

## ARTIFICIAL INTELLIGENCE: REFLECTIONS ABOUT EMERGING REGULATORY FRAMEWORKS ON ITS APPLICATIONS – BRAZILIAN CASE AND INTERNATIONAL TRENDS\*

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**Abstract:** The article approaches the repercussions between Law and Artificial Intelligence (AI), setting as a general objective the analysis of possible impacts of emerging regulations on AI's potential application and exploration and the indication of trends in the regramming of the subject, focusing on Brazil. To achieve the purpose of this work, the text investigates AI applications in different domains and European Union's efforts preceding the regulation of AI in the economic bloc, examines Brazilian Senate bills no. 5051/2019 and 5691/2019, and bill no. 21/2020 of the Brazilian House of Representatives. In order to highlight the relevance of appropriate normative rules to improve the use of AI and to increase the reliability of its systems, bibliographic surveys are carried out and exploratory and qualitative research is used, taking advantage of national and international normative sources. The article should conclude that the legal texts need to be adapted as the Artificial Intelligence systems progress.

\* This article consists of a translation with adaptations for publication in Portuguese in periodical.

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Recebido em 20/06/2020  
Aprovado em 05/07/2020

**Keywords:** Artificial Intelligence. AI applications. Draft bills. AI regulatory, Brazil.

**Resumo:** O artigo trata das repercussões entre Direito e Inteligência Artificial (IA), estabelecendo como objetivo geral a análise de possíveis impactos de regulamentações emergentes sobre as potenciais aplicação e exploração da IA e o apontamento de tendências de regramento da matéria, destacando o exemplo do Brasil. Para atingir o objetivo deste trabalho, o texto investiga aplicações de IA em diferentes domínios e esforços da União Europeia antes da regulamentação da IA no bloco econômico, examina os projetos de lei do Senado brasileiro no. 5051/2019 e 5691/2019, e o projeto de lei nº 21/2020 da Câmara dos Deputados do Brasil. A fim de destacar a relevância de regras normativas adequadas para melhorar o uso da IA e para aumentar a confiabilidade de seus sistemas, são realizados levantamentos bibliográficos e utilizadas pesquisas exploratórias e qualitativas, aproveitando fontes normativas nacionais e internacionais. O artigo deve concluir pela necessidade de adaptação dos textos legais à medida que os sistemas de Inteligência Artificial avançam.

**Palavras-chave:** Inteligência Artificial. Aplicações da IA. Projetos de lei. Regulamentação da IA, Brasil.

## Introduction

The increasing number of available data and the technologies that use them have caused many changes in society. In this scenario, Artificial Intelligence (AI) resources have been very useful in facilitating, improving and speeding up several routine activities – e.g., contributing to the organization of documents and to decision-making processes, which are frequent in the legal sphere and in other sectors.

However, recognizing that the advancement of AI tools also increases the risks of their use and the possibilities of misuse and malfunctioning of systems, especially those with relative or almost complete autonomy (autonomous agents), many professionals in the field have emphasized the need for regulation in this area.

For this reason, this article reserves as a general objective the analysis of normative regulations impacts on the progress and forms of Artificial Intelligence application, and the indication of tendencies in the matter regulation, taking for example Brazil, whose legislative bodies have already elaborated proposals of law on AI.

In order to investigate ways of using Artificial Intelligence resources and to recognize potential repercussions of the elaboration of norms on their use, exploratory research will be employed. Then, through qualitative research, European Union (EU) documents about AI related measures and guidelines that should lead the EU in the regulation of the matter will be

examined and highlighted for comparison with the proposals presented in Brazil, taking advantage of national and international normative sources.

In closing, a logical-deductive methodology will be used to investigate the normative regulation proposals in Brazil in the Senate bills no. 5051/2019 and 5691/2019 and in the House of Representatives Bill of no. 21/2020, conducting a bibliographic survey to assess whether the texts formulated meet the new needs that have arisen. The article should conclude that legal texts wishing to regulate Artificial Intelligence need to be adapted as their systems progress.

### 1. Artificial Intelligence: applications and need for regulation.

There is no agreement on “Artificial Intelligence” (AI) exact definition. However, for the purpose of this article, we will consider AI as the “relatively new scientific and technological field which studies the nature of intelligence by using computers to produce intelligent behavior” (BADIA, 2001, p. 9).

It is recognized that AI is capable to optimize and to speed up many activities in different domains. That’s because there are about sixteen Artificial Intelligence categories – theory of computation, reasoning, constraint satisfaction, programming, theorem proving, artificial life, neural networks, belief revision, natural language understanding, data mining, machine learning, distributed AI, knowledge representation, expert systems, systems and generic algorithms (CIOFFI *et al*, 2020).

Each of these classes is capable of influencing other fields of study. For example, artificial neural networks – complexes that have characteristics and abilities similar to those of natural neural networks capable, among other things, of recognizing patterns (MOHAGHEG, 2000) – can be useful to geotechnical engineering in identifying landfill boundaries (TOLL, 1996).

Artificial Intelligence may also be used in health-related matters. The expert systems, logical systems that attempt to reproduce human expertise in a particular area of knowledge (ANDRADE; CARNEIRO; NOVAIS, 2010), e.g., can be applied to medicine in the choice of treatments and in the diagnostic process in resource-poor locations (WAHL *et al*, 2018).

Another intriguing feature is the development of autonomous vehicles, operating without a human driver. In this sense, Germany has already published a normative act that updates the Convention on Road Traffic of 1968, and authorizes the use of systems [of Artificial Intelligence] that interfere in the form of driving vehicles (DEUTSCHLAND, 2016).

Even in the legal sphere AI can be harnessed. In this regard, multi-agent AI systems applied to Online Dispute Resolution<sup>4</sup> can be understood as a group of entities that perceive the context in which they are inserted and make intelligent decisions to resolve the issue and to achieve the common goal (ANDRADE *et al*, 2010).

Although there are several benefits of Artificial Intelligence in many matters of social and academic interest, also exist complex difficulties in the legal treatment of problems that may arise from AI applications. Some of these issues refer to the uncertainty about who is responsible for damage caused by autonomous AI agents – such as autonomous vehicles (SCHERER, 2015, p. 356). On the other hand, the content of the regulations may influence the development of AI, since intangible legal impositions impair research and may inhibit the use of developed products.

Thus being, the countless possible benefits brought by Artificial Intelligence to various activities and study areas require regulation that, first, avoids malicious uses, and, second, does not obstruct its progress. The creation of legal standards should also consider the particularities of the AI and be useful in answering questions about the problems that could occur due to its uses. Then, recognizing the complexities of Artificial Intelligence regulation and the need for pragmatic responses, we examined some provisions adopted by the European Union related to AI and critically analyzed the emerging AI regulation in Brazil.

## 2. Provisions on AI adopted by the European Union before its regulation: brief remarks

Since inadequate or inaccurate regulation may hinder the use of Artificial Intelligence, the European Union (EU) has been preparing for this challenge for some time and has presented measures and principles to be adopted in activities that involve (and should involve in the future) the use of AI in the economic bloc.

To this end, the European Commission sent a communication on AI for Europe to the competent authorities in 2018. The document defined relevant strategies for making the best implementation of AI resources, such as taking advantage of the Digital Single Market, of the excellence centers in Artificial Intelligence spread across the continent and the investment of around 500 million Euros per year between 2018 and 2020. In this way, the EU aims to increase economic competitiveness, improve services and benefit society in order to include European

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<sup>4</sup> “Online Dispute Resolution” is an expression that refers to means of managing disputes other than litigation and that use a virtual space – such as e-mediation (BELLUCCI; LODDER; ZELEZNIKOW, 2004).

citizens (EUROPEAN COMMISSION, 2018). The tactics presented are pertinent as they allow the imminent regulatory framework to design well-defined and enforceable measures.

Also in that document, the Commission took the initiative to ensure an appropriate legal and ethical framework in relation to Artificial Intelligence, in particular attention to the guarantees expressed in the Charter of Fundamental Rights of the European Union (EUROPEAN COMMISSION, 2018). The promised adequacy framework has not been fully defined, but a future detailed analysis of emerging challenges with further guidance on liability rules arising from the use of new technologies has been signaled. It is therefore noted that the Union is continuing to seek answers on the best forms of regulation.

To make progress towards this goal, the European Commission published the White Paper on Artificial Intelligence in 2020, which aims to define policy options on how to achieve the objectives of boosting the use of AI and addressing related risks to some of the applications of these new technological resources (EUROPEAN COMMISSION, 2020).

This second document was considerably more emphatic about the value created by data and its indispensability for the development and improvement of AI systems, recognizing that artificial intelligence is a combination of technologies that bring together algorithms, data and computational capacity (EUROPEAN COMMISSION, 2020). In the Register, the Commission declared that the European Union should create an excellent, reliable and human-centred AI ecosystem.

The White Paper ratifies many of the measures contained in the Communication made by the European Commission in 2018 and describes six actions that should make the best use of AI and that point to human centrality and oversight as essential to the proper functioning of Artificial Intelligence systems. The guidelines seem coherent and capable of building the desired reliable ecosystem if they are endorsed and detailed in the legislation that must be created in sequence. Some of the principles and guidelines mentioned are common to other countries, as we will observe in the subsequent analysis of the emerging regulatory regime in Brazil.

### **3. Purpose of AI regulation in Brazil: an analysis of bills no. 5051/2019, no. 5961/2019 and no. 21/2020**

Certainly, regulatory frameworks must express precisely what the rules set out in them are about. This proposition is also valid for Artificial Intelligence, since it is necessary that the

laws that intend to regulate it define its concept (SCHERER, 2019). Matthew Scherer points out with property that

The increasing role of AI in the economy and society presents both practical and conceptual challenges stem from the manner in which IA is researched and developed and from the basic problem of controlling the actions of autonomous machines. The conceptual challenges arise from the difficulties in assigning moral and legal responsibility for harm caused by autonomous machines, and from puzzle of defining what, exactly, artificial intelligence means (SCHERER, 2019, p. 358).

Considering these assertions from the perspective of the Brazilian scenario, it is noticed that, only in 2019, the Brazilian legislative authorities proposed (at least) two bills related to Artificial Intelligence that do not contain definitions of their concept (no. 5051/2019 and no. 5961/2019) – in other words, of what they intend to regulate. However, we will focus our efforts on the critical analysis of Bill 21/2020 from the Brazilian House of Representatives because it deals with the subject in more detail and because its approval may imply considerable changes in the ways in which AI systems will be developed and used in the Country.

Brazilian Senate presented two bills – no. 5051/2019 and no. 5961/2019 – relating to Artificial Intelligence. The first of them aims to establish the principles for the use of AI in Brazil (BRAZIL, 2019a), while the second introduces the national AI policy (BRAZIL, 2019b).

Bill no. 5051/2019 provides as guiding principles regarding the use of AI in the country (i) respect for human rights, human dignity, diversity and plurality, (ii) guarantee of the protection of personal data and privacy, (iii) transparency, reliability and possibility of auditing the systems and (iv) human supervision (BRAZIL, 2019a). These requirements are certainly inspired by the impositions of the Constitution of the Brazilian Republic concerning fundamental rights and guarantees, and are similar to determinations contained in the EU White Paper. However, there are many difficulties related to their implementation and the gap in the expression of rule norms (not principles) in the Bill accentuates legal insecurity.

In a different direction, Senate Proposal no. 5691/2019 sets as guidelines promotion of sustainable and inclusive growth and institution of ethical patterns for the use of Artificial Intelligence. As well, encouragement of private and public investments for research in the field of AI, promotion of collaboration and exchange of information between experts and foreign and domestic institutions, valorization of human work and promotion of digital entrepreneurship (BRAZIL, 2019b).

Though the guidelines are positive, the means of their implementation expressed in this emerging regimen are imprecise. Article 5 of PL 5961/2019, e.g., determines as instruments of

the National Policy on Artificial Intelligence agreements for the development of social technologies, transversal programs structured in partnership with private institutions and with public agencies and sector funds for innovation, science and technology (BRAZIL, 2019a), but does not provide details about the investments and the focus of programs to be created.

Otherwise, the Bill presented by the House of Representatives (no. 21/2020) establishes rights, duties, governance instruments and principles for the use of AI in Brazil and makes other provisions (BRAZIL, 2020). The text introduces, at the beginning, the definition of an artificial intelligence system, its life cycle and knowledge in AI as follows:

Art. 2 For the purposes of this Law, it is considered:

I - artificial intelligence system: the system based on a computational process that can, for a certain set of objectives defined by man, make predictions and recommendations or make decisions that influence real or virtual environments;

II - life cycle of the artificial intelligence system: composed of the phases, sequential or not, of planning and design, data collection and processing and model construction; verification and validation; implementation; and operation and monitoring;

III - knowledge in artificial intelligence: skills and resources, such as data, codes, algorithms, research, training programs, governance and best practices, necessary to conceive, manage, understand and participate in the life cycle of the system; (free translation) (BRAZIL, 2020).

After delimiting the object on which it will focus, the text goes on to describe what (or who) should be considered as an agent – anything capable of perceiving the environment in which it is inserted and acting on it by means of effectors (RUSSEL; NORVIG, 1995) – of Artificial Intelligence. According to Bill 21/2020, "artificial intelligence agent" is any legal or natural person, private or public, that is responsible for any of the phases in an AI system's life cycle (BRAZIL, 2020). At this point, the draft legislation seems to disregard the automation and autonomy of many artificial intelligence systems for accountability purposes.

Some liabilities attributed to artificial intelligence agents are to provide clear information about the procedures and criteria used by the AI system and public disclosure of the institution responsible for its establishment. Other obligations include ensuring that the data provided to the system are processed in accordance with Law 13.709 (related to the protection of personal data), closing the system if a human being can no longer control it and protecting the system against cyber security threats (BRAZIL, 2020).

The obligation to provide information on the operation of AI systems is positive in terms of increasing the people reliability in the systems. This is due to the fact that fears about the automation of decisions and procedures are related to the low use of resources capable of making the results obtained faster and more satisfactory – for example, in the use of second generation ODR in the treatment of conflicts.

What most draws attention among the duties of the AI agents contained in Project 21/2020, especially those involved in the development and operation phases, is the accountability, in the form of the law, for the decisions taken by the Artificial Intelligence system. This attribution was also similarly expressed in the Senate Bills no. 5051/2019 and no. 5961/2019 and reflects the human supervision emphasized in the three draft legislation. Also with respect to human oversight, the (emerging) proposals of the European Union and the vision displayed in the Brazilian PLs seem to converge, although the EU and Brazil may define in different ways the limits of the responsibility of people and autonomous AI systems.

In the proposal of the Brazilian Chamber of Deputies, the answer to questions such as who is responsible for accidents caused by autonomous vehicles would be: the IA agents for the development and operation of the system, defined under Bill 21/2020. Although the solution found temporarily meets the wishes of some sectors of society, it may become inadequate with the advancement of technologies and with the increase in reliability of the systems, which are in constant improvement.

Even so, among the three bills presented we consider more coherent and complete the proposal of the House of Representatives (bill 21/2020), since it presents definitions that are more exact on the regulated matter and requires the provision of information on the procedures that increase the reliability of the systems and that can prevent misuse. However, the exclusively human accountability for actions and decisions taken by the Artificial Intelligence systems and the provisions that are difficult to comply with lead to the recognition of the need to enhance the text, extending the dialogue to specialists and citizens and creating working groups responsible for the necessary adjustments.

## Conclusion

The inclusion of new technologies and Artificial Intelligence resources is indispensable for the improvement of services and for the facilitation of a multitude of activities in various domains. However, the many benefits can be mitigated by misuse or potential failures – which is why research on AI and regulatory design of how the new tools will be used are important.

Thus, the results obtained in the exploratory research conducted in this article pointed to the usefulness of AI in applications in the fields of medicine (e.g., in the choice of health treatments), geotechnical engineering, law (e.g., in Online Dispute Resolution) and, certainly,

in many other areas. Therefore, the inevitability and pertinence of the application of Artificial Intelligence resources is perceived.

The qualitative research accomplished indicated international trends in the regulation of artificial intelligence based on the centrality of the human being, on the administration of data and on respect for the fundamental guarantees established in legal systems. These assessments were made possible by the examination of European Union documents – related to the future regulation of AI in the block and to the enforcement and enhancement of the exploitation of AI assets – and by the analysis of Brazilian legislative entities bills that intend to govern the matter, taking benefit of national and international normative sources.

Among the draft bills observed, the proposal of the House of Representatives (no. 21/2020) is considered more coherent, since it addresses with greater detail the object on which it intends to focus and is more coherent internally. This whereas the Brazilian Senate bills no. 5051/2019 and 5961/2020 present many principles and only few ways of concretion. It is also important to highlight that the principles expressed in Bill 21/2020 are similar to those in the White Paper and the Communication on AI issued by the European Commission. Although it is the most complete proposal of those observed, it seems essential to adapt the text of the bill of the Brazilian House of Representatives in relation to the accountability of people for actions of Artificial Intelligence systems, considering the results of the bibliographic survey accomplished.

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