." Dafoe, A. (27th August 2018). AI Governance: A Research Agenda. *Ctr. Gov. AI.* https://www.fhi.ox.ac.uk/wp-content/uploads/GovAI-Agenda.pdf

[10] As well-known example, COMPAS is an instrument developed by a psychometrician and a correction professional, licensed by a company to many US jurisdictions. COMPAS is likely the best-known and most-scrutinized criminal risk assessment instrument currently in use in court despite a 2016 constitutional challenge in Wisconsin and a ProPublica investigation alleged racially biased scoring. See Karp, B. (2023). What Even Is a Criminal Attitude? And Other Problems with Attitude and Associational Factors in Criminal Risk Assessment. *Stan. L. R., 75,* 1431-1529.

[11] See the concerns of Pasquale, F. and Cashwell, G. (2018). Prediction, Persuasion, and the Jurisprudence of Behaviourism, *Univ. of Toronto L.J*, *68,* 63-81.

[12] Nieva-Fenoll, J. (2018), *Inteligencia Artificial y Proceso Judicial*, Marcel Pons.

[13] See the discussion in Susskind, R. (1996). *The Future of Law: Facing the Challenges of Information Technology*, Clarendon Press.; Id. (2017). *Tomorrow's Layers: An Introduction to Your Future*. Oxford University Press; Volokh, E., (2019). Chief Justice Robots, *Duke L.J*., *68*, 1135-1192; Re, R. M. and Solow-Niederman, A. (2019). Developing Artificially Intelligent Justice, *Stan. Tech. L. Rev.*, *22,* 242-289; Huq, A. Z. (2020). A Right to a Human Decision. *Va L. Rev.,* 611, 106, 611-688; Pasquale, F. (2019). A Rule of Persons, Not Machines: The Limits of Legal Automation. *Geo Wash L. Rev*., 1, 3-55; Chen, B., Stremitzer, A. and Tobia, K. (2023). Having Your Day in Robot Court. *Harv. J. L. & Tech.*, 3-37. For the literature in Italian language see, for example, Ruffolo, U. (2021). La *machina sapiens* come "avvocato generale" ed il primato del giudice umano: una proposta di interazione virtuosa. *Astrid*, *8,* 1-32.

However, the opportunity must be taken to verify whether these scenarios are consistent with the principles that govern the civil procedure[14], above all that of the independence of the judiciary and the impartiality of the judge.

While the independence of the judiciary is normally a principle born and recognized with the constitutions[15], its impartiality has a long story and it can be found in the Compilation of Justinian: *nemo iudex in causa sua*.

In Italy, for example, the impartiality of the judge was expressly introduced into the Constitution only recently, but nobody ever doubted that it was an essential principle on which the trial must be based, so much so that it was already visible from the combination of some provisions of the Constitution.[16]

Independence is an attitude towards any outside pressure or influence, impartiality is an attitude towards the subject matter of the dispute and the parties involved. However, the independence affects the organization of the judiciary and therefore from the beginning appears as a precondition for impartiality.

AI is far from being neutral, because it is developed by entering data chosen according to subjective criteria. Therefore, we can appreciate that it could very well affect and limit the independence of judiciary. On the other hand, however, AI, at least in the abstract, can be developed in such a way as to favor impartiality in the decision more than the judge does, who is inevitably taken by her passions and convictions, as well as being subject to human perceptive limits. The judicial decision could be much more controllable, and a greater degree of legal certainty could be achieved.[17]

With the help of some jurists, legal philosophers, computer scientists and cognitive psychologists who have dealt with AI and the procedural law field, in the following pages I will try to establish how much the independence of the judiciary and the impartiality of judges can be affected by AI and how AI can be used to comply with these law principles.

Feelings for predictability has also infected civil procedure.

AI can be used in the administration of justice to support the administrative board of the courts. The 'if then' structure of the support tools doesn't raise any independence issue, on the contrary it reduces the delay and the access to justice. Then AI can be used to support the judge's activity or, for now theoretically, as a substitute of the judge.[18]

The primary application of AI within litigation was (and is) to have the algorithm predict what a court's decision would be. Mostly it is used to allow lawyers to better advise the client on the probabilities to win the case or for reaching an agreement. The so-called predictive justice could lead easily to substitution of the judge, and only needs to be perceived as the better way to reach the right decision.[19] Once it is perceived as the best decision, any judge would rely on the predicted decision.

---

[14] According to Huq, A. Z. (2021). Artificial Intelligence and the Rule of Law. *Public Law and Legal Theory Working Paper Series*, *764*, 1-14 the advent of new decision-making and forecasting tools shouldn't simply be occasions for celebration or discouragement. Rather, they should be understood as an opportunity to rethink the elements that we have previously, perhaps prematurely, lumped together in our conception of the rule of law.

[15] Shetreet, S. and Forsyth, C. (2011). *The Culture of Judicial Independence*. *Conceptual Foundations and Practical Challenges.* Brill Nijhoff.

[16] See Cappelletti, M. and Vigoriti, V. (1971). I diritti costituzionali delle parti nel processo civile italiano, *Riv. dir. proc*., 604-637; Trocker, N. (1974). *Processo civile e costituzione.* Giuffrè; Chiarloni, S. (2008). Giusto processo, garanzie processuali, giustizia della decisione. *Riv. trim. dir. proc. civ.*, *1*, 129-152; Id. (2000). Il nuovo art. 111 Cost. e il processo civile. *Riv. dir. proc.*, *4*, 1010-1034; Fabiani, M. (23rd June 2010). Garanzia di terzietà e imparzialità del giudice ed efficienza del processo. *Judicium, https://www.judicium.it/wp-content/uploads/saggi/95/M.%20Fabiani.pdf*; Monteleone, G. (2012). L'imparzialità del giudice e la prova nel processo. *Giusto proc. civ., 7* (2), 323-334.

[17] This is the opinion of Zalnieriute, M. and Bell, F. (2021). Technology and Judicial Role. In G. Appleby and A. Lynch (Eds.), *The Judge, the Judiciary and the Court: Individual, Collegial and Institutional Judicial Dynamics in Australia* (pp. 116-142). Cambridge University Press.

[18] Some scholars consider unconstitutional to replace the judge-person with a judge-machine.

[19] Taruffo, M. (2019). *Verso la decisione giusta.* Giappichelli.

Next step would be the conviction of the unnecessity of the human judge. The result would be the end of one of the three powers: the judicial one. At that point no issues about independence would arise. I think that the risk of seeing the predictive justice as better than the human justice is not just theoretical. For this reason, the monitoring of the use of AI in civil procedure is necessary to establish limits in order to maintain the judiciary as judiciary.

We know that human beings have a particular aptitude for predicting the future, dictated by the need to make choices in the present. Cognitive psychology has been studying the topic for years,[20] especially regarding the bias that human beings incur[21].

Numerous limits hinder a prediction that will then occur. Among them the scenarios we built have an intrinsic limit: it is not possible for us to obtain all the information we need to fully evaluate a situation, and we are not able to anticipate every single possible contingency.[22]

Therefore, human beings immediately found in AI that missing piece of Holy Grail, which was to predict the future as accurately as possible. The applications of AI have therefore developed in many areas and, among these, also in that of law and jurisdiction.

In the latter, predictability has always been seen as a value that guarantees democracy itself. The legal system is based on certainty, which allows the activity prescribed by the rules to be linked to certain intended or undesirable consequences[23]. It is thus possible to determine in advance what the legally wrong choices are, avoiding programs of action that can, to a greater or lesser extent, cause unwanted legal consequences. So, we actively try to control by law at least some of the events we are going to encounter in life, and thus replace chance with causality. And this limited and legally regulated sphere of activity in the world gives us, if not absolute certainty about the future, at least a fairly reassuring substitute for it.[24]

When legal certainty involves the judiciary, the issue becomes much more delicate, because independence is at stake. In the legal tradition of both civil law and common law, the principle of the supremacy of the law rules[25]. And it rules for the judge as well. The judge analyses any matter that is subjected to her consideration *from the legal point of view* and only from the legal point of view, without any moral implication, for example. This guarantees the third aspect of the judge's independence: the neutrality.

Nobody and nothing can tell the judge what to do, except the law. But the judge applies the law to the facts and on doing so she interprets the law. Her interpretation keeps the law alive (lebendiges Recht) and at the same time evolves it with the evolution of the society. The interpretation cannot be identical to the previous one, it contains always new elements. In fact, any decision needs to give reasons and cannot just refer to previous decisions.

The law can give the possibility to the judges to relay to previous judgments, but the reasons for the relay must be given. All this must be done in the freedom and discretion of the judge and nobody, even the law, can demand the judge to decide in a way or another.

---

[20] See, for example, Dougherty, M. R., Gettys, C. F. and Ogden, E.E. (1999). MINERVA-DM: A memory processes model for judgments of likelihood. *Psychological Review*, *106* (1), 180-2019; Griffin, D. and Tversky, A. (1992). The weighing of evidence and the determinants of confidence. *Cognitive psychology*, *24* (3), 411- 435.

[21] Tetlock, P.E. (2002). Cognitive biases in path-dependent systems: Theory driven reasoning about plausible pasts and probable futures in world politics. In T. Gilovich, D.W. Griffin and D. Kahneman. (Eds.), *Inferences, Heuristics and Biases: New Directions in Judgment Under Uncertainty*, (pp. 335-366). Cambridge University Press.

[22] Griffin D. W. and Ross L. (1991), Subjective construal, social inference, and human misunderstanding. *Advances in experimental social psychology*, *24,* 319-359.

[23] On the concept and for a critics to it Brady, J. C. (1973), Legal Certainty: The Durable Myth. *Irish Jurist,* 8 *(1),* 18-32.

[24] According to Gometz, G. (2005), *La certezza giuridica come prevedibilità*, Giappichelli, legal certainty means the ability of individuals to predict accurately, reliably in the long term the range of legal consequences susceptible to being spontaneously or coercively attributed to acts or facts, as well as the temporal context in which these legal consequences will come into effect to be.

[25] Kaufman, I.R. (1980). The Essence of Judicial Independence. *Columbia L. Rev*., *80* (4), 671-701.

Because then the judge interprets the law, the certainty of the law is not and cannot be neither a starting point but constitutes only the aim to strive for. Certainty is not ensured by the individual judge and her single judgment, but by the set of individual interpretations of the law by the individual judges or courts and their single judgments.[26]

But if legal certainty is given by the set of judgments issued by the judges, why not process all these judgments with AI and predict only one and certain result, that can be seen valid for everybody? Then the algorithm could be trained to evolve with situations and new needs of the society and predict even higher quality results, that could make the judge unnecessary.

In compliance with the principle of independence, let's see if, and within what limits, a positive answer can be given to this question.

Building AI for litigation in the framework of judiciary independence

The development of AI was possible thanks to the so-called data quake, which was the explosion in the amount of available data due to the increase in processor speed and the decrease in costs for their conservation.

The open data movement has also contributed to this. At one point, governments around the world convinced themselves to make a series of data available to the public (open data) to increase transparency and make government more accountable, improve smart city services for citizens and encourage economic growth[27].

The open data movement[28] culminated with the Open Government Partnership (OGP), an international organization founded in 2011 with 76 countries joined (including Italy and Peru) to promote transparent, participatory, inclusive and accountable governance.[29]

An open data culture is also supported and enabled by national and international initiatives, such as the EU Directive 2019/1024, which aim to improve access to public sector data, to stimulate the use of such data, both for commercial and non-commercial purposes. The EU data portal, where

---

[26] Bin, R. (2013), A discrezione del giudice. Ordine e disordine: una prospettiva quantistica, Franco Angeli. For the broad discussion in Italy, see Bobbio, N. (1951), La certezza del diritto è un mito?, *Riv. int. fil. dir.*, *28,* 146-152; Guastini, R. (1986), La certezza del diritto come principio di diritto positivo?, *Le regioni, 14,* 1090-1102; Gianformaggio, L. (1988), Certezza del diritto, *Digesto Discipline privatistiche sezione civile*. Utet; Carnelutti, F. (1943), La certezza del diritto, *Riv. dir. civ.*, 1943, 81-91. Costantino, G. (2011), Il principio di affidamento tra fluidità delle regole e certezza del diritto, *Riv. dir. proc.*, 1073-1097.

[27] Chignard S., (29th March 2013), A brief history of Open Data. *ParisTech Review.* https://www.paristechreview.com/2013/03/29/brief-history-open-data/. Krishnamurthy, R., Awazu, Y. (2016) Liberating data for public value: the case of Data.gov. *Int. J. Inf. Manage*, *36* (4), 668-672; Charalabidis, Y., Zuiderwijk, A., Alexopoulos, C., Janssen, M., Lampoltshammer, T., and Ferro, E. (2018). *Open Data Evaluation Models: Theory and Practice.* In *The World of Open Data. Public Administration and Information Technology*, Self-Edition, *28*, Springer.

Fischer, C., Hirsbrunner, S. D., and Teckentrup, V. (2022). Producing Open Data. *Res. Ideas Outcomes*, *8*, 1-16; Micheli, M., Ponti, M., Craglia, M. and Berti Suman, A. (2021). Emerging models of data governance in the age of datafication. *Big Data Soc.*, *7* (2), 1-15; Neves, F. T., De Castro Neto M. and Aparicio, M. (2020). The impacts of open data initiatives on smart cities: a framework for evaluation and monitoring. *Cities, 106*, 1-20. See the very recent study by the EU Commission, Publications Office of the European Union, Ooijen, C., Osimo, D., Regeczi, D. et al. (2023). Rethinking the impact of open data – A first step towards a European impact assessment for open data. *Publications Office of the European Union,* https://data.europa.eu/doi/10.2830/911822.

[28] In 2009, on his first day in office, President Obama signed the Memorandum on Transparency and Open Government, declaring that "information maintained by the Federal Government is a national asset," and calling for the use of "new technologies to put information about agency operations and decisions online and to make it readily available to the public

In 2013, the US government issued an Executive Order on "Making Open and Machine Readable the New Default for Government Information" to advance and accelerate open data implementation in federal agencies. The Order stated explicitly that "openness in government strengthens our democracy, promotes the delivery of efficient and effective services, and contributes to economic growth."

[29] The United Nations views open data as a key tool in the effort to achieve and measure progress toward the Sustainable Development Goals (SDGs), the human rights and development agenda adopted by 130 countries in 2016. See Noveck, B.S., (2017). Rights-Based and Tech-Driven: Open Data, Freedom of Information, and the Future of Government Transparency. *Yale Human Rights & Development L.J.*, *19,* 1-46.

metadata of publicly available data across Europe is systematically collected to improve the accessibility and increase the value of open data, is also an example of this approach.[30]

As in other administrative areas, even the judicial sector benefits from open data with data analysis projects that help identify organizational problems to be solved and act on the basis of experience[31]. From another point of view, as the ECHR has emphasized, the accessibility of all citizens to court decisions makes justice transparent and thus a condition for a fair trial. The ability for any citizen to obtain a copy of the rulings without the need to justify a recognized interest would protect the parties from the secret administration of justice and is also one of the means of maintaining trust in judges[32]. Furthermore, according to the European Parliament, some aspects of the accessibility of court records pose serious legal problems and may even infringe upon fundamental human rights that are internationally recognized, such as the right to equality in arms[33]. In the Magna Carta of Judges (Fundamentals) adopted by the CCJE on November 17, 2010, point 14 is as follows: "Justice shall be transparent and information shall be published on the operation of the judicial system."

The provision of data is good and right because it ultimately guarantees external control over the independence and impartiality of the judge and favors the creation of a balanced system of accountability of the judiciary.[34]

As stated in the ENCJ[35] Report 2022-2023: The goal of the judiciary is to dispense quality justice within a timeframe consistent with the demands of society by judges that are, and are seen to be, independent and impartial in a fully transparent manner.[36]

The increase in data available to the judicial system is also due to the digitization of a large part of the procedure and to the migration of data online. The growth of data in the legal environment also is seen as bringing greater value to the data itself, which can be used more effectively to reduce the cost of access to justice.[37] Lawyers will have an easier job and therefore less expensive. At the same

---

[30] Huyer E. and van Knippenberg L. (2020). The Economic Impact of Open Data: Opportunities for Value Creation in Europe. *European Commission.* https://data.europa.eu/sites/default/files/the-economic-impact-of-open-data.pdf.

Open data can cover a wide range of subject areas. The variety of data expands the possible uses and, therefore, AI-based products and services. European Commission (9th June 2023). *Open data and AI: A symbiotic relationship for progress*. https://data.europa.eu/en/publications/datastories/open-data-and-ai-symbiotic-relationship-progress. See also Neufeld, S. (21st July 2021). Deploying open government data for AI-Enabled Public Interest Technologies. *Observer Research Foundation.* https://policylab.rutgers.edu/artificial-intelligence-and-open-data-for-public-good-implications-for-public-policy/; Austin, T., Kamleshkumar Kishnani, P., Mariani, J., Busath, K., Diehl, A. (10th December 2021). Trustworthy open data for trustworthy AI. Opportunities and risks of using open data for AI. *Deloitte Insights.* https://www2.deloitte.com/us/en/insights/industry/public-sector/open-data-ai-explainable-trustworthy.html

[31] White House Data-Driven Justice Initiative (DDJI) partnered with 129 communities to bring about empirically-based reforms

[32] Case of *Szücs v. Austria* (135/1996/754/953). The data is often entrusted to private companies that build databases for a fee, inaccessible to ordinary citizens.

[33] See the study European Parliament. (2013) National practices with regard to the accessibility of court documents. https://blog.okfn.org/2016/07/27/open-data-as-a-human-right-the-case-of-case-law/.

[34] "*Judicial independence and judicial accountability are not discrete concepts at war with one another, but rather complementary concepts that can and should be regarded as allies":* is the shared opinion of Burbank, S. B. (2003). Perspectives on Judicial Independence: What Do We Mean by "Judicial Independence"? *Ohio State Law Journal, 64,* 323-339. See also Geyh, C. G. (2003). Judicial Independence, Judicial Accountability, and the Role of Constitutional Norms in Congressional Regulation of the Courts. *Indiana Law Journal, 78,* 153-221; Id. (2008) The Endless Judicial Selection Debate and Why It Matters for Judicial Independence. *Geo. J. Legal Ethics*, *21*, 1259-1281; Moliterno, J. E., Berdisová L., Čuroš, P. and Mazúr, J. (2018). Independence Without Accountability: The Harmful Consequences of Eu Policy Toward Central and Eastern European Entrants. *Fordham International Law Journal, 42,* 481-552.

[35] European Network of Councils for the Judiciary.

[36] European Network of Councils for the Judiciary, (2022-2023). Indicators Independence, Accountability and Quality of the Judiciary. Reenforcing judicial protection. https://pgwrk-websitemedia.s3.eu-west-1.amazonaws.com/production/pwk-web-encj2017-p/GA%20Ljubljana/ENCJ%20Report%20Indicators%20IAQ%202022-2023%2025%20May%202023%20pdf.pdf.

[37] Carpenter, A. E., Steinberg, J. K., Shanahan, C. F. and Mark, A. (2018). Studying the "New" Civil Judges. *Wisc. L. Rev.,* 249-246; Steinberg, J. K. (2016). Adversary Breakdown and Judicial Role Confusion in "Small Case" Civil Justice. *Byu L. Rev.,* 899-970; Carpenter, A. E. (2018) Active Judging and Access to Justice. *Notre Dame L. Rev., 93*, 647-708; Thornburg, E. G. (2010). The Managerial Judge Goes to Trial. *U. Rich. L. Rev., 44,* 1261-1325.

time, platforms can be built to help parties resolving disputes without lawyers and through predicting the outcome of disputes to reach agreement. Judges will no longer be the exclusive producers of data, but above all they will manage it.[38]

According to some scholars the ability to deliver justice will increasingly depend on the health of its data ecosystem.[39]

When the use of the data extends to the design of AI which has with an impact on the jurisdictional function of the judiciary, due consideration must be given to the guarantees of independence.

If we imagine that the data which are fed to the machine are collected and stored by the judiciary itself and this then decides to use and process them to create an AI to be used in decisions, at a local or national level, independence is guaranteed on condition that in all phases of the creation and management of the AI there is the supervision of the judiciary itself. This protects the independence of judiciary as a whole. To protect the single judge as well, the transparency of the AI process must be provided. Furthermore, to any judge must be guaranteed the possibility not to use or not to take into consideration the AI results.

Undue influence could also come from within the judiciary when judges receive direction (or pressure from peers or) from those with administrative duties.[40] Therefore, if the judiciary itself develops and adopts AI with decision-making functions, it should at least clarify externally what the details of the machine's functioning are.

Things are different when the Big Data that is supplied to the machine to make its predictions or any other job/service affecting the judge decision comes from a government body. The latter could also be the Ministry of Justice. The judiciary is and must be independent from this as well. Normally the judiciaries of democratic countries are equipped with independent bodies of self-government.[41] If it was the Ministry that chose and provided the decisions to be used and even set up the machine, independency would not be granted. If the Ministry then turns to external companies that use their algorithms (protected by copyright) and the data collected in ways that are not disclosed to the public, the guarantee of independence from them as well would not be a foregone conclusion.

Undue external influence on the individual judge or on the judicial system can be represented, among other things, by undue interference in the decision-making process. Thus, the EctHR, pursuant to art. 6, § 1[42], condemned attempts by non-judicial authorities to intervene in judicial proceedings, considering them ipso facto incompatible with the notion of an "independent and impartial tribunal", whether they influenced the course of proceedings[43]. The constitutional guarantees of the

---

[38] First, courts will be data users when designing and monitoring new data-driven tools, including court-connected legal aid chatbots. Second, the courts will be the distributors of data as they collect the mountains of data generated by the legal system and determine the conditions under which this data will be made available to outside actors. find a way to use it. Third, the courts will be the data regulators - especially the use of third-party data - because they determine which software vendors can and cannot provide legal services under the law. applicable law on attorneys and codes of professional responsibility. Precisely see Freeman Engstrom D. and Vogt R.J. (2022). The New Judicial Governance: Courts, Data, and The Future of Civil Justice. *DePaul L. R.,* 1-82.

[39] Ibid. point out that, in exercising the new governance roles, courts will offer a multitude of options for how decisions are made and communicated about data collection, use and processing. They will quickly see data as a strategic asset, not just a by-product of case processing or court management. Courts will also face common buying or selling issues: How much of their in-house engineering capabilities to build and rely on and how much to outsource to external vendors? Other options will include deciding how to standardize data formats across jurisdictions, as well as how and by whom that data is accessed. How the courts perform these new and unexplored governance roles - as data users, data distributors, and data regulators (and data usage) - will determine, perhaps more than any other force, the future of the civil justice system.

[40] *Parlov-Tkalčić c. Croazia*.

[41] Kaufman I.R. (1980), The Essence of Judicial Independence. *Columbia L. Rev*., *80*(4), 671-701.

[42] Article 6 of the European Convention on Human Rights establishes the right of every person "to have his or her case heard fairly, publicly and within a reasonable time by an independent and impartial tribunal". It concerns the right of every person liable to justice to a judge who is able to "act without any restriction, improper influence, instigation, pressure, threat or interference, direct or indirect, from any source or for any reason" (recommendation Rec (94) 12 of the Committee of Ministers of the Council of Europe on the independence, efficiency and role of judges, which recalls, also from a literal point of view, Article 2 of the «Basic Principles» established by the United Nations).

[43] *Sovtransavto Holding v. Ucraina* and *Agrotehservis v. Ucraina.*

independence and impartiality of the judiciary must be effectively implemented with day-to-day administrative practices, which may include the use of AI.

It follows that every judge, to safeguard her independence, must be able to use only Ais whose origin, structure and functioning are clear and transparent, and which are specifically approved by law, not already en bloc, but in detail. This guarantees the recognition of independence from the outside of the judicial system as well.

In the next paragraph I will enquire whether and to what extent these guarantees can be given by the structure and the functioning of a ML.

ML: decision without reasons and independence of judges

While the inductive algorithm is generally covered by copyright[44], once the latter is removed the algorithm can be disclosed, the deductive algorithm is formed along the way and the data that structure it are difficult to be decoded. Moreover, in deep learning neural networks, the architecture is entirely sub-symbolic, such as the prototypical example of an opaque model, or, to use popular jargon, a black box[45]. They are typically not guided by prior knowledge.

The complexity together with the dynamism of this system have prevented developing a clear explanation of algorithmic reasoning[46]. It is extremely difficult, if not impossible, for users to understand and verify the reliability of the patterns learned by the machine.

Although transparency itself has offered the opportunity of creating large databases from which to extrapolate those needed to create MLs, paradoxically the lack of intelligibility of the ML activity affects transparency.

Two transparency issues arise[47]: technical transparency (which, although experts may have access to the source code, would often be difficult or impossible to achieve) and explainability of a kind that in the EU refers to Article 22 of the GDPR[48]. The second represents a more useful approach for the citizen and the user. It could be defined controlled transparency.

On this second aspect, although experts may have access to the source code, there is often no interest in explaining how it works to users. The risk is that these could suffer negative consequences from algorithmic applications that remain opaque.

To reduce the risk posed by ambiguous algorithmic decisions, Article 22 of the GDPR also requires companies to provide meaningful information about the existence of algorithmic decision-making, how data is processed, the logic involved, and possible outcomes.[49]

Some concerns regard the limitations on following the rules on transparency under the GDPR. The disclosure of algorithms and AI applications are not compulsory in case their use do not form

---

[44] See above.

[45] See above. See also McJohn, S. M. (1988). Review of Artificial Legal Intelligence. *Harv. J.L. & Tech., 12*, 241-244, at 244 writs: Applied to the legal domain, a neural network would give a result without the reasons for it; a 'black-box' approach that fits poorly with the need for justifications in the legal world".

[46] Tschiderd C. A. (2021). *Beyond the "Black Box". Denv. L. Rev.*, 683, 705-706.

[47] Christian, B. (2020). *The Alignment Problem: Machine Learning and Human Values, W.W*. Norton & Company, describing fairness and transparency risks.

[48] 1. The data subject shall have the right not to be subject to a decision based solely on automated processing […], which produces legal effects concerning him or her or similarly significantly affects him or her. 2. Paraph 1 shall not apply if the decision: […] 2) authorized by "[the] law to which the controller is subject" and that adopts appropriate measures to protect the data subject; c. is based on the data subject's explicit consent. 3. In the cases referred to in points […] (c) of paragraph 2, the data controller shall implement suitable measures to safeguard the data subject's rights and freedoms and legitimate interests, at least the right to obtain human intervention on the part of the controller, to express his or her point of view and to contest the decision.

[49] Casey, B., Farhang, A. and Vogl R. (2019). Rethinking Explainable Machines: The GDPR's "Right to Explanation" Debate and the Rise of Algorithmic Audits in Enterprise. *Berkeley Tech. L.J.*, *34* (1), 143-188; Kaminski, M. E. The Right to Explanation, Explained. *Berkeley Tech. L. J.*, *34,* 189-218; Hamon, R., Junklewitz, H., Malgieri, G. and De Hert, P. (3rd-10th March 2021) *Impossible Explanations?: Beyond Explainable AI in the GDPR from a COVID-19 Use Case Scenario.* FAccT 21: Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency. Virtual Event Canada.

decisions or generate legal effects, or the latter are not created exclusively by algorithms. The explanations are not to be provided in case where algorithms are fed by anonymized data (see Arts. 13 and 14 GDPR).[50]

Once the user has received information on the functioning of the AI before using it, she no longer has the right to receive any information during use. Therefore, if in the meantime the algorithm has changed and, therefore, the procedure and the decision could be different, the user may not be informed. Moreover "mathematical explanations, access to algorithms, or detailed information about computing systems are never considered" as right of data subjects to obtain transparency about the "logic involved."[51]

Several regulatory solutions to overcome algorithmic opacity[52] and place greater obligations on companies have been proposed in recent years[53]. Algorithmic impact assessments are suggested which would require documentation even before the development of the AI.[54] Internal and external audits would assess the quality and impact of algorithmic systems on a wider audience[55]. Some also point out that stakeholders need more information on the managerial, legal and technical aspects of algorithmic systems to assess systemic risks.[56]

These fall under the category of Explainable AI (XAI), as a process allowing users to understand the structure and the results generated by AI systems.

Even with respect to XAI there is no agreement between developers and analysts on transparency. According to some AI developers XAI is the key for building trust and confidence in AI. Industry analysts, on the contrary, point out the incompleteness of information provided by XAI.[57]

The EU is adopting the AI Act that acknowledges and regulates the transparency of the AI. For a group of subjects, including 'Assistance in legal interpretation and application of the law', classified as high risk, it provides the registration on an EU database that will be publicly accessible.[58]

In US the Senate has adopted the Algorithmic Accountability Act[59].Further intrinsic features of ML are far from complying with transparency. Due to the technical complexity or incomprehensibleness of algorithmic systems, in fact it may be technically difficult for companies to explain the cause and correlation of algorithmic decisions.

---

[50] Brkan, M. and Bonnet, G. (2020). Legal and Technical Feasibility of the GDPR's Quest for Explanation of Algorithmic Decisions: Of Black Boxes, White Boxes and Fata Morganas. *Eur. J. Risk Reg.*, *11* (1), 18-50.

[51] Barros Vale, S. and Zanfir-Fortuna, G. (2022), Automated Decision-Making Under the GDPR: Practical Cases from Courts and Data Protection Authorities. *Future of Privacy Forum*, 2-60.

[52] Guidotti, R., Monreale, A., Ruggieri, S., Turini, F., Giannotti F. and Pedreschi D., (2018). A Survey of Methods for Explaining Black Box Models. *ACM Comput. Surv. 51* (5), Article No. 93, 1-42.

[53] Selbst, A. D. (2021). An Institutional View of Algorithmic Impact Assessments, *Harv. J.L. & Tech.*, *35,* 117-191.

[54] See Ada Lovelace Institute (29th April 2020), *Examining the Black Box: Tools for Assessing Algorithmic Systems*, https://www.adalovelaceinstitute.org/wp-content/uploads/2020/04/Ada-Lovelace-Institute-DataKind-UK-Examining-the-Black-Box-Report-2020.pdf.; Kaminski, M. E. (2020), Understanding Transparency in Algorithmic Accountability. In W. Barfield (Ed), *The Cambridge Handbook of the Law of Algorithms* (pp. 121-138). Cambridge University Press; Katyal, S. K. (2019). Private Accountability in the Age of Artificial Intelligence. In W. Barfield (Ed), *The Cambridge Handbook of the Law of Algorithms* (pp. 47-106). Cambridge University Press.

[55] Casey, B., Farhang, A. and Vogl R. (2019). Rethinking Explainable Machines: The GDPR's "Right to Explanation" Debate and the Rise of Algorithmic Audits in Enterprise. *Berkeley Tech. L.J.*, *34* (1), 143-188;

[56] Lu, S., (2022). Data Privacy, Human Rights, and Algorithmic Opacity. *Calif. L. Rev.*, 110, 2087-2147.

[57] See the discussion in Pearce, G. (6th April 2022). *Explainable Artificial Intelligence (XAI): Useful but Not Uncontested*. Information Systems Audit and Control Association. https://www.isaca.org/resources/news-and-trends/newsletters/atisaca/2022/volume-14/explainable-artificial-intelligence-useful-but-not-uncontested. See also Dargan, M. (2023). Model Act for Algorithmic Models: A Regulatory Solution for AI Used in Hiring Decisions. *Hous. L. Rev.*, *13*, 50-82.

[58] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52021PC0206

[59] H.R. 6580, 117th Cong. (2022).

Mökander, J., Juneja, P., Watson, D.S. and Foridi, L. (2022). The US Algorithmic Accountability Act of 2022 vs. The EU Artificial Intelligence Act: what can they learn from each other? *Minds & Machines*, *32* (4), 751-758.

Models of ML only predict the occurrence of certain phenomena, but do not explain their causes or the laws that govern them[60]. This is because the machine's 'decision' is formed on probabilities. This does not even correspond to how the human being, even more so in legal reasoning, is used to thinking, that is on the basis of causality.

Furthermore, the ML (and this, as we said, is one of the most important issues) is not able to distinguish causality from simple correlation, so it would not be able to process the facts adequately. Scholars have also highlighted how this way of thinking about AI based on prediction makes, dangerously, persuasion obsolete.[61].

The last but again fundamental aspect is that predictive justice assumes that the operator provides the facts (da mihi factum) and the machine the law (dabo tibi ius) automatically. The doctrine underlines how the fact is always different and therefore the law to apply cannot be standardized.[62]

The road to absolute transparency has probably been taken, but until it is achieved it does not seem that deep ML can be used as decision-making in place of human judges. Without any doubt the AI possibly used in the context of the civil procedure must be completely transparent, starting with the entered of data to build the ML which will then grow its experience. It must be intelligible for all stakeholders (judges, lawyers, parties, judicial experts, etc.), at every stage of the artificial process.

The lack of transparency negatively affects independence when it makes it impossible to adequately justify the decision made with the help of AI or relying on its results. The reasons for judgment are based on transparency because they act as an intermediary between the recipient of the decision and the authority from which the decision comes. The reasons must be such as to guarantee internal control, i.e. the knowledge of the motives for the decision and the possibility of identifying its defects. Furthermore, the reasons offer the best guarantee to validate other principles concerning the exercise of the judicial function, such as the independence and impartiality of the judge[63]. In this way, the guarantee, for all citizens, of an external and widespread control on the exercise of judicial power takes shape with a view to the transparency of the judicial function.[64]

Through the reasoning, the principles and constitutional rules that guarantee, among others, the independence and impartiality of the judge become effective within the proceedings.[65]

---

[60] ML has also challenged science which, instead of being based on causally explained theory, is becoming increasingly data centric. Traditionally, in fact, the process of building a scientific model for a given phenomenon rests on the formulation of theoretical hypotheses, generally on the basis of both observation and prior knowledge, and their subsequent experimental evaluation. At the same time, a model is required to satisfy the fundamental epistemic desires of scientific investigation, i.e. explain the laws, causes or mechanisms underlying natural phenomena, predict their evolution and control their occurrence.

[61] Pasquale, F. and Cashwell, G. (2018). Prediction, Persuasion, and the Jurisprudence of Behaviourism. *Univ. of Toronto L.J., 68,* 63- 81. See the defense by Garsten, B. (2006). *Saving Persuasion*. Harvard University Press..

[62] Taruffo, M., (1997). Precedente ed esempio nella decisione giudiziaria. In L. Gianformaggio and M. Jori (Eds.), *Scritti per Umberto Scarpelli*, Giuffrè, 783-801; Passanante, L. (2018). *Il precedente impossibile. Contributo allo studio del diritto giurisprudenziale nel processo civile*, Giappichelli.

[63] "The duty to give reasons is a condition for the effectiveness of these other principles in terms of the concrete implementation of justice": Taruffo, M. (1975). *La motivazione della sentenza civile*, Cedam. The same opinion was expressed by Denti, V. (1987) Art. 111 Cost: La magistratura, In V. Denti, G. Neppi Modona, G. Berti and P. Corso, *Commentario alla Costituzione*, (Vol. IV, pp. 8-145) Zanichelli; see also Pizzorusso, A. (1992). Garanzia costituzionale dell'azione. In A. Pizzorusso, G. Volpe, F. Sorrentino (Eds.), *Digesto civile*, (p. 612). UTET.

[64] See, for example, in UK, Court of Appeal Flannery v. Halifax Estate Agencies del 2000. Lord Justice Henry "on the duty to give reasons" stressing that today the professional judge has a general duty to give reasons for his decisions, he wrote: "Transparency should be the watchword".

[65] See Taruffo, M. (1975). *La motivazione della sentenza civile*, Cedam; Evangelista, S. (1977). Motivazione della sentenza civile. In *Enc. dir.* (pp. 154- 180). Giuffrè; Montesano, L. (1988). Controlli esterni sull'amministrazione della giustizia e funzioni garantiste della motivazione. In *La sentenza in Europa. Metodo, tecnica e stile*. Cedam; Fazzalari, E. (1988). La sentenza in rapporto alla struttura e all'oggetto del processo, In *La sentenza in Europa. Metodo, tecnica e stile*. Cedam; Andolina I. A. and Vignera, G. (1997) *I fondamenti costituzionali della giustizia civile. Il modello costituzionale del processo civile italiano*. Giappichelli; Rasia C. (2016). *La crisi della motivazione nel processo civile*. Bologna University Press.

The principle of independence can be considered concretely implemented, not only when the judge demonstrates which exactly were the rules chosen as suitable for regulating a certain case and what were the reasons that led her to attribute a certain meaning to them, but also when this demonstration is inspired by criteria of objective rationality.[66]

The adequate motivation of the decision will therefore be possible if the algorithm will be completely intelligible for the judge who will be able to 'explain it' within the decision.[67] Not only that, but the algorithm must also be able to 'think' logically and not by prediction. This proviso follows unless, of course, we want to radically change the legal reasoning on which our civil society is based for centuries.

Conclusions

Some scholars argue that machine learning is unlikely to completely replace human judges. They have emphasized that the adjudication is a combination of "easy" cases and "hard" cases. While ML tools are good for easy cases, they will produce "dangerous or absurd" results when presented with new categories of facts. Thus, we think of the emergence of "cyborg" systems that combine measurements and effectiveness of the cybernetic medium with the judgment of the human organism for difficult cases[68]. According to another view, once the technological problem of designing an artificial intelligence capable of producing persuasive legal texts is solved, there will be "few conceptual reasons" to reject the prospect of applying that same technology to judges.[69]

In my opinion both theories mirror reality. The first from the point of view of the Sollen (as it should be) and the second from the point of view of the Sein (as it is).

Already numerous are theoretical questions leading towards a great improving of ML in civil procedure. *How* do we sue in a world where AI is operating on its own.[70] *How* to ensure that "common" questions of law and fact "predominate" over individual ones in class action litigation and facilitating certification for innumerable currently uncertifiable classes[71]. These are just two examples.

---

[66] Regardless of the various theories on the reasons of the judgment, it seems that all jurists agree on the idea that it should report the logical-intellectual process followed by the judge to reach the decision. See Taruffo, M. (1975). *La motivazione della sentenza civile*, Cedam; Id. (1988). *La sentenza in Europa. Metodo, tecnica e stile*, Cedam; Lancellotti, F. (1976). Sentenza civile. In *Noviss. Dig. It*., (Vol. XVI). Giappichelli; see also Chizzini, A. (1989). Sentenza nel diritto processuale civile. In *Digesto civ.,* (Vol. IV). Giappichelli. Fazzalari, E. (1989). *Sentenza civile*. In *Enc. dir*. (Vol. XLI, pp. 1245-1272). Giuffré; Perelman, C. and Foriers P., (1978). *La motivation des décisions de justice*, Etablissements Emile Bruylan. Ancel J. P. (1998). La rédaction de la décision de justice en France, in Juges et jugements: L'Europe plurielle. L'élaboration de la décision de justice en droit compare. *Revue internationale de droit comparé. 3*, 841-852.

[67] Taruffo, M. (1998). Judicial Decisions and Artificial Intelligence. In G. Sartor, L. K. Branting. (Eds.), *Artificial Intelligence and Law* (pp. 311-324). Springer.

[68] Wu, T. (2019). Will Artificial Intelligence Eat the Law? The Rise of Hybrid Social-Ordering Systems. *Columbia L. R*., *119,* 2001-2028.

[69] Volokh E. (2018). Chief Justice Robots. *Duke L.J.,* 2018, *68,* 1135-1192.

Obviously, the discussion involves more scholars. For examples, Gowder, P. (2020). Is Legal Cognition Computational? (When Will Deep Vehicle Replace Judge Hercules? In R. Whalen (Ed). *Computational Legal Studies: The Promise and Challenge of Data-Driven Legal Research*, 215-237; Livermore, M. A. (2020). Rule by Rules. In R. Whalen (Ed.), *Computational Legal Studies: The Promise and Challenge of Data-Driven Legal Research,* 238-365; Genesereth M. (2015), Computational Law: The Cop in the Backseat. *CodeX-The Stanford Center for Legal Informatics*. https://logic.stanford.edu/publications/genesereth/complaw.pdf; McGinnis, J. O. and Wasick, S. (2015). Law's Algorithm. *Fla. L. Rev., 66*, 991-1050; Coglianese, C. and Lehr, D. (2017). Regulating by Robot: Administrative Decision Making in the Machine-Learning Era. *Geo. L.J., 105,* 1147, 1223.

[70] It is the question of Niesel, Z. (2020). Machine Learning and the New Civil Procedure. *SMU L. Rev., 73,* 493-540 where she explores the impact of machine learning on procedural law in two important areas: service of documents and personal jurisdiction.

[71] Salib, P. N. (2022). Artificially Intelligent Class Actions. *Texas L. Rev., 100* (3), 519-575.

Many experiments have been carried out and more are in progress, such as the US Supreme Court Forecasting Project[72] on the Project on ECtHR[73]. Just to give an example, text analysis research has made recent progress in automatically identifying more aspects of meaning in legal documents. These include extracting examples of legal concepts, such as factual factors and patterns that strengthen or weaken a party's legal claim, and retrieving judgments that explain legal provisions, laws and regulations related to a legal issue. They also incorporate rhetorical and argumentative structures, including phrases that play a specific role in decisions about the case, such as declaring a rule of law or uncovering facts or quotes providing the court's issues, conclusions, and reasons.[74]

A lot in place[75], in many countries of the world[76].

Up to now there are no cases in which the judge has been replaced by the machine.

In many situations the machine 'simply' supports the judge's activity. When this support affects the outcome of the decision or part of it, the independence of the judge must, in any case, be ensured.

References

Aletras N. et al. (2006). Predicting Judicial Decisions of the European Court of Human Rights: A Natural Language Processing Perspective. *2 PeerJ Comp. Sc.*, 92.

Ancel, J.P. (1998). La rédaction de la décision de justice en France. *Juges et jugements: L'Europe plurielle. L'élaboration de la décision de justice en droit compare*. Paris.

Andolina, I. A. and Vignera, G. (1997). I fondamenti costituzionali della giustizia civile. Il modello costituzionale del processo civile italiano. Torino, 191 ss.

Ashley, K. D. (2022). Prospects for Legal Analytics: Some Approaches to Extracting More Meaning from Legal Texts. *90 U. Cin. L. Rev.,* 1207.

Austin, T., Kamleshkumar Kishnani, P., Mariani, J., Busath, K. and Diehl, A. (10th December 2021). Trustworthy open data for trustworthy AI. Opportunities and risks of using open data for AI, *Deloitte Insights*.

Barros Vale, S. and Zanfir-Fortuna, G. (2022). Automated Decision-Making Under the GDPR: Practical Cases from Courts and Data Protection Authorities, Future of Privacy Forum, 19.

Bin, R. (2013). A discrezione del giudice. Ordine e disordine: una prospettiva quantistica. Milano, 101 ss.

[72] Ruger, T.W. et al. (2004). The Supreme Court Forecasting Project: Legal and Political Science Approaches to Predicting Supreme Court Decisionmaking. *Colum. L. Rev*., *104* (4), 1150-1210: "For every argued case during the 2002 Term, we obtained predictions of the outcome prior to oral argument using two methods--one a statistical model that relies on general case characteristics, and the other a set of independent predictions by legal specialists. The basic result is that the statistical model did better than the legal experts in forecasting the outcomes of the Term's cases: The model predicted 75% of the Court's affirm/reverse results correctly, while the experts collectively got 59.1% right". See also, for example, Katz, D.M., II Bommarito, M.J. and Blackman, J. (2017). A general approach for predicting the behavior of the Supreme Court of the United States. *PLoS ONE*, *12* (4), 1-18.

[73] In this study, ML models were constructed to predict whether judgments by the ECtHR would lead to a violation of an Article in the Convention on Human Rights. See Chalkidis, I. et al., (2019). Neural Legal Judgment Prediction in English. In A. Korhonen, D. Traum and L. Màrquez (Eds.), *Proc. 57th Ann. Meeting Assoc. For Computational Linguistics,* 4317-4323. Aletras N. et al. (2016). Predicting Judicial Decisions of the European Court of Human Rights: A Natural Language Processing Perspective. *2 PeerJ Comp. Sc,* 2-19; Medvedeva, M., Vol, M. and Wieling, M. (2020). Using Machine Learning to Predict Decisions of the European Court of Human Rights. *AI & L*, *28,* 237-266.

[74] See Ashley, K. D. (2022). Prospects for Legal Analytics: Some Approaches to Extracting More Meaning from Legal Texts. *U. Cin. L. Rev., 90,* 1207-1240.

[75] On lawyer-driven legal tech tools Kluttz, D. N. and Mulligan, D. K. (2019). Automated Decision Support Technologies and the Legal Profession, *Berkeley Tech. L.J., 34,* 853-890; Komoda, J. (2023). Designing Ai for Courts. *Richmond J. of L. & Tech., 29*(3), 145-192.

[76] One example is EXPERTIUS an AI that advises Mexican family court judges and clerks on how to adjudicate pension claims. VICTOR is the AI used in Brazil to review appeals and check whether the general repercussion requirement is met.

For Italy, see, for example some projects, *http://www.corteappello.bari.it/allegati_sito/progetto_pre-vedibilita_decisioni.pdf*; *http://www.cor- teappello.venezia.it/giurisprudenza-predittiva-per_198.html*); *http://www.giustiziabrescia.it/giustizia_predittiva.aspx*

See also Deng, J. (2019) Should the Common Law System Welcome Artificial Intelligence: A Case Study of China's Same-Type Case Reference System. *Geo. L. Tech. Rev.*, *3.2*, 223-280.

Bobbio, N. (1951). La certezza del diritto è un mito? *Riv. int. fil. dir.*, 146 ss.
Brady, J. C. (1973). Legal Certainty: The Durable Myth, 8 *Irish Jurist*, 18.
Brkan, M. and Bonnet, G. (2020). Legal and Technical Feasibility of the GDPR's Quest for Explanation of Algorithmic Decisions: Of Black Boxes, White Boxes and Fata Morganas. *11 Eur. J. Risk Reg.* 18, 21 ss.
Burbank, S. B. (2003). Perspectives on Judicial Independence: What Do We Mean by "Judicial Independence"? 64 *Ohio State Law Journal,* 323.
Cappelletti, M. and Vigoriti, V. (1971). I diritti costituzionali delle parti nel processo civile italiano. *Riv. dir. proc*., 604 ss.
Carnelutti F. (1943). La certezza del diritto. *Riv. dir. civ.*, 81 ss.
Carpenter, A. E., Steinberg, J. K., Shanahan, C. F. and Mark, A. (2018). Studying the "New" Civil Judges. *Wisc. L. Rev*., 249, 252 ss.
Carpenter A. E. (2018). Active Judging and Access to Justice. 93 *Notre Dame L. Rev.,* 647, 652; Thornburg, E. G. (2010). The Managerial Judge Goes to Trial. *44 U Rich. L. Rev.,* 1261, 1291.
Casey, B., Farhang A., and Vogl, R. (2019). Rethinking Explainable Machines: The GDPR's "Right to Explanation" Debate and the Rise of Algorithmic Audits in Enterprise. *34 Berkeley Tech. L.J.*,143.
Chalkidis, I. et al. (2019). Neural Legal Judgment Prediction in English, Proc. 57th Ann. Meeting Assoc. For Computational Linguistics. 4317.
Charalabidis, Y., Zuiderwijk, A., Alexopoulos, C., Janssen, M., Lampoltshammer, T. and Ferro, E. (2018). Open Data Evaluation Models: Theory and Practice. *The World of Open Data. Public Administration and Information Technology*, vol. 28.
Chen, B., Stremitzer, A. and Tobia, K. (2023). Having Your Day in Robot Court. *Harv. J. L. & Tech.*, 3.
Chiarloni, S. (2000). Il nuovo art. 111 Cost. e il processo civile. *Riv. dir. proc.*, 1010.
Chiarloni, S. (2003). Giusto processo, garanzie processuali, giustizia della decisione. *Riv. trim. dir. proc. civ.*, 36;
Chignard, S. (29th March 2013). A brief history of Open Data. *ParisTech Review*.
Chizzini, A. (1998). Sentenza nel diritto processuale civile. *Digesto civ.* Torino, vol. IV, 236 ss.
Christian, B. (2020). The Alignment Problem: Machine Learning and Human Values. *W.W. Norton & Company* describing fairness and transparency risks.
Coglianese, C. and Lehr, D. (2017). Regulating by Robot: Administrative Decision Making in the Machine-Learning Era. *105 Geo. L.J.,* 1147, 1154.
Costantino, G. (2011). Il principio di affidamento tra fluidità delle regole e certezza del diritto. *Riv. dir. proc.*, 1073.
Dafoe, A. (27th August 2018). AI Governance: A Research Agenda. *Ctr. Gov. AI.*
Dargan, M. (2023). Model Act for Algorithmic Models: A Regulatory Solution for AI Used in Hiring Decisions, *13 Hous. L. Rev.,* 50.
Deng, J. (2019). Should the Common Law System Welcome Artificial Intelligence: A Case Study of China's Same-Type Case Reference System. 3 *Geo. L. Tech. Rev.,* 223.
Denti, V. (1987). Art. 111 Cost. La magistratura, *Commentario alla Costituzione. Zanichelli,* vol. IV, 8 ss.
Domingos, P. (2017). The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World. New York.
Dougherty, M. R., Gettys, C. F. and Ogden, E.E. (1999). MINERVA-DM: A memory processes model for judgments of likelihood. 106 *Psychological Review*, 180.
Engstrom, D. and Vogt, R. J. (2022). The New Judicial Governance: Courts, Data, and The Future of Civil Justice. 72 *DePaul L. R.,*171.
Evangelista, S. (1977). Motivazione della sentenza civile. *Enc. dir. Giuffrè,* vol. XXVII, 158.
Examining the Black Box: Tools for Assessing Algorithmic Systems, Ada Lovelace Institute Report (2020). 7 ss.
EU Commission. (2023). Rethinking the Open Data. Towards a European Impact assessment for open data. Luxembourg.
Fabiani, M. (2010). Garanzia di terzietà e imparzialità del giudice ed efficienza del processo. *Judicium,* 1.
Fazzalari, E. (1994). *La sentenza in rapporto alla struttura e all'oggetto del processo*. *La sentenza in Europa*, 316;
Fazzalari, E. (1989). Sentenza civile. *Enc. dir*., Giuffré vol. XLI, 1245 ss.
Fischer, C., Hirsbrunner, S. D. and Teckentrup, V. (2022). Producing Open Data. *Res. Ideas Outcomes*, 8.
Genesereth, M. (2015). Computational Law: The Cop in the Backseat, White Paper, CodeX-The Stanford Center for Legal Informatics.
Geyh, C. G. (2003). Judicial Independence, Judicial Accountability, and the Role of Constitutional Norms in Congressional Regulation of the Courts. 78 *Indiana Law Journal,* 153.
Geyh, C. G. (2008). The Endless Judicial Selection Debate and Why It Matters for Judicial Independence, *21 Geo. J. Legal Ethics*, 1259, 1278.
Gianformaggio, L. (1988). Certezza del diritto. *Digesto Discipline privatistiche sezione civile*. *Utet*.
Gometz, G. (2005). La certezza giuridica come prevedibilità. *Giappichelli*, 293.

Gowder, P. (2020). *Is Legal Cognition Computational? (When Will Deep Vehicle Replace Judge Hercules?), Computational Legal Studies*, 2020, 215;.

Griffin, D. W. and Ross, L. (1991). Subjective construal, social inference, and human misunderstanding. In Advances in experimental social psychology, Vol. 24. *Academic Press,* 319 ss.

Griffin, D. and Tversky, A. (1992). The weighing of evidence and the determinants of confidence. 24 *Cognitive psychology*, 411.

Guastini, R. (1986). La certezza del diritto come principio di diritto positivo? *Le regioni*, 1090.

Guidotti, R., Monreale, A., Ruggieri, S., Turini, F., Giannotti, F. and Pedreschi, D., A Survey of Methods for Explaining Black Box Models. *ACM Comput. Surv.* 51, 5, Article 93.

Hamon, R., Junklewitz, H., Malgieri G.and De Hert P., (2021), Impossible Explanations?: Beyond Explainable AI in the GDPR from a COVID-19 Use Case Scenario, FAccT. *21 Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, 549.

Hildebrandt, M. (2018). Law as Computation in the Era of Artificial Legal Intelligence: Speaking Law to the Power of Statistis. 68 *Suppl. Univ. of Toronto L.J.,* 1, 12.

Huq, A. Z. (2020). A Right to a Human Decision, *106 Va. L. Rev.*, 611 ss., 635;

Huq, A. Z. (2023). Artificial Intelligence and the Rule of Law, in Public Law and Legal Theory Working Paper Series, No. 764

Huyer E. and van Knippenberg L. (2020). The Economic Impact of Open Data: Opportunities for Value Creation in Europe. Brussels, European Commission.

Jabotinsky, H. Y. and Lavi, M. (2022). The Eye in the Sky Delivers (and Influences) What You Buy. 24 *Uni Pennsylvania J. Const. L.,* 1329.

Karp, B. (2023). What Even Is a Criminal Attitude? And Other Problems with Attitude and Associational Factors in Criminal Risk Assessment. *75 Stan. L. R.,* 1431.

Kaminski M. E. (2020). Understanding Transparency in Algorithmic Accountability, *Cambridge Handbook of the Law of Algorithms,* 121 s.; S. K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 *UCLA L. Rev.,* 54, 115.

Kaminski, M. E. (2019). The Right to Explanation, Explained. *University of Colorado Law Legal Studies Research Paper No. 18-24, Berkeley Technology Law Journal,* Vol. 34, No. 1, 189.

Katz, D.M., Bommarito, M.J. II, Blackman, J. (2017). A general approach for predicting the behavior of the Supreme Court of the United States. *12 PLoS ONE.*

Kaufman, I.R. (1980). The Essence of Judicial Independence. 80 *Columbia L. Rev*., 671 ss.

Kluttz, D. N. and Mulligan, D. K. (2019). Automated Decision Support Technologies and the Legal Profession. 34 Berkeley Tech. L. J., 853, 889.

Komoda, J. (2023). Designing Ai For Courts, *29 Richmond J. of L. & Tech.,* 145.

Krishnamurthy, R. and Awazu, Y. (2016). Liberating data for public value: the case of Data.gov. 36 *Int. J. Inf. Manage*, 668 ss..

Lancellotti, F. (1976). Sentenza civile. *Noviss. Dig. It*. Torino, vol. XVI, 1118.

LeCun, Y., Bengio, Y. and Hinton, G. (2015). Deep Learning, *521 Nature,* 436.

Livermore, M. A. Rule by Rules*, Computational Legal Studies*, cited, 238, 250 ss

Lu, S. (2022). Data Privacy, Human Rights, and Algorithmic Opacity, 110 *Calif. L. Rev.,* 2087 ss.

McCarthy, J., Minsky, L.M., Rochester, N. and Shannon, C.E. (31st August 1955) A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence. http://www-formal.stanford.edu/jmc/history/dartmouth/dartmouth.html.

McGinnis, J. O. and Wasick, S. (2015). Law's Algorithm, *66 Fla. L. Rev.,* 991, 1040.

McJohn, S. M. (1988). Review of Artificial Legal Intelligence. 12 *Harv. J.L. & Tech,* 241, 244.

Medvedeva, M., Vol, M. and Wieling, M. (2020). Using Machine Learning to Predict Decisions of the European Court of Human Rights. *8 AI & L.* 237.

Micheli, M., Ponti, M., Craglia, M. and Berti Suman A. (2021). Emerging models of data governance in the age of datafication, *Big Data Soc.*, 7.

Mökander, J., Juneja, P., Watson, D.S. and Foridi, L., (2022). The US Algorithmic Accountability Act of 2022 vs. The EU Artificial Intelligence Act: what can they learn from each other? *32 Minds & Machines*, 751.

Moliterno, J. E., Berdisová, L., Čuroš P. and Mazúr, J. (2018). Independence Without Accountability: The Harmful Consequences of Eu Policy Toward Central and Eastern European Entrants. *42 Fordham International Law Journal,* 481.

Monteleone, G. (2012). L'imparzialità del giudice e la prova nel processo. *Giusto proc. civ*., 326.

Montesano, L. (1988). Controlli esterni sull'amministrazione della giustizia e funzioni garantiste della motivazione. *La sentenza in Europa. Metodo, tecnica e stile*. *Cedam,* 434;

Nay, J. J. (2023). Law Informs Code: A Legal Informatics Approach to Aligning Artificial Intelligence with Humans*, 20 Nw. J. Tech. & Intell. Prop*., 309.
Neufeld, S. (2021). Deploying open government data for AI-Enabled Public Interest Technologies. *ORF*.
Neves, F. T., De Castro Neto, M. and Aparicio, M., (2020) The impacts of open data initiatives on smart cities: a framework for evaluation and monitoring. *Cities,* 106.
Nicholson C., Artificial Intelligence (AI) vs. Machine Learning vs. Deep Learning. *Pathmind.*
Niesel, Z. (2020). Machine Learning and the New Civil Procedure. 73 *SMU L. Rev.,* 493.
Nieva-Fenoll, J. (2018). Inteligencia Artificial y Proceso Judicial, 1.
Noveck, B.S. (2017). Rights-Based and Tech-Driven: Open Data, Freedom of Information, and the Future of Government Transparency. 19 *Yale Human Rights & Development L.J.*, 1 ss.
Open data and AI: A symbiotic relationship for progress. (9th June 2023). data.europa.eu.
Pasquale, F., (2019). A Rule of Persons, Not Machines: The Limits of Legal Automation. 87 Geo Wash. L. Rev. 1, 3.
Pasquale F. and Cashwell, G. Prediction, Persuasion*,* cited above, 63. See the defense by Garsten, B. (2006). Saving Persuasion, *Cambridge, MA. Harvard University Press.*
Pasquale, F. and Cashwell, G. (2018). Prediction, Persuasion, and the Jurisprudence of Behaviourism. 68 *Univ. of Toronto L.J.,*63.
Passanante, L. (2018). Il precedente impossibile. Contributo allo studio del diritto giurisprudenziale nel processo civile. *Giappichelli.*
Perelman, C. and Foriers, P. (1978). La motivation des décisions de justice. Bruxelles
Pizzorusso, A. (1992). *Garanzia costituzionale dell'azione. Digesto civile. UTET*, 612.
Rasia, C. (2016). La crisi della motivazione nel processo civile. *Bologna university Press,* 233 ss.
Re, R. M. and Solow-Niederman, A. (2019). Developing Artificially Intelligent Justice, 22 *Stan. Tech. L. Rev.*, 242.
Ruffolo, U. (2021). La *machina sapiens* come "avvocato generale" ed il primato del giudice umano: una proposta di interazione virtuosa. *Astrid*,1.
Ruger T. W. et al. (2004). The Supreme Court Forecasting Project: Legal and Political Science Approaches to Predicting Supreme Court Decisionmaking. *104 Colum, L. Rev*., 1150.
Salib, P. N. (2022). Artificially Intelligent Class Actions. *100 Texas L. Rev.,* 519.
Selbst, A. D. (2021). An Institutional View of Algorithmic Impact Assessments, 35 *Harv. J.L. & Tech.*, 117.
Scherer, M. U. (2016). Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies. *29 Harv. J.L. & Tech,* 353-360
Schwab, K. (2017). The Fourth Industrial Revolution*. Penguin,* 1.
Shetreet, S. and Forsyth, C. (2012). The Culture of Judicial Independence. Conceptual Foundations and Practical Challenges*. Brill Nijhoff.*
Shalev-Schwartz, S. and Ben-David, S. (2014). Understanding Machine-Learning: from Theory to Algorithms, *Cambridge University Press.* Cambridge.
Steinberg, J. K. (2016). Adversary Breakdown and Judicial Role Confusion in "Small Case" Civil Justice*,* 2016 *Byu L. Rev.* 899, 938 ss.
Susskind, R. (1996). The Future of Law: Facing the Challenges of Information Technology, *Clarendon Press.*
Susskind, R (2017). Tomorrow's Layers: An Introduction to Your Future. *Oxford University Press*.
Taruffo, M. (1975). La motivazione della sentenza civile. *Cedam,* 398 ss.
Taruffo M., (1998). Judicial Decisions and Artificial Intelligence. *Artificial Intelligence and Law*. Springer, 311 ss.
Taruffo, M. (1998). Precedente ed esempio nella decisione giudiziaria. *Scritti per Umberto Scarpelli. Giuffrè,* 783 ss.;
Taruffo, M. (2019). Verso la decisione giusta*. Giappichelli.*
Tetlock, P.E. (2002). Cognitive biases in path-dependent systems: Theory driven reasoning about plausible pasts and probable futures in world politics. *Inferences, Heuristics and Biases: New Directions in Judgment Under Uncertainty*. *Cambridge University Press*.
Trocker, N. (1974). Processo civile e costituzione. Milano.
Tschider C. A. (2021). Beyond the "Black Box", *98 Denv. L. Rev.*, 682, 705 ss.
Volokh, E., (2019). Chief Justice Robots, *68 Duke L.J.*, 1135.
Wu, T. (2019). Will Artificial Intelligence Eat the Law? The Rise of Hybrid Social-Ordering Systems. 119 *Columbia L. R*., 2001 ss.
Zalnieriute, M. and Bell, F. (2021). 'Technology and Judicial Role', The Judge, the Judiciary and the Court: Individual, Collegial and Institutional Judicial Dynamics in Australia. *Cambridge University Press*.