

Courts and Artificial Intelligence

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Summary

This article explores the use of artificial intelligence in courts of law. AI raises any number of questions for courts and judges. What can AI do for the administration of justice, and what does that require? Complexity reduction is at the heart court processes, irrespective of their subject matter. Not all court work is complex custom work. Routine processes have different requirements from the complex custom processes. Therefore, information technology, including artificial intelligence, is also not the same for all cases. Which AI has already proven itself for these different processes? And since the work of courts and judges is governed by the standards of proper procedure, for instance in Article 6 of the European Convention on Human Rights, what does this mean for working with AI? The Council of Europe developed the Ethical Principles for the use of AI in the administration of justice. And how can legal information be made more usable for AI?

1. Introduction

Machines take over work from people everywhere. Once upon a time we found spell-checking and search engines intelligent information technology. Today, facial recognition checks travelers at our airports. Google Maps gives me unsolicited advice about my destination: "the restaurant may be closed". My tablet and my mobile phone answer my spoken questions with friendly spoken replies. The newspapers talk about robot justice. There are claims that algorithms can accurately predict court decisions, and that we won't need human judges anymore. We enjoy talking about things that don't exist yet, and fantasize about how they will make our lives easier. But what do we actually already know about the use of artificial intelligence? This article explores the potential and risks of artificial intelligence in courts based on current knowledge.

The main questions of this article are: (1) how can artificial intelligence (also: AI) be useful for courts and judges, and (2) what is needed to make the AI useful? Court cases do by no means always require a complex custom-made approach. Many cases can be processed automatically, at least in part. That is why information technology, including artificial intelligence, is not the same for all cases. What artificial intelligence has already proven itself for these different processes? How can courts and judges work with artificial intelligence according to the standards fair procedure, for instance in Article 6 of the European Convention on Human Rights? What risks do the standards of Article 6 run when using artificial intelligence? The Council of Europe developed the Ethical Principles for the use of AI in the administration of justice. And how can legal information be made more usable for artificial intelligence?

2. Artificial Intelligence

Artificial intelligence (AI) can be described as "allowing a machine to behave in such a way that it would be called intelligent if a human being behaved in such a way". This is the definition that John McCarthy,

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considered to have invented the term "Artificial intelligence", gave to AI in 1956.² This is important to establish, for so defined human intelligence is the measure of what AI does. Intelligence, that is, the ability to reason abstractly, logically and consistently, discover, lay and see through correlations, solve problems, discover rules in seemingly disordered material with existing knowledge, solve new tasks, adapt flexibly to new situations, and learn independently, without the need for direct and complete instruction.

AI, in order to work, needs Big Data. Luc Julia, one of the creators of the digital assistant Siri, evokes this image: if a machine is to be able to recognize a cat with 95% certainty, we need about 100,000 pictures of cats.³ . We have collected a lot of data in the meantime. That is one of the reasons why AI has attracted so much interest recently. AI comes in many different shapes, such as speech recognition and image recognition. This article is mainly about machine learning and natural language processing. Deep learning, in which the technology itself learns, is still the subject of the future. What do we know about AI, and especially about machine learning, in the administration of justice?

3. Courts and information technology

Administering justice means doing justice in individual cases, and the judiciary also has a shadow function in presenting standards to society more broadly. But regardless of the subject matter, the work of courts and judges is to process information: parties bring information to the court, transformations take place in the course of the procedure, and the outcome is also information. Not all of this information processing is complex customization. Default judgments and statements of inadmissibility are mostly routinely produced, many cases require a simple assessment without a hearing, and some cases are settled. Only a limited proportion of the cases that the judiciary has to deal with, are complex, contradictory cases.⁴ It cannot be stressed enough that the process, and hence the need for information technology, is not the same for all cases.

In administrative and civil cases (including subdistrict/local/small claims court cases), the way in which cases are handled depends mainly on (a) the complexity of the information in a case and (b) the degree of predictability of the outcome. A relatively large proportion of routine cases have a predictable outcome. In those cases, the court ruling is a document produced in a largely automatic process based on data supplied. The judgment document provides a title for enforcement. Here, the court mainly needs digital submissions in which the filing party provides the data digitally so they do not have to be re-entered manually. Moreover, if the outcome is predictable, case processing can be partly or even largely automated, precisely because the outcome is largely or entirely certain.

In family and employment matters, there is also a significant proportion of routine cases. Here, the judge, in a function similar to that of a civil-law notary, assesses a proposed arrangement of the parties for legal validity. This can be – in the Netherlands - a regular divorce, but also a parental authority provision or the termination of an employment contract. Here too, the judgment is a largely automatically composed document confirming that the proposed arrangement complies with the law. Here, too, digital filing and process automation are the first IT requirements. In addition, a smart filing portal can help the parties to bring their case to court in the best possible way. Below is an example from practice.

² J. McCarthy et al., "A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence (31 August 1955)", in: Jerry Kaplan (red.) *Artificial Intelligence: What Everyone Needs to Know*, Oxford: Oxford University Press 2016.

³ L. Julia. *L'intelligence artificielle n'existe pas* (AI does not exist). First Edition, Paris 2019, p. 123.

⁴ A.D. Reiling, *Technology for Justice, how information technology can support judicial reform* (diss. VU Amsterdam) Leiden: Leiden University Press 2009, p. 111-122. The Netherlands Judiciary deals with approximately 1.3 million cases annually.

A settlement is regularly reached in cases that are less routine. To bring about a settlement, there is software that can analyze the parties' points of view and present an optimum result based on the parties' input. Only in those cases that are not settled, the end product of the court proceedings is a judgment in the strict sense of the word.

In the criminal justice system, routine cases are handled (at least in the Netherlands) by the Public Prosecution Service, and only those cases where a judgment is required are brought before a court. Here, too, there are simple cases and cases that are more to extremely complex.

In all complex cases in which the judge or the panel has to give a judgment in order to bring the case to a conclusion, the need for information technology mainly consists of knowledge systems that make legal sources easily accessible, and a digital case file that can present large amounts of information in an accessible manner.

Artificial intelligence is also information technology, and consequently the AI can also have different uses for different cases.

4. What can artificial intelligence do for courts?

AI can therefore also be useful in different ways to meet different requirements. Sales talk on AI for courts is abundant: it would make it fairer, and moreover, unlike human judges, AI does not get tired and does not depend on its glucose levels to function.⁵ This is mostly speculation. The discussion here, however, focuses mainly on what we already know from evidence. Its focus is on "proven technology", AI that has already proven to be useful in practice. But are robots already able to judge? The jury is still out on this one.⁶

1. **Organizing information.** Recognizing patterns in text documents and files can be useful, for example when sorting large amounts of cases, or in complex cases that contain a lot of information. An example from the United States of America is eDiscovery, an automated investigation of electronic information for discovery, before the start of a court procedure. eDiscovery uses machine learning AI, which learns through training what the best algorithm is that can extract the relevant parts from a large amount of information. Parties agree which search terms and coding they use. The judge assesses and confirms the agreement. This is a method of document investigation recognized by the courts in the United States and the United Kingdom.⁷ The method is faster and more accurate than manual file research.

2. **Advise.** AI that can advise can be useful for people, potential parties to a court case, who are looking for a solution to their problem, but do not yet know what they can do. Advisory AI can also be useful for legal professionals. AI not only looks for relevant information, but also provides an answer to a question. The user then decides for herself whether she will act on the advice. The advisory function can help people resolve more of their problems by themselves and thus prevent disputes or court cases. If the

⁵ D. Kahnemann, *Thinking, fast and slow*, London: Penguin 2011 p. 43.

⁶ H.J. van den Herik, *Kunnen computers rechtspreken (Can computers be judges?)* (Inaugural lecture Leiden) Arnhem: Gouda Quint p. 33.

⁷ The first case in which this methodology was accepted as legally valid was *Anti-Monopoly, Inc. v. Hasbro, Inc.*, 1995 WL 649934 (S.D.N.Y., Nov. 3, 1995), by Andrew Peck, magistrate in het Southern District of New York. In *Da Silva Moore v. Publicis Groupe & MSL Group*, No. 11 Civ. 1279 (ALC) (AJP) (S.D.N.Y., Feb. 24, 2012) Peck decided that eDiscovery is an acceptable way of searching for relevant digital information in applicable cases, in *Rio Tinto PLC v. Vale S.A., et al.*, 2015 WL 872294 (S.D.N.Y., Mar. 2, 2015) he approved the parties' stipulated review protocol for the technology assisted review (TAR) of documents, noting judicial acceptance of the practice when proposed by the parties and the emerging issue of disclosure of the seed set used to train the program. And in *Hyles v. City of New York, et al.*, No. 10 Civ. 3119 (AT) (AJP) (S.D.N.Y., Aug. 1, 2016) he wrote that "Even though TAR will be permitted in cases before his court, its use won't be mandated. In the United Kingdom, the practice was also recognized, in High Court of Justice Chancery Division, U.K. (2016). *Pyrrho Investments Ltd v. MWB Property Ltd* [2016] EWHC 256 (Ch).

advice is not enough, support in finding a solution is also a possibility. Help in formulating a solution that requires judicial review, such as a request or a summons, can ensure that the judge's assessment can become more of a routine matter. A proven practical example of this function is in use at the Civil Resolution Tribunal (CRT) in British Columbia, Canada.⁸ The CRT was established to deal with disputes relating to strata, subsidized housing. When it proved successful, the jurisdiction was gradually extended, and in April 2019 personal injury resulting from collisions was added to its jurisdiction. CRT offers the Solution Explorer, with free public legal information and calculation aids, available 24/7. There are guided pathways, interactive questions and answers, dispute resolution or preparation for proceedings at CRT. Underneath is a specially built expert system that is updated every three months. This updating is still done by human experts, based on user feedback and analytical data about the system. So this is not yet "real" AI.

At the District Court of East Brabant in the Netherlands, in collaboration with Tilburg University, Eindhoven University of Technology and the Jheronimus Academy of Data Science (JADS), a study is ongoing into the possibilities of AI for traffic violation cases, in which a citizen appeals to the court within the framework of the administrative handling of traffic violations.⁹ The study aims to develop a tool to support judges in preparing and deciding such cases. The study uses data from the District Courts of East Brabant and Zeeland-West Brabant, and from the Arnhem-Leeuwarden Court of Appeal, which deals with appeals. This was – thinking back to the 100,000 cats - the only way to have sufficient data to work with. Evidently, this is still an experiment. Results are expected in the course of 2020.

3. Predictions. AI that claims to be able to predict court decisions attracts a lot of interest. The usual English/American term for this is "predictive justice". This term has given rise to discussion, because the outcome of the prediction algorithms is neither justice nor predictive. The term "forecast" is a more accurate description, is now the insight. The outcome looks more like a weather forecast than like an established fact. Just like the weather, court proceedings risk having an unpredictable outcome. As the case becomes more complex with more information and more issues, that risk increases. This is one reason why there is so much interest in AI, because it claims to be able to reduce the risk. In the United States, various prediction tools are offered commercially. Therefore, their workings are business secrets, so we do not know how they work. However, there are some non-commercial applications, and we do have some insight into their operation.

For example, a group of American academics has developed a machine learning application that claims to be able to predict the outcome of a case at the Supreme Court of the United States (SCOTUS) with an accuracy of 70.2%, and the voting behavior of individual judges with 71.9% accuracy.¹⁰ In addition to information about the case, this application uses information about the political preferences and past voting behavior of the individual justices.

The most extensively described application is one that claims to be able to predict decisions of the European Court of Human Rights (ECHR).¹¹ This tool uses using natural language processing and machine learning to predict whether or not in a particular situation the Court will rule whether a particular provision of the European Convention on Human Rights (ECHR) has been violated. The tool works with information from earlier judgments. This AI claims 79% accuracy. The material this AI processes is

⁸ British Columbia Civil Resolution Tribunal (2019), *The Civil Resolution Tribunal*, <<https://civilresolutionbc.ca>.

⁹ M. van der Put, 'Kan artificiële intelligentie de rechtspraak betoveren (*Can AI bewitch the courts?*)?' *Rechtstreeks* 2019-02. p. 50-60.

¹⁰ Katz, Daniel Martin et al. A General Approach for Predicting the Behavior of the Supreme Court of the United States (January 16, 2017). SSRN: <https://ssrn.com/abstract=2463244> or <http://dx.doi.org/10.2139/ssrn.2463244>.

¹¹ Aletras N, Tsarapatsanis D, Preotiuc-Pietro D, Lampos V. 2016. 'Predicting judicial decisions of the European Court of Human Rights: a Natural Language Processing perspective', *PeerJ Computer Science* 2:e93 <https://doi.org/10.7717/peerj-cs.93>.

already the result of a many complexity reduction steps. Most ECHR cases are dealt with by the registry, by the Commission or by chambers with one or more judges. The investigators only used judgments from HUDOC, which does not include cases resulting from inadmissible requests. They also did not use requests for their experiment, simply because they were not available. Moreover, the texts of the rulings were written to provide justification for the judgment.¹² Aletras et al. note that their results indicate that the facts of a case, as presented by the Court, is the strongest indicator of the outcome of the case. They consider it a useful aid for judges because it can recognize patterns in a text document, and can thus quickly identify which direction a judgment could take.

Predicting recidivism in criminal cases is another practical example from the US. This tool, the Correctional Offender Management Profiling for Alternative Sanctions (COMPAS), is used in practice by U.S. criminal judges in some states when assessing the recidivism risk of defendants or convicted persons in decisions on pre-trial detention, sentencing or early release. Those in favor of using tools such as COMPAS say that they reduce the number of people detained because the tools make the assessment of the recidivism risk more objective. The US detains far more people than any other country, and this is considered undesirable for several reasons.¹³ COMPAS uses data from the criminal record and from a questionnaire with 137 questions, including questions such as: "Is someone who is hungry allowed to steal? Strongly disagree, disagree, etc.". The tool, by using data from the past, systematically overestimates recidivism among African American defendants compared to Caucasian Americans. The information is intended to indicate that defendants do not pose a risk and therefore do not need to be detained. However, judges using the tool in fact detain more people than before.¹⁴

Another example from the US is startup Ravel in the US. It developed tools for analyzing trends in judgments, courts, and also judge profiles. Ravel offered the tools on a subscription basis. The tool's operation is not public. No information about the accuracy is known to me. Ravel was purchased by LexisNexis, the largest provider of legal information in the US. The tools are now part of LexisNexis' service package.

5. AI in court practice: Ethical principles

Technology is one thing, but how we can and should work with it in practice is still heavily debated. As we speak, already more than 25 documents set out ethical principles for the use of AI, including those of the Institute of Electrical and Electronics Engineers (IEEE), the European Union and the Council of Europe. The Commission for the Efficiency of Justice (CEPEJ) of the Council of Europe has addressed the issue. CEPEJ's Working Party on Quality (GTQUAL) developed ethical principles for the use of AI in the administration of justice. CEPEJ adopted them in December 2018.¹⁵ These five 'Ethical Principles' overlap here and there, so dealing with them in a rigorous and systematic manner is a little problematic.

1 respect for fundamental rights. Ensure that design and implementation of AI services and tools are compatible with fundamental rights such as privacy, equal treatment and fair trial.

2 equal treatment. Avoid discrimination between individuals and groups of individuals. The example of COMPAS above shows that discrimination, unjustified distinction between individuals and groups, is a real risk. The data used by the algorithm may be the cause, and the prejudice may also be embedded in the algorithm itself.

¹² H. Prakken. 'Komt de robotrechter eraan (*Is the robot judge arriving?*)?' *Nederlands Juristenblad* 2018-04 no. 207

¹³ Institute for Crime and Justice Policy Research World Prison Brief, prisonstudies.org last visited on 6 December 2019.

¹⁴ J. Angwin. 'Machine Bias', *ProPublica*, May 23 2016.

¹⁵ European Commission for the Efficiency of Justice (CEPEJ). *European Ethical Charter on the Use of Artificial Intelligence in Judicial systems and their environment*. Strasbourg, Council of Europe 2019.

3 data security. When processing judicial decisions and data, certified sources and data that cannot be altered should be used, with models that are multidisciplinary in design, in a secure technological environment.

4 transparency. Data processing methods should be made transparent and comprehensible, and external audits should be allowed. The requirement of transparency is now established case law. The user of an algorithm must make public the choices made and the data and assumptions used in a complete, timely and appropriate manner so that these choices, data and assumptions are accessible to third parties. Such full, timely and appropriate disclosure should make it possible to assess, or have assessed and, if necessary, reasoned, the choices made and the data and assumptions used, so as to ensure effective legal protection against decisions based on those choices, data and assumptions, with the possibility of judicial review by the courts. This is now consistent case law in the Netherlands courts.

5 AI under user control. The algorithm may not be used as a prescription, i.e. the computer does not prescribe anything and cannot decide by itself. Users must know and understand what the AI does, and the users must be in control of the choices they make. This means that users must be able to deviate from the outcome of the algorithm without difficulty. This human control was an issue in the Loomis case, before the Supreme Court of Wisconsin.¹⁶ At stake were: (1) whether the use of the result of a risk assessment by an instrument such as COMPAS, where the operation is a business secret, violates the defendant's right to a fair trial because the secret operation deprives a defendant of the opportunity to test the accuracy and scientific value of the risk assessment, and (2) whether it violates the right to a fair trial to rely on such a risk assessment because it includes gender and race in the assessment of the recurrence risk. The Wisconsin Supreme Court dismissed Loomis' objections, but said that the judge should give reasons as to how he or she uses COMPAS. The case was referred to the Supreme Court of the United States, which decided not to hear the case.

In the Netherlands, the Council of State recommended that the principles of good governance, and in particular the principle of a reasoned decision and the due diligence principle, should be interpreted more strictly in the context of digitization.¹⁷ This means, among other things, that a decision must explain which decision rules (algorithms) have been used and which data have been copied from other administrative bodies. This will strengthen the position of citizens in automated and chain decision-making; in the phase of objection to automated decisions, customized and human reconsideration is recommended.

What can happen when IT is blindly relied upon is shown by an example from the courts in the United Kingdom.¹⁸ There, a relatively simple piece of IT determines the financial capacity of (ex)-spouses in maintenance proceedings. The parties fill in a PDF form, and the IT calculates the resulting capacity. Due to a small mistake, which went unnoticed, incorrect calculations were made in 3,638 cases between April 2011 and January 2012, and between April 2014 and December 2015. Debts, instead of being deducted, had been added to the assets, so the assets taken into account were too high. In cases that were still pending, this could still be corrected. However, incorrect decisions were issued, and presumably complied with, in more than 2,200 cases.

In conclusion: AI can have a number of functions for courts and judges, and also for parties to a case and individuals seeking justice. The function with the best evidence so far is structuring large amounts of information, which could make the administration of justice more efficient. Advising and forecasting are functions that are still subject to many reservations. But when judges use AI results in their judgment,

¹⁶ 881 N.W.2d 749 (Wis. 2016) en 137 S.Ct. 2290 (2017).

¹⁷ Council of State advice of September 6 2018, Staatscourant (Official Gazette) -2018-50999.

¹⁸ F. Contini, en G.F. Lanzara. (2017), *'The elusive mediation between law and technology'* in P. Branco, N. Hosen, M. Leone and R. Mohr (eds), *Tools of Meaning: Representation, Objects, and Agency in the Technologies of Law and Religion*, I Saggi di Lexia, Aracne, Rome 2018 p. 4-9

this is accepted in practice, provided they give their reasons. However, there are conditions attached to making AI useful for courts. The following paragraph is about those conditions.

6. What is needed to make AI useful in courts?

Article 6 of the ECHR, and consequently the Ethical Principles, set the standard for a proper procedure. It requires, among other things, a transparent procedure, equality of arms for the parties to the proceedings, and also a well-founded judgment. Judicial complexity reduction as described in paragraph 3 must therefore be substantiated, transparent and offer a level playing field to the litigants.

In order for AI to be able to process legal information effectively, the legal information must first be made machine processable. In order for AI to work in accordance with Article 6 of the ECHR, this also means the following. It has long been known that bad data, such as legally incorrect decisions, reduce the quality of the AI result.¹⁹ But correct data is not enough. Text recognition with natural language processing, in which the text-driven behavior of lawyers and judges is calculated from an external perspective, can recognize patterns.²⁰ Patterns such as statistical relations are not enough to substantiate a judgment. For the AI to be able to process and understand legal information, that information needs to be enriched: structured and provided with legal meaning.²¹ At present, this structuring and meaning must be added to judgments (text documents) after they have been written. AI can be used much more effectively once legal information such as court decisions is made machine-processable before publication with textual readability, document structures, identification codes and metadata. Adding legal meaning in the form of structured terminology and defined relationships, will further increase AI's.

In addition, AI needs enough data in order to work. How much would that be, if AI needs 100.000 pictures of cats as in my example? Few jurisdictions will be able to provide that many decisions on exactly the same issue. Moreover, judgments will nearly always contain decisions on many issues, procedural as well as substantive. Nor are the substantive decisions invariably yes/no decisions. How many such yes/no decisions does AI need to reach a reasonably reliable conclusion?²²

AI should be able to explain how it came to its result. This can be an explanation of the processing process, but also a substantive explanation. Research shows that AI in general should be technically capable of the kind of explanation that we now ask from humans, but that in practice humans can explain some aspects more easily than AI.²³

So there is still a lot of work to be done to make AI really useful in courts. AI must be able to explain how the result came about, judiciaries must digitize their information and provide legal interpretation. Judges and others who work with AI also need to understand how the AI works. The Ethical Principles must be implemented and made to work in the institution and in the court work processes. Who is authorized to make which decisions, and who will monitor compliance?

The examples above show that human control is needed in all phases. First of all, human users need to determine what the AI has to do, how it is measured and evaluated; there has to be continuous testing

¹⁹ K. Lum and William Isaac, 'To Predict and Serve?' *Significance magazine.com*, October 2016, last visited on December 7 2019

²⁰ M. Hildebrandt, 'Position on artificial intelligence and the law', Position paper for hearing/round table discussion on 'Artificial Intelligence in the administration of justice' on at the Second Chamber of Parliament of the Netherlands, March 29 2018. Kamerstukken (Chamber documents) II 2018Z05199 .

²¹ M. van Opijnen, 'Legal(ly) linked data', *Computerrecht 2018/2* no. 55.

²² M. Scherer. 'Artificial Intelligence and Legal Decision-Making: The Wide Open? Study on the Example of International Arbitration' (May 22, 2019). *Queen Mary School of Law Legal Studies Research Paper No. 318/2019*. Available at SSRN: <https://ssrn.com/abstract=3392669>.

²³ F. Doshi-Velez et al. 'Accountability of AI under the law', arXiv: 1711.01134 [cs. AI] November 2017, last visited December 7 2019

to ascertain that the AI is still doing what it should, the system has to be designed in such a way that it can be easily and robustly adjusted, and continuous auditing is necessary.²⁴ And should such an audit be done within the judiciary, which is after all independent, or is an external audit appropriate? I am convinced that with an external audit the judiciary can be more transparent. That will generate more trust than just an internal audit.

7. Conclusions

What good can AI do for justice, and what does it take? This article explored what is known about AI in courts. Not all court work is complex custom work. Therefore the need for information technology is not the same for all cases. AI, after all also information technology, can therefore be useful in different ways for different types of cases. Some AI has already proven itself in practice. There is not (yet) any evidence that robots (are going to) judge. The standard of Article 6 ECHR prescribes a proper procedure. A lot of work is still needed before AI can comply with this standard of a proper procedure. Legal information needs to be more structured and endowed with meaning. Explaining how the result was reached is not feasible for the time being. AI is already able to help individuals, litigants and judges with organizing information. As the legal information is enriched, it can also help with advice and suggestions. Judges need to understand what the AI is doing in order to make adequate use of it. Courts must digitalize their information and provide it with legal interpretation to make it more usable for the AI. Courts must constantly monitor their AI for effectiveness and adjust it if necessary. For courts and court systems, largely set up and run as production organizations, this kind of development work is a huge new task.

²⁴ Alex Pentland, 'A Perspective on Legal Algorithms', MIT Computational Law Report 6 December 2019, p. 4-6