


ARTICLE

Artificial Intelligence and Innovation in Brazilian Justice

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Abstract

Artificial intelligence can bring benefits to legal practice, providing agility and precision. It can allow judicial decisions to be the result of the combination of algorithms, enabling the development of a system based on machine learning. This article seeks to demonstrate the current state of the use of artificial intelligence in the Brazilian justice system with the impact of the development of a deep learning system, merely the result of the automation of textual analyses of legal cases, which now serve as models. Reflection is more than necessary given the ethical issues that can arise in view of the inherent precepts that are usually impregnated in the judicial function. Civil servants, lawyers, prosecutors and judges should be guided by a pertinent regulation of new technologies and reflect on whether judicial decisions would be the result of human thinking or not, in addition to the risk that they can carry when the models are biased, in good or bad faith, due to erroneous classification or misinformation in the system.

Keywords artificial intelligence; Brazilian judiciary; issues; uses; benefits

INTRODUCTION

Artificial intelligence (AI) is a tool currently available for a world connected and eager for quick and less costly solutions. When applied to justice, several benefits can be obtained given the high number of repeated cases, in the cases in which one is faced with merely economic discussions, in civil cases. Even if the debate is in the criminal area, the benefits can also be obtained by applying to similar cases, notably in the admission of appeals, with a willingness to expand their skills today. The article discusses AI, notably the Brazilian experience of justice, its challenges and its impacts on justice. The analysis requires reflection on the judicial function, given the need for institutional and normative improvement, not just the mere regulation of AI applied to justice.

THE BRAZILIAN EXPERIENCE

VICTOR

Named VICTOR, the AI tool is the result of the initiative of the Brazilian Supreme Court (STF), under the administration of Justice Cármen Lúcia, to know and deepen the discussion on the applications of AI in the judiciary. It takes care of the largest and most complex AI project of the judiciary and, perhaps, of the entire Brazilian public administration.

In the initial phase, VICTOR can read all the extraordinary appeals that go up to the STF and identify which ones are linked to certain topics of general repercussion. This action represents only a small but important part of the initial stage of processing appeals in the Court, but it involves a high complexity level in machine learning.

VICTOR is in the phase of building its neural networks to learn from thousands of decisions already made in the STF regarding the application of several themes of general repercussion. The objective is to achieve high levels of accuracy, which is measuring the program's effectiveness – to assist the servers in their analysis.

The project is being developed in partnership with the University of Brasília (UnB; federal university), making it the most relevant Brazilian academic project related to AI application in law. The UnB has put researchers, professors and high-level students on the team, many with academic backgrounds abroad, from three law and technology research centers.

The object of research and development of this project is to apply machine learning methods to use its potentials in pattern recognition in legal processes related to judgments of general repercussions of the STF. Pragmatically, it aims to develop a system composed of deep machine learning algorithms enabling the automation of textual analyses of these legal processes. This will be done by creating machine learning models for analyzing the STF's resources regarding the most recurring general repercussion themes and integrating the Court's solutions to assist the servers responsible for analyzing the resources received and identifying related topics (Grupo de Pesquisa e Aprendizado de Máquina da Universidade de Brasília (GPAM 2021).

VICTOR will not be limited to its initial objective. Like any technology, its growth can become exponential, and several ideas for expanding its skills have already been discussed. The initial objective is to increase the speed of processing cases through technology to assist the STF's work. The machine does not decide, does not judge; this is historically a human activity. It is being trained to act in layers of process organization to increase judicial evaluation efficiency and speed.

The researchers and the Court intend that all courts in Brazil can use VICTOR to pre-process extraordinary appeals right after they are filed (these appeals are brought against court judgments), which aims to anticipate the admissibility judgment addressing issues with general repercussions, the first obstacle for an appeal to reach the STF. As a result, it may impact the reduction of this phase by two or more years. VICTOR is promising, and its field of application tends to expand more and more.

The name of the project, VICTOR, is a clear and well-deserved tribute to Victor Nunes Leal, former Justice of the Brazilian STF from 1960 to 1969, author of the work *Coronelismo, Enxada e Voto* and mainly responsible for the systematization

of the jurisprudence of the STF in judicial *sumula* (synopsis),¹ which facilitated the application of judicial precedents to appeals, basically what will be done by VICTOR (Supremo Tribunal Federal 2021).

Among the robot's functions is to separate and classify the procedural parts. At this point, the machine can do a job in 5 seconds that was previously done by servers in approximately 30 minutes, representing great savings in allocating working time for specialized servers.

Another function performed by the robot is to identify the most common themes of general repercussion. The robot assists in resolving about 10,000 extraordinary appeals that reach the STF per year.

Justice Fux states that "the machine does not decide, nor does it judge. After all, this is human activity. The project's objective is for trained machines to act in layers of organization of processes, helping those responsible for analyzing resources to identify related topics more clearly and consistently; that is, the intention is to assist and not replace the servers." (Fux 2019)

Rafael Moraes Moura and Amanda Pupo consider that VICTOR will expedite "the proceedings in the highest Court – which has eleven magistrates – based on the reading of all extraordinary appeals and identification of those linked to topics of general repercussion" (Moraes Moura and Pupo 2018).

VICTOR identifies which extraordinary appeals are linked to certain themes of general repercussion, representing a small but important initial phase of resource processing and involving a high level of complexity in machine learning.

What is expected is that the system will achieve high levels of accuracy, which is the measure of the system's effectiveness to assist employees in their analysis.

The result obtained with the system makes it possible to resort to one of the justices for review, which safeguards the need for control and personal assessment of the judgments.

There is another important example. In the Judiciary of Pernambuco, an AI system examines new tax enforcement actions and decides which ones are in accordance with procedural rules and which ones are dismissed due to the statute of limitations.

According to judge José Faustino Macêdo, of the Trial Court of Tax Enforcement Cases of Recife, in the daily routine, the system called ELIS is used, which uses AI in the decision-making process, and which has zero cost for the Court, since servers of the Court itself developed it. For the Magistrate, "ELIS in a way decides. It says if the case is OK or not and puts it in my box for me to sign. It is like replacing me. Now, I do not say that she replaces me because I have to stop, login, and look, check if it is right." (Ferreira 2020)

It is important to mention that there is always an express mention about using AI to allow transparency in the Court's proceedings. The AI system in the Justice of Pernambuco was created in 2018 and fed with data from the approximately 450,000 tax foreclosures underway at the time in Recife, mainly related to the non-payment of tax – the property tax IPTU and the tax applicable to any received service (ISS).

¹*Sumula vinculante* is "a collection of rules of law that have become firmly settled by decisions of the Supreme Federal Tribunal. Its provisions are summarily cited to dispose of those issues in future litigation" (Rosenn 1984:34). It can be considered the equivalent of "binding precedent" in the Common Law system (Rosenn 1984).

SOCRATES

According to the Court, at the Superior Court of Justice (STJ), the AI system received the name SOCRATES and was “trained” using data from 300,000 court decisions. AI “reads” new cases and groups those with similar issues together so that they can be judged in blocks. The software is also used in screening to bar the entry of some types of cases that are unrelated to the court’s duties.

This digital barrier is important because the Brazilian Justice has created a category called repetitive demand, which applies to the entire process. Its theme is a legal issue common to thousands of other cases. These are legal issues that involve millions of people, such as readjustments in health plans or indexes for the correction of public rates.

In this situation, identifying an appeal as a repetitive demand causes it to be returned to the court of origin. When the STJ decides on the matter, each state court will apply the judicial decision to each case.

The STJ wants to go further in using technology and reports that the SOCRATES 2 project is already underway. The idea is to move forward so that the AI will soon provide the judges in an organized manner with all the elements necessary for the judgment of their cases, such as the description of the parties’ theses and the major decisions already taken by the Court concerning the subject of the case (Superior Tribunal de Justiça 2020).

SIGMA

The Federal Appeals Court for the 3rd Region (TRF3) started, on July 3, 2020, implementing the AI program called SIGMA to assist in preparing reports, decisions and judgments in the Electronic Judicial Process (PJe) system.

One of the most advanced AI systems in the entire Brazilian judiciary, SIGMA was created in collaboration with several federal justice bodies of the 3rd Region: the Vice-Presidency of the TRF3, the Secretariat of Information Technology (SETI), the Laboratory of Applied Artificial Intelligence of the 3rd Region (LIAA-3R) and the Electronic Judicial Process Systems Division (DSPE).

The tool was already being used, on an experimental basis, by the Office of the Vice-Presidency to improve the flow of cases underway and to speed up the judicial provision. It started with the centralization of draft models in the AI system for conformity and appeal admissibility judgments.

SIGMA is available for all TRF3 chambers and will also be extended nationally to the Electronic Justice Trial (PJe) system (TRF3 2020).²

The use of AI in the judiciary was recently regulated by the National Council of Justice (CNJ) and will be done through Synapses, a virtual platform that will centralize technology initiatives.

²SIGMA is an intelligent system for the use of models for the production of decision drafts. The program sorts stored texts, comparing information extracted from procedural documents with how each unit uses its models. AI generates inputs for the report’s writing. Observing the procedural documents suggests models already used for the same type of process, accelerating magistrates and civil servants’ productivity to avoid conflicting decisions. The program facilitates and accelerates the search in the collection of the justice body. It uses information technology tools, which, unlike conventional systems, can perform tasks faster than human reasoning.

According to Decree (Portaria) CNJ 271, of December 4, 2020, the agencies' use of AI occurs through this common platform, resulting from a partnership between the CNJ and the Court of Justice of Rondônia (TJ-RO). The use of the centralized repository encourages collaboration, transparency, improvement and dissemination of judiciary projects.

The AI models adopted on the platform to assist the judiciary in presenting analyses, suggestions, or content must adopt measures that enable the tracking and auditing predictions made in their application flow. To this end, Synapses provides automated registration of the learning and consultation process.

The models released for production will be available for consultation on the CNJ portal, containing the description, accuracy, use case and Uniform Research Locator (URL) of the Application Program Interface (API) for integration. The judicial systems that use the models must return to the API registered on the platform information on possible disagreement regarding the predictions' use. The platform administrators will create, change, and extinguish indicators at the participants' suggestions regarding their application and benefits.

The AI platform is available 24 hours a day, uninterruptedly, except for system maintenance periods, which will be previously scheduled and announced on the CNJ portal (Conselho Nacional de Justiça 2020).

CHALLENGES OF ARTIFICIAL INTELLIGENCE SYSTEMS

AI systems bring several benefits to law practice, especially concerning the automation of repetitive activities, providing greater agility and precision. However, the impacts that new technologies have on society also raise a series of ethical–legal questions in the regulatory field.

AI would be regulated in the wake of what the Brazilian Congress is trying to do with Bill No. 5.691 of 2019, authored by Senator Styvenson Valentim and whose current rapporteur is Senator Rogério Carvalho. This project aims to stimulate the formation of a favorable environment for the development of technologies in AI, creating, with public consultation, a true national policy for the theme (Senado Federal 2019).

Strongly driven by rapid technological development, AI is increasingly present in people's lives, corporations and governments, being considered a new technological frontier with the potential to leverage new growth fronts. According to research by the consulting firm Accenture, this technology could double annual economic growth rates by 2035. The prediction is that AI will increase productivity by up to 40% and allow people to optimize their time. Due to its strategic importance for economic and social development, the proposition aimed at instituting the National Artificial Intelligence Policy in Brazil is meant to articulate efforts and stimulate the formation of an environment favorable to implanting a technological ecosystem that incorporates this new growth factor.

According to the project mentioned above, the principles of the National Artificial Intelligence Policy are: I, inclusive and sustainable development; II, respect for ethics, human rights, democratic values and diversity; III, protection of privacy and personal data; and IV, transparency, security and reliability (Article 2).

In turn, there is a great ethical concern and the valorization of human work in the guidelines of the National Artificial Intelligence Policy, like, among others: I, establishment of ethical standards for the use of AI; II, promoting inclusive and sustainable growth; III, improving the quality and efficiency of services offered to the population; IV, stimulating public and private investments in research and development of AI; V, promoting cooperation and interaction between public entities, between the public and private sectors and between companies; VI, development of strategies to increase the exchange of information and collaboration between specialists and national and foreign institutions; VII, stimulating research and innovation activities by science, technology and innovation institutions; VIII, development of mechanisms to foster innovation and digital entrepreneurship, with tax incentives aimed at companies that invest in research and innovation; IX, training of professionals in the field of technology in AI; X, valorization of human work; and XI, promoting a fair digital transition with the mitigation of the adverse consequences of AI for the labor market and labor relations (Article 3).

It also determines that AI solutions must: I, respect people's autonomy; II, preserve people's intimacy and privacy; III, preserve the bonds of solidarity between peoples and different generations; IV, be intelligible, justifiable and accessible; V, be open to democratic scrutiny and allow debate and control by the population; VI, be compatible with the maintenance of social and cultural diversity and not restrict personal lifestyle choices; VII, contain security and protection tools that allow human intervention whenever necessary; VIII, provide traceable decisions and without discriminatory or prejudiced bias; and IX, follow governance standards that guarantee the continuous management and mitigation of the potential risks of technology (Article 4).

Finally, the referred project establishes as instruments of the National Artificial Intelligence Policy: I, transversal programs developed in partnership with public agencies and private institutions; II, sectorial funds for science, technology and innovation; and III, agreements for the development of social technologies (Article 5), providing that the Federal Government and public entities with legal personality may enter into agreements with private or public entities, national or international, to obtain resources technical, human or financial designed to support and strengthen the National Artificial Intelligence Policy (Article 6), just what the Brazilian STF did when implementing VICTOR in partnership with the UnB.

In the view of Justice Luiz Fux, of the STF, the study of AI in law is divided into three parts: the scope of the application of AI in the legal world; ethical challenges and problems related to the regulation of these new technologies; and successful examples of the application of this technology in the Brazilian judiciary. Regarding the first topic, in the wake of the points raised by Justice Fux, it is important to verify how AI has been applied in the legal world, such as the robot lawyer Ross, created by IBM and used by one of the largest law firms in the United States, Baker & Hostetler. "The Ross robot will analyze relevant passages of cases or laws so that lawyers do not have to spend more time than necessary finding the applicable legislation and jurisprudence on the subject." (Fux 2019)

The fact is that AI and machine learning are already imposing changes in market practices and the provision of services in some parts of the legal sector. However, the

role of efficiency-oriented solutions with AI technology – and the legal space of technology in general – is still evolving in the legal sector.

The review of contracts would also be another function of AI highlighted by Justice Fux. The technology has also been applied in other areas, such as family law. As an example, there is a platform that helps couples prepare all the documents required for divorce.

Regarding the issue of ethics and fundamental rights, the Justice also explored the regulatory challenges for AI in law, remembering that, in recent years, much has been discussed about the need to regulate new technologies.

He presents four areas that have raised questions of an ethical–legal nature: (i) civil liability for autonomous acts of machinery; (ii) the protection of copyright and the production of works by machines; (iii) the notion of due process and isonomy because of possible algorithmic biases; (iv) the right to privacy and the use of personal data by AI systems.

He adds that there is “no doubt that the more autonomous the robot is, the less it can be seen as a simple instrument in the hands of other players, such as the manufacturer, the operator, the owner, the user, and others, when talking about civil liability” (Fux 2019).

As for copyright, Justice Fux points out that practices such as painting or composing music and texts, which were the exclusive fruit of the human intellect, have increasingly been delegated to computers. In these cases, he asks, to whom does the copyright of these works belong?

In Brazil, he explains that only the individual who produced it can be considered the author of a work according to the Copyright Law. Thus, the robot could not be the author of these.

The judiciary also uses algorithms in the United States to calculate the likelihood of an individual being a repeat offender and suggesting what type of sentence and supervision he should receive.

When judging this software’s use, former US Attorney General Eric Holder said that studies have been increasingly concerned with algorithmic biases in AI systems, especially concerning race. For Luiz Fux, “given that biases present themselves as an intrinsic characteristic of human thinking, it can be concluded, likewise, that an algorithm created by biased human beings will probably suffer from the same ‘evil,’ not on purpose, but due to the information provided to the system. In this way, so-called algorithmic biases arise when machines behave in ways that reflect the implicit human values involved in programming, thus skewing the results” (Fux 2019).

An important fact about ethics is that programs can perceive and record our behavior patterns on the Internet (what we research, what we buy, and our interests). This ability, known as pattern recognition, makes the boundary between public and private life increasingly blurred, and we often end up sharing information without consent.

Brazil enacted Law No. 13,709, of August 14, 2018 (General Data Protection Law), which provides for the processing of personal data, including in digital media, by a natural person or by a legal person under public or private law, intending to protect the fundamental rights of freedom and privacy and the free development of

the personality of the natural person. Thus, the use of AI should be challenged to limit and protect personal data.

In the justice system specifically, AI can radically influence how criminal and civil cases are heard and decided – although there are many questions about their eventual application and the need to consider the ethical implications of using this technology.

CONCLUSIONS

Brazil's STF initiated the implementation of AI to solve the admissibility of appeals in repetitive subjects, such as using the program VICTOR, with the possibility of resorting to one of the justices of that Court in case of disagreement. This implementation has taken place without a law authorizing it. This is why it is important to create an environment suitable for using AI with the required precautions. The optimization of time, reducing the number of public servants needed for basic tasks, and shifting them to the most relevant ones, are advantages already felt. From that experience, others will follow.

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TRANSLATED ABSTRACTS

Abstracto

La inteligencia artificial puede aportar beneficios a la práctica jurídica, aportando agilidad y precisión. Puede permitir que las decisiones judiciales sean el resultado de la combinación de algoritmos, permitiendo el desarrollo de un sistema basado en el aprendizaje automático. Este artículo busca demostrar el estado actual del uso de la inteligencia artificial en el Sistema de Justicia Brasileño con el impacto del desarrollo de un sistema de aprendizaje profundo, meramente resultado de la automatización de análisis textuales de casos legales, que ahora sirven como modelos. La reflexión es más que necesaria dadas las cuestiones éticas que pueden surgir ante los preceptos inherentes que suelen estar impregnados en la función judicial. Los funcionarios, abogados, fiscales y jueces deben guiarse por una normativa pertinente de las nuevas tecnologías y reflexionar sobre si las decisiones judiciales serían el resultado del pensamiento humano o no, además del riesgo que pueden acarrear cuando los modelos son sesgados, en de buena o mala fe, debido a la clasificación errónea o desinformación al sistema.

Palabras clave inteligencia artificial; poder judicial brasileño; problemas; usos; beneficios

Abstrait

L'intelligence artificielle peut apporter des avantages à la pratique juridique, en apportant agilité et précision. Elle peut permettre aux décisions judiciaires d'être le résultat de la combinaison d'algorithmes, permettant le développement d'un système basé sur l'apprentissage automatique. Cet article cherche à démontrer l'état actuel de l'utilisation de l'intelligence artificielle dans le Système Judiciaire Brésilien avec l'impact du développement d'un système d'apprentissage profond, simplement le résultat de l'automatisation des analyses textuelles des affaires juridiques, qui servent désormais de modèles. La réflexion est plus que nécessaire étant donné les problèmes éthiques qui peuvent se poser compte tenu des préceptes inhérents généralement imprégnés de la fonction judiciaire. Les fonctionnaires, les avocats, les procureurs et les juges devraient être guidés par une réglementation pertinente des nouvelles technologies et réfléchir à la question de savoir si les décisions judiciaires seraient le résultat d'une réflexion humaine ou non, en plus du risque qu'elles peuvent comporter lorsque les modèles sont biaisés, en bonne ou mauvaise foi, en raison de la classification erronée ou de la désinformation du système.

Mots clés intelligence artificielle; pouvoir judiciaire brésilien; enjeux; utilisations; avantages

抽象的

人工智能可以为法律实践带来好处，并提供敏捷性和准确性。它可以使司法判决成为算法组合的结果，从而可以开发基于机器学习的系统。本文旨在通过深度学习系统的发展来证明巴西司法系统中人工智能的使用现状，而这仅仅是对法律案例进行文本分析的自动化的结果，而该案例现在已成为模型。考虑到通常会渗透到司法职能中的内在戒律，考虑到可能出现的道德问题，思考是不必要的。公务员，律师，检察官和法官应受有关新技术法规的指导，并反思司法裁决是否将是人类思想的结果，除了在模型有偏见时他们可能承担的风险之外，归因于系统的错误分类或错误信息。

关键词 人工智能 - 巴西司法机构 - 问题 - 用途 - 利益

خلاصة

يمكن للذكاء الاصطناعي أن يجلب فوائد للممارسة القانونية، ويوفر الحرونة والدقة. يمكن أن تسمح للقرارات القضائية بأن تكون نتيجـة مزيـج من الخوارزميات، مما يتيح تطوير نظام يعتمد على التعلم الآلي. تسعى هذه المقالة إلى إظهار الحالة الحالية لاستخدام الذكاء الاصطناعي في نظام العدالة البرازيلي مع تأثير تطوير نظام التعلم العميق، مجرد نتيجة لأنتمتة التحليلات النصية للقضايا القانونية، والتي تعمل الآن كنماذج. يعتبر التامل أكثر من ضروري بالنظر إلى القضايا الأخلاقية التي يمكن أن تنشأ في ضوء المبادئ المتأصلة التي عادة ما تكون مشربة في الوظيفة القضائية. يجب أن يسترشد موظفو الخدمة المدنية والمحامون والمدعون العامون والقضاة باللوائح ذات الصلة للتحديات الجديدة والتفكير فيما إذا كانت القرارات القضائية ستكون نتيجـة للتفكير البشري أم لا، بالإضافة إلى المخاطر التي يمكن أن يتحملها عندما تكون النماذج متحيزة حسن النية أو سوء النية بسبب التصنيف الخاطئ أو المدخلات الخاطئة للنظام.

الكلمات الدالة الذكاء الاصطناعي القضاء البرازيلي القضايا الاستخدامات الفوائد

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