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Artificial Intelligence as a Tool to Improve the Administration of Justice?

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Abstract. Recently, technological development made a significant impact on the administration of justice. Lawyers, both legal practitioners and academics, can no longer afford to ignore the potential that the technology offers. The development of new fields in legal informatics, such as the applicability of Artificial Intelligence (AI) in law, opened up new opportunities which have hitherto been unthinkable. In the not too distant future, lawyers will need to answer the question whether AI can be engaged in the process of judicial decision making. On the other hand, the creation of a well-functioning artificial intelligence system which can carry out numerous adjudicating activities and reasoning processes is not the only requirement for using artificial intelligence in the automation process of judicial activities. Detailed analysis of its legal compliance is needed as well. This paper analyses the admissibility of using artificial intelligence tools in the judiciary and contains considerations on ethical aspects of AI application in judicial proceedings (whether an AI system is capable of taking over the role of a decision maker in judicial proceedings, thereby replacing, or supporting the judge). The research presented in the paper may provide an impulse to start a large-scale scientific discussion on the possibility and admissibility of AI application in the judicial system and may also be the basis for formulating proposals addressed to lawmakers and policymakers.

Keywords: artificial intelligence, judiciary, court proceedings, e-court

1. Introduction

The role of science is to gaze into the future, to anticipate the possibility of a particular phenomenon's occurrence, and sometimes even to adjust reality to human needs. For many years, the goal of scientists dealing with legal informatics and computerization of the judiciary has been to adjust the law to a constantly changing technological landscape and to create legal solutions

that meet the needs of modern society. For that purpose, there were numerous attempts to use computers, electronic devices, and other modern technologies as tools for facilitating the work of lawyers: starting with bringing the electronic payment order proceedings[1] into force, through providing online access to court judgements or computerization of public registers, and ending with the introduction of the electronic court report and e-filing systems before courts. The digitization of legal information and the creation of technology supporting the preparation of legal documents played a significant role in the development of computerization. Moreover, it is worth mentioning that the automation of simple and repeatable actions to eliminate unnecessary human labour has always been one of the goals of computerization.[2] But this automation did not interfere with the process of applying the law – the core element of every judicial proceeding and the element restricted only for human beings until now.

Taking the above into account, further developments of computerization in the field of judicial proceedings are worth considering. Constant development of artificial intelligence instruments allows improving the functioning of the administration of justice. One of the ideas for such improvement is the attempt to automate judicial proceedings by creating artificial intelligence systems with the ability to decide legal cases unassisted or supported by a human judge.

2. Artificial Intelligence

There is no widely accepted definition of *artificial intelligence*.[3] It is not the purpose of this paper to present every possible meaning of this term. Our aim is to analyse the admissibility of using current artificial intelligence tools in the judiciary. To achieve it, it is enough to indicate that 'artificial intelligence' consists of various automated problem-solving techniques in cases when these problems cannot be resolved with the use of simple algorithms. The main purpose of our research on artificial intelligence is – of course – to create a system equipped with the ability of independent thinking: perception, understanding, prediction, or drawing conclusions. Speaking of artificial intelligence, creators assume that the development of artificial minds with an intelligence equal to our own or even superior to ours will eventually take place. This objective has yet to be achieved. Nevertheless, the creators of artificial intelligence methods have reached many intermediate goals. Most of them can be used during judicial proceedings. For

1 E.g. in Poland the electronic payment order procedure was introduced to The Civil Procedure Code in the Act of 9 January 2009 on the Amendment to the Civil Procedure Code and other Acts (as published in the Official Journal in 2009, number 26, item 156); http://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20090260156 (accessed: 20.08.2019).

2 Gołaczyński 2010. 4.

3 See more: Russell–Norvig 2010. 1–2.

this reason, the paper deals only with 'specialized AI', i.e. artificial intelligence methods optimized around one specific task (opposite to 'general AI',[4] which is still considered to be in the future if it is attainable at all). Therefore, the 'artificial intelligence' referred to in the title of this paper shall be understood as any existing AI methods (procedures, applications, implementations) able to conduct the legal reasoning required to make a judgment in judicial proceedings. It includes but is not limited to symbolic approaches and sub-symbolic methods such as neural networks.

Due to the above, in the paper, only current achievements in the field of AI are analysed. As a result, the paper does not cover considerations on an autonomous AI judge which could be created in the future (a machine that could successfully perform any intellectual task that a human being – a human judge – can perform or a machine that is capable of experiencing consciousness). Despite this, one of the goals of the paper is to convince the reader that the application of AI in the judiciary does not have a futurological nature.

3. Research on AI & Law and Implementation of AI in the Legal Sphere

Successes of the creators of artificial intelligence have always stimulated the imagination of scientists, including lawyers. Research on relations between artificial intelligence and law has been the subject of scientists' interest since at least the 1970s.[5] For the first thirty years, science was interested mostly in knowledge-based AI systems. In the 1980s, the research was directed primarily at information extraction and information retrieval as well as the construction of so-called *expert systems* of various kinds. In the late 1980s and early 1990s, the emphasis was also placed on various logical formalisms (in particular deontic logics). Machine learning techniques began to be studied in the AI & Law community in the mid-2000s, and the data analytics started to be taken seriously in the early 2010s.[6]

In the beginning, all initiatives in the field of AI & Law were purely academic, but over time businesses took an interest in AI tools in legal practice. And as a result now, for several years, we have been dealing with a legal tech boom. In a legal sphere, AI systems are most frequently applied in advanced case-law search

4 Artificial general intelligence (AGI) refers to systems that exhibit intelligence comparable to the human one. Machines equipped with general AI have the capacity to understand or learn any intellectual task that a human being can.

5 Actually, papers on preliminary logic-based AI can be traced back to the early 1950s, but the phrase AI & Law started to be used in the 1970s.

6 Coenen–Bench-Capon 2017.

engines as assistance in drafting legal documents, in predictive analytics systems, as automated verification of legal compliance, or as legal aid chatbots. The use of AI systems to support the work of legal practitioners has initially been observed in the private sector. Let us mention a few examples:

1) *ROSS Intelligence* in the U.S.A. It is created by the IBM legal research service for U.S. law and is powered by artificial intelligence. ROSS is based on the now famous Watson – a question-answering computer system capable of answering questions posed in natural language, developed in IBM's DeepQA project.[7] Watson is well-known for winning the quiz show Jeopardy! while competing against human champions of this show.[8]

2) *Predictice* in France. It is a predictive analytics tool for estimating a success rate of court proceedings. Authors of Predictice claim that the system can analyse one million judicial decisions within 1 second, and in the last two years they started cooperation with over four hundred lawyers.[9]

3) *Luminance* in the UK. It is a machine learning system which improves legal analytics by reading, understanding, and learning from analysed documents. Luminance was launched in 2016, and since then it has been said to be used by over 14 of the global TOP 100 law firms.[10] Its pattern recognition technology, advanced statistical probability analysis, supervised and unsupervised machine learning methods are said to allow identifying similarities, differences, and anomalies at all levels of the review of legal documents; thus, the system can be used in, e.g., due diligence or compliance analysis.

Recently, the possibilities offered by the AI systems have been attracting increasing attention from governments and public authorities. As an example, a Brazilian project-in-progress at the Brazilian Supreme Court, called VICTOR, which was developed in partnership with the University of Brasília, aims to support the Brazilian Supreme Court by providing analysis of the cases that reach the Court, using document analysis and natural language processing tools.[11] In Europe, Latvia is exploring the possibilities for the use of the machine learning systems in the administration of justice.[12] Also, the Estonian Ministry of Justice designed a 'robot judge' that can adjudicate small claims disputes of less than €7,000. Officials hope the system can clear a backlog of cases for judges and court clerks.[13]

7 https://rossintelligence.com/ (accessed: 20.08.2019).
8 https://www.youtube.com/watch?v=P18EdAKuC1U (accessed: 20.08.2019).
9 https://predictice.com/ (accessed: 20.08.2019).
10 https://www.luminance.com/ (accessed: 20.08.2019).
11 Da Silva et al. 2018. 7.
12 Appendix I to the European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and their environment adopted by the Council of Europe European Commission for the efficiency of justice (CEPEJ) during its 31st plenary meeting, Strasbourg, 3–4 December 2018. 14.
13 https://www.wired.com/story/can-ai-be-fair-judge-court-estonia-thinks-so/ (accessed: 20.08.2019).

But the public use of AI systems had varying degrees of success; some of the most known – and fairly controversial ones – include the HART (Harm Assessment Risk Tool): the AI-based technology created to help the UK police makes custodial decisions based on the recidivism risk assessment – it has been described as reinforcing existing biases. Similarly, COMPAS, the US Correctional Offender Management Profiling for Alternative Sanctions also presented this problem. This risk assessment algorithm was created and used to predict potential hotspots of violent crime and assess the risk of recidivism. In simple words, COMPAS was used to forecast which criminals are most likely to re-offend. COMPAS was highly efficient, but it ran a high risk of racial profiling and raised questions about non-discrimination. Through COMPAS, black offenders were seen almost twice as likely as white offenders to be labelled as posing a higher risk of recidivism but did not re-offend. The COMPAS software produced the opposite results with white offenders: despite their criminal history displaying a higher probability of re-offending, they were more likely to be labelled as a lower risk than black offenders.[14]

4. Polish Perspective: The Need for Change

The rapid development of AI techniques today allows us to create systems which may be able to support the judiciary (at least in some of the proceedings). The application of AI in the field of justice has the potential to revolutionize it by, inter alia: accelerating judicial proceedings, unifying case-law, widening access to court, and increasing cost-efficiency. It is, therefore, worth resenting the capabilities of the systems automating the civil proceedings (on the example of Poland).

Currently in Poland, all judicial proceedings are performed by human judges without any support of AI systems. On 4 January 2010, the electronic court (the e-court)[15] was inaugurated. The e-court considers pecuniary civil claims under an electronic payment order procedure. The claimant communicates with the e-court exclusively electronically, via the Internet, employing a system dedicated to the proceedings. The payment order (one of the types of judicial judgements in the Polish legal system) is issued by a judge or a court referent and then automatically

14 The NGO ProPublica analysed COMPAS assessments and published an investigation claiming that the algorithm was biased (https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing – accessed: 20.08.2019). The NGO Big Brother Watch in the UK criticized the HART system for 'unfair and inaccurate decisions, and a 'postcode lottery' of justice, reinforcing existing biases and inequality' (https://bigbrotherwatch.org.uk/wp-content/uploads/2018/07/Big-Brother-Watch-evidence-Policing-for-the-future-inquiry.pdf – accessed: 20.08.2019).

15 The 16th Civil Division of the Lublin Regional Court (now the 6th Civil Division of the Lublin-West Regional Court in Lublin).

served on the claimant, utilizing the electronic system, whereas the service of the lawsuit and the payment order on the defendant takes place in the traditional way (a hard copy of the payment order is delivered by post). The payment orders are issued only based on the circumstances indicated by the claimant in a statement of claim. It is important that the claimant must refer in the statement of claim to evidence in support of his arguments. However, such evidence need not be attached to the statement of claim. It means that during e-court proceedings the claimant is not required (as in traditional proceedings) to prove (with documents) the circumstances justifying their claim. Additionally, these circumstances are not verified by the judge with relation to the viewpoint of the defendant as the defendant does not participate in e-court proceedings. The defendant learns about the complaint when he is served with the payment order, together with the statement of claim. If the defendant disagrees with the arguments of the claimant expressed to the e-court in the payment order, they have the right to file a statement of opposition. The statement of opposition revokes the payment order. As a result, the case starts over from the beginning, but according to the rules of adversarial litigation – with equal participation of the claimant and the defendant. The rate at which the payment orders rendered by the e-court are opposed is between 18% and 26%.[16]

In the e-court, 8 judges, 64 court referents, and 55 external court referents (jointly 127 people)[17] cooperate in the rendering of decisions. According to the data published by the Polish Ministry of Justice, only in the first half of 2018, 1,334,284 civil cases were resolved by the e-court. Assuming an 8-hour working time of adjudicators[18] (as a rule, this is the maximum daily working time in the Polish legal system), by use of simple arithmetic, we can easily conclude that the average time for resolving a civil case in the e-court was as little as 5.67 minutes (and in 2017 the average time was 4.96 minutes). Of note, the total number of civil cases resolved by civil courts in Poland in the first half of 2018 was 6,530,208, while the average processing time of a civil case in the non-electronic writ of payment proceedings in Polish civil courts was 3.8 months.[19]

The above data shows that 20% of civil cases in Poland are currently examined in the e-court in electronic proceedings. The time of examination of a single civil case and the percentage at which the payment orders rendered are opposed prove that these cases do not require the increased activity of a judge. It seems that the electronic payment order proceedings may constitute a perfect ground for the implementation of activities in the field of AI and law. This would also make possible the transfer of the 127 judges adjudicating currently in the e-court to more

16 Data for 2010 – 2013 gathered by Łukasz Goździaszek (Gołaczyński–Mączyńska 2017. 213, 224– 228).
17 https://www.e-sad.gov.pl/Subpage.aspx?page_id=44 (accessed: 20.08.2019).
18 124 working days (992 working hours) passed from 1 January until 30 June 2018.
19 https://isws.ms.gov.pl/pl/baza-statystyczna/publikacje/download,2779,0.html (accessed: 20.08.2019).

complicated civil cases, in which they could entirely use their vast competences, their knowledge, and experience.

The analysis of statistical data leads to the conclusion that some types of civil proceedings in Poland are ready for full automation from a technological and a functional point of view. However, a question arises as to whether the binding legal framework of civil proceedings allows such automation. It turns out that questions about the admissibility of replacing a judge with a computer program are not completely meaningless and – even today – do not have a purely hypothetical aspect.

5. Machine + Human?

The information on algorithmic bias (as in the case of COMPAS and HART) can be surprising. Technology used to be regarded as neutral and impartial, and decision support systems powered by AI as a great tool to augment human judgement and reduce both conscious and unconscious biases. But from the perspective of machine learning algorithms, this opinion can be seen as being outdated. Data-driven decision making may reflect and amplify existing cultural prejudice and inequality.

The above-mentioned examples show that the use of AI in the justice system may present not only great advantages but also serious weaknesses. Of course, efficiency is a clear advantage of the use of AI in the judiciary, but it cannot overrule other aspects (such as human rights or ethical considerations). One of the ideas for surmounting the obstacles connected with the use of AI in judicial proceedings may be using AI systems not instead of human judges but in support of them (human judges possess wisdom and experience which could overcome AI's weaknesses). Taking the above into account, two possible models of AI application in the judiciary can be identified:

(1) use of AI tools to create a system which can adjudicate cases unassisted (in such cases, the system would adjudicate instead of the judge),

(2) use of AI tools to create a support system for a judge (in this model, the system would only support the judge by finding relevant facts, analysing the case-law or reviewing the legal literature, and, finally, suggesting a decision to the judge).

At first glance, most people regard the second model (humans supported by machines) as more desirable. Psychological research, however, shows that despite appearances the use of AI as a support tool can be potentially dangerous too. It might seem that this model is neutral as the decision-making process will remain in human hands. However, it turns out that using AI only in support of a judge may have the same results as the full automation of judicial proceedings. This

results from the psychological consequences of the 'persuasiveness' of decision support systems.

J. J. Dijkstra undertook a psychological experiment examining how lawyers respond to AI-generated solutions while resolving a case.[20] There were two groups of participating lawyers, both were resolving legal cases: the first group with the support of the AI system and the second one by themselves. The experiment has shown that lawyers:

— have difficulties with the assessment of the accuracy of the automatically generated advice as they focus on the argumentation presented in favour of the solution by the system, while ignoring alternative solutions;

— trust the system too much, and as a result they carelessly accept the system's advice (including incorrect solutions inserted on purpose into the experiment by the experimenters);

— in cases in which they are being advised by two entities (the system and another human), participants considered the system's advice 'to be more objective and rational than the human one' (even when the human advice was essentially identical to that provided by the system).

As a result, the participants performing legal reasoning without the support of the system achieved better results than the participants using the support system. The participants' conduct resulted from a certain psychological reaction – a desire to avoid excessive effort when processing information. The research proves that people use computer systems to evade the decision-making process and not to increase the quality of their own decisions.[21] It is therefore possible that the use of AI-generated support in the judiciary might not improve adjudication or even be detrimental to the quality of decisions rendered. Reliance on AI support systems may result in decisions regarding legal issues of citizens being made by the computer program – despite the false impression that all the guarantees supposedly provided by human adjudication are kept in place. Ignoring this fact in the legal analysis of using AI in the judiciary could bring our research and the potential application of AI in the judiciary to the level of methodological and scientific carelessness.

The presented research indicates that although there are two models for the automation of judicial proceedings (the model of replacing the human with the machine and the model of the AI system supporting the human judge), the analysis of their legal admissibility is convergent in some respect. In both cases, the effect of their functioning is similar: it is the system, not the human, who is the author of the judgment in each legal case. This circumstance was also presented in the publication with the title *Algorithms and Human Rights – Study on the Human Rights Dimensions of Automated Data Processing Techniques and Possible*

20 Dijkstra 2001. 119–128.

21 Todd–Benbasat 1994.

Regulatory Implications, prepared in March 2018 by the Committee of Experts on Internet Intermediaries (MSI-NET) of the Council of Europe:

> [g]iven the pressure of high caseloads and insufficient resources from which most judiciaries suffer, there is a danger that support systems based on artificial intelligence are inappropriately used by judges to 'delegate' decisions to technological systems that were not developed for that purpose and are perceived as being more 'objective' even when this is not the case. Great care should, therefore, be taken to assess what such systems can deliver and under what conditions that may be used in order not to jeopardise the right to a fair trial.[22]

6. Conclusions

Before any properly functioning 'AI judge' is created, consequences revealing the full picture of potential advantages and risks of such evolution in civil proceedings needs to be reliably examined. Both full automation of legal proceedings via artificial intelligence systems taking over all functions performed by the judge and the use of AI tools as the judge's support system must remain in line with the democratic rule of law and follow provisions shaping the content and form of judicial procedure. Without the detailed analysis of the compliance of AI implementations with national, European, and international legal orders, it is completely useless to thoughtlessly implement new technological solutions or raise hasty hypotheses about the inevitability of replacing the lawyers with artificial intelligence.

My future research will include the assessment of whether in judicial proceedings conducted with the support of AI all leading principles characterizing the content and form of court procedures are respected. It will allow the evaluation of the possibility of implementing AI tools into judicial procedures:

1) without the necessity to amend the provisions of law,

2) by partial or substantial changes in the legislation (including constitutional regulations), and

3) by creating brand new fully automated (but non-judicial) solutions for settling legal disputes.

The research undertaken is aimed at complementing the efforts of AI and law researchers (focused on modelling or building artificial intelligence systems into

22 The Council of Europe Study DGI(2017)12 'Algorithms and Human Rights – Study on the Human Rights Dimensions of Automated Data Processing Techniques (in particular algorithms) and Possible Regulatory Implications', prepared in March 2018 by the Committee of Experts on Internet Intermediaries (MSI-NET), March 2018 (https://rm.coe.int/algorithms-and-human-rights-en-rev/16807956b5, accessed: 20.08.2019), 8, 12.

the work of lawyers) by carrying out reliable legal and interdisciplinary analyses of the admissibility of using AI in the judiciary.

Finally, it is worth highlighting that if the technological development characterized by the creation of a well-functioning automatic legal adjudication system will get ahead of the analysis of the compatibility of such solutions with law or the assessment of the level of social acceptance for the use of artificial intelligence injustice, the consequences may be difficult to predict.

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