A STUDY ON ARTIFICIAL INTELLIGENCE AND ITS USE BY THE JUDICIARY: RISKS AND BENEFITS

UM ESTUDO SOBRE A INTELIGÊNCIA ARTIFICIAL E SEU USO PELO PODER JUDICIÁRIO: RISCOS E BENEFÍCIOS

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RESUMO

O objetivo deste trabalho é explorar a evolução da inteligência artificial, sua utilização em diversos países e seus riscos e benefícios, com a pesquisa se focando em estudar a aplicação da inteligência artificial dentro do Poder Judiciário. Assim, apresenta-se a problemática: as decisões automatizadas proferidas por inteligências artificiais podem ser consideradas confiáveis e neutras? Compreender as consequências de se utilizarem as decisões automatizadas no sistema judiciário, como elas estão sendo implantadas nos mais variados setores sociais e como esta tecnologia em desenvolvimento deve ser empregada são fatores discutidos dentro deste trabalho. Utilizando o método indutivo, a pesquisa aborda o conceito de inteligência artificial, sua origem e história até os dias atuais, seu funcionamento, suas aplicações nacionais e internacionais, com foco em tribunais superiores e federais, e examina os benefícios e riscos da tecnologia, incluindo a "moralidade algorítmica". Para isso, o trabalho se valerá de doutrinas, trabalhos científicos e matéria legislativa,

também elucidando e refletindo o tema a partir de casos concretos, a fim de chegar a conclusões sobre os temas levantados.

Palavras-Chave: Inteligência Artificial. Decisões Automatizadas. Algoritmos. Legislação.

ABSTRACT

The objective of this work is to explore the evolution of artificial intelligence, its use in different countries and its risks and benefits, with the research focusing on studying the application of artificial intelligence within the Judiciary. Thus, the problem arises: can automated decisions made by artificial intelligence be considered reliable and neutral? Understanding the consequences of using automated decisions in the judicial system, how it is being implemented in the most varied social sectors, and how this developing technology should be used are factors discussed within this work. Using the inductive method, the research addresses the concept of artificial intelligence, its origin and history to the present day, its functioning, its national and international applications, focusing on Superior and Federal Courts, and examines the benefits and risks of the technology, including "algorithmic morality". To achieve this, the work will make use of doctrines, scientific works and legislative matters, also elucidating and reflecting the topic based on concrete cases, in order to reach conclusions on the topics raised.

KEYWORDS: Artificial Intelligence. Automated Decisions. Algorithms. Legislation.

INTRODUCTION

The aim of this paper is to delve into the subject of the evolution of artificial intelligence. In their daily lives, many people come across discussions in various media about the rapid advance of artificial intelligence, its growing role in their lives and how it will gradually change the technology they know today. However, few people truly understand the scope of these changes, how this technology actually works, and the specific areas of their lives that will be impacted by it and, above all, why it is so significant.

The main methodological approach adopted in this dissertation will be the inductive method. In other words, the aim of this work is to reach a conclusion through observation and the formulation of theories. By introducing additional information to existing premises, the aim is to reach a conclusion that may or may not be true. For research techniques, bibliographical research will be used.

The first chapter of the work focuses on exploring the concept behind the term "artificial intelligence". This involves delving into its origins and what makes a machine an artificial intelligence. Moving on to the second chapter, after analyzing the history and functioning of artificial intelligences, the research investigates the potential applications of this technology, both in national and international contexts. The aim of the chapter is to analyze the role and evolution of AIs in various sectors of society in different countries.

The third chapter reflects on the benefits and harms caused by the use of artificial intelligence technology. The final chapter seeks to highlight how algorithms developed by human beings can often reproduce the prejudices inherent in people themselves.

This raises the question: can automated decisions made by artificial intelligences be considered reliable and neutral? The hypothesis underlying this work is that automated decisions made by artificial intelligences have the potential to speed up conflict resolution; however, they often run the risk of becoming generalized, reflecting prejudices and, in some situations, harming the lives of individuals. Understanding what artificial intelligence is, its emergence, the sectors in which it is currently applied and possible future applications are fundamental elements for the general understanding of those who seek to take advantage of its benefits.

1   ARTIFICIAL INTELLIGENCE – CONCEPT AND HISTORICAL EVOLUTION

The definition of robots is widespread in society. These are automatic mechanisms capable of carrying out various movements and jobs. They have electronic systems that vary according to their model and are controlled by human beings. Robotics is applied in countless areas of knowledge, from industries to domestic activities, making activities less exhausting and increasing the productivity of companies.

However, it is important not to confuse robotics with artificial intelligence. Although they have similarities, they are different fields of study. The study of artificial intelligence aims to simulate human intelligence, building machines that

are capable of solving problems, creating solutions and making decisions in the place of human beings. It aims to develop the rationality of the robot, integrating intelligence into it and enabling it to act and think (CARNEIRO, 2021). Matthews discusses the issue by pointing out that the ability of machines to calculate is not synonymous with consciousness and thought:

> A primeira coisa que poderia ser dita é que, mesmo se o computador pudesse executar certos tipos de tarefas normalmente efetuadas pelos seres humanos, o que normalmente envolveria a mente humana, isto não significa que o computador devesse ser descrito com 'possuindo uma mente'. Levemos em conta uma tarefa que os computadores de vários tipos têm sido capazes de executar, há muito tempo, mais precisamente, a do cálculo. Acredita-se que a capacidade de um ser humano para calcular seja normalmente considerada uma habilidade mental, um exercício do intelecto. (MATTHEWS, 2007, p. 96)

In order to achieve this goal, feeding the machine is extremely important. The existence of a mechanism that allows the software to learn and plan in a similar way to a person is based on data that is provided artificially. It is also important to carry out tests and supervise the activities of the machine to avoid failures (FIGUEIREDO and CABRAL, 2020).

The main purpose of developing AIs is the possibility of delegating functions to the system. After all, social demands are growing every day, overburdening human beings with often tiring and repetitive activities, which slow down the progress of applying effort to what is really crucial. The need for man and machine to coexist is therefore becoming apparent, creating a kind of dependency between them (CUEVA, 2021). Although AI has been thought of for over two millennia, it only came to fruition in the last century, with the first work on the subject being carried out by Warren McCulloch and Walter Pitts:

> O primeiro trabalho agora reconhecido como IA foi realizado por Warren McCulloch e Walter Pitts (1943) [...], eles mostraram que qualquer função computável podia ser calculada por certa rede de neurônios conectados e que todos os conectivos lógicos (e, ou, não, etc.) podiam ser implementados por estruturas de redes simples. McCulloch e Pitts também sugeriram que redes definidas adequadamente seriam capazes de aprender (RUSSELL e NORVIG, 2013, p. 41).

The researchers proposed a model of artificial neurons, which were characterized by being "on" or "off" according to the appropriate stimulus.

McCulloch and Pitts made considerable progress in this field of study, suggesting the existence of machines capable of learning. Following the work of the two authors, Alan Turing, who had been working and lecturing on the subject since 1947, wrote an article considered to be the most influential in the field.

However, the question of how to identify intelligence in a system remained. The answer came in the form of the Turing Test, developed by Turing, a researcher, computer scientist and mathematician. In 1950, Alan discussed in his article "Computing Machinery and Intelligence" whether machines could think. Following this reasoning, the researcher proposed a test, based on the "imitation game" (GOMES, 2010, p. 236).

In the original game, there is an interaction among three players. Player A is a man, Player B is a woman, and Player C can be of any gender. Player C can't see, touch or hear the other participants, communicating only through written messages. Their aim is to find out which of them is a man and which is a woman, through a session of questions. Player A must induce Player C to make the wrong decision by pretending to be a woman, while Player B has the role of helping him by answering the questions truthfully (TURING, 2010, p. 1).

The Turing test is similar to the imitation game, but with a computer playing the role of "Player A". Thus, the test involves three elements: two people and a computer. It consists of an assessment that aims to find out whether the machine is capable of behaving with an intelligence equivalent to that of a human being, impersonating one and succeeding in fooling the test interrogator (MAGRAF and FRANCO, 2019, p. 3-4).

Throughout his exploration of objections to his vision, Turing seeks to dismantle the arguments against the possibility of artificial intelligence, and ends by concluding that the free and autonomous thinking of machines is possible through learning machines. His discoveries paved the way for many advances in the field of computer science.

But to understand how artificial intelligences work, we need to understand the concept of algorithms. Algorithm refers to a set of mathematical guidelines, a succession of operations aimed at achieving an expected result within a delimited time interval. The expression has its origins in the 9th century, before computers, and it is associated with the Persian mathematician Al-Khwãrizmi, whose book instructed in mathematical methods to be solved manually (KAUFMAN, 2018, p. 26).

Thus, an algorithm is understood as a sequence of instructions to achieve a specific goal, with the steps to be followed being finite and carried out systematically. It relies on the input and output of information mediated by the instructions to be carried out (A+B+C=D). Because of the complex name, when people think of algorithms they visualize complex computer codes, but in reality algorithms are much simpler than that.

In 1959, researcher Arthur Lee Samuel inaugurated a subfield of AI by coining the term machine learning. Progressing from pattern analysis and the principles of computational learning theory in artificial intelligence, machine learning investigates the research and formulation of algorithms that, by following guidelines, make predictions or choices based on data – models that are developed on the basis of sample inputs (KAUFMAN, 2018, p. 20).

It is therefore understood that, in the field of artificial intelligence, there are two essential pillars that play vital roles in its research: data analysis (analytics) and (machine learning). Data analysis encompasses a set of algorithms designed to examine information and its mutual connections. This implies the ability to explore data, identify relationships between them and extract meaningful insights. Machine learning, on the other hand, is a field in which algorithms have the remarkable ability to capture patterns present in a specific set of data. These algorithms can then apply these patterns to make predictions or generalizations in similar situations in the future (WOLKART, 2019, p. 706).

Within the field of machine learning, there are algorithms that acquire knowledge from the vast amount of data available on the internet or in other sources (originated from big data). This ability arises as a development of machine learning, called deep learning (deep learning). Through deep learning, the system is able to identify correlation patterns on its own, independently of human intellectual reasoning. This idea is explained by Henrique Pinto in his research:

> (...) isso só é alcançado pelo sistema por meio de uma forma não linear de aprendizado por ele mesmo desenvolvida em várias camadas – algo similar ao que supostamente ocorre no cérebro humano por sua rede neurológica, na qual uma rede múltipla de unidades condutoras de dados se retroalimenta. A maioria dos softwares de reconhecimento de voz, de identificação de faces, de tradução, de reconhecimento de objetos, entre outros, são bons exemplos de sistemas tecnológicos que já operam com o deep learning e que dependem de uma grande

quantidade de dados disponíveis na rede virtual para que possam funcionar (PINTO, 2020, p. 47).

Research done with humanoid robots gave space for the demonstration of emotions in social robots. Among its research sectors, the field of artificial intelligence studies "affective computing", that is, the possible implementations of emotions in artificial systems. Often, this communication occurs subliminally, but it remains important to create an emotional bond between individuals and the social robots with which they interact:

> Dentre outras coisas, os computadores podem ser utilizados para testar diferentes teorias de emoções, para reconhecer emoções humanas, para expressar emoções, para responder de maneira inteligente a emoções humanas e, de uma maneira mais extrema e controversa, para emular emoções. Uma comunicação afetiva entre um ser humano e um robô social é muito importante para criar uma ilusão de que se interage com um ser inteligente (GUDWIN, 2005, p. 10).

Artificial intelligence in the 21st century has turned to numerous utilities. Chat GPT, launched in 2022, uses an algorithm with neural networks to analyze a large amount of data in order to generate answers to any command or question made by its users. When asking for the GPT Chat, it analyzes the input of the data, processes the present information and returns seconds later with the answer, based on probabilities. This AI, in addition to the information it provides, can answer questions and chat more humanized than others previously available to the public (SGARBOSA, 2020, p. 198).

The Ameca robot was developed by the company Engineered Arts of the UK-based and it is known for its human resemblance: it can speak and make incredibly realistic human expressions, although it does not yet have the ability to walk. Ameca is part of a project that took about fifteen years to complete, with its price being around 100 thousand pounds, which is equivalent to R$ 745,000.00. The machine can be used as a basis for developing artificial intelligence and machine learning technologies, having hardware and software that allow constant updates (G1, 2022, online).

Thus, the technology that involves artificial intelligence is developing at a fast pace, exceeding the expectations of everyone. And along with its growth, challenges arise in its incorporation into the daily lives of the people and the labor market. These challenges are shaped differently according to each of the

existing cultures in the world, and each nation develops a different understanding about the development of artificial intelligences.

2   THE USE OF THE ARTIFICIAL INTELLIGENCE

After analyzing the history and functioning of artificial intelligences, this work will explore their possible applications, both national and international, to study their role and evolution in the most diverse sectors of society. In order to maintain the study focus of the work, the study of international countries will be limited to Europe, the United States, China and Japan, and the national study will focus on the higher and federal courts.

The current historical era in which humanity finds itself, called the Fourth Industrial Revolution, has as one of its most prominent characteristics, which distinguishes it from previous ones, the deep interaction between the physical and digital worlds. This implies that the division between online and offline life has become incredibly subtle with this revolution encompassing automation technology, cyber-physical systems, intense data exchange, artificial intelligence, cloud computing, among other topics, always seeking to improve the efficiency and productivity of activities performed by humans (SCHWAB, 2016, p. 16).

Thanks to the global transcendence of artificial intelligence, which arises in the context of the Fourth Industrial Revolution, there is a certain competition between the different countries and regions that are more advanced in the technological sector, in order to occupy a position in the world development related to the area. This leads to the establishment of public policies and private interests, which start investing in innovation, infrastructure and research related to artificial intelligence. Along with the development of these policies, there is a growing concern to adapt the law to this phenomenon, in order to ensure legal certainty (BONADIO, E., MCDONAGH, L., ARVIDSSON, E, 2018, p. 656).

On October 20th of 2020, the European Parliament adopted the Resolution 2.020 of 2014 (INL), which contained guidance for the European Commission on how to deal with civil liability issues related to Artificial Intelligence (AI) – known as "Resolution of 2020". This resolution highlights the need to create clear rules that determine who is responsible when any damage or problem occurs due to AI.

The proposed regulation organizes responsibility in three perspectives: of the operator (which represents the central focus), of third-party users who use this technology to harm individuals (in case they are subject to subjective modality)

and the manufacturer of AI systems, subject to European Directive 85/374/EEC, in case the AI product is defective (EHRARDT JUNIOR, NETTO, 2023, p. 147).

This is relevant to ensure that everyone involved – from the companies developing the technology to the people who may be affected by it – has a solid legal framework that protects their interests and rights. The idea is to ensure that, as AI becomes more present in our society, there is a fair and uniform liability system to deal with possible problems that may arise (ANTUNES, 2021, p. 1).

The internet market in China has some unique characteristics. There is a lot of competition from companies, which forces them to maintain strict cost control and create a positive image in order to attract investment, a fact that has shaped some of the most resilient entrepreneurs of the world.

Comparing Silicon Valley and Chinese companies, one can see that Silicon Valley companies grew up in an environment of abundance, seeking elegant technical solutions to complex problems. On the other hand, in the Chinese economy, poverty was only present for one generation, which led Chinese startups to focus more on the market and generating profit (KUBOTA, 2022, p. 14).

Lee (2018) explains that 2014 was a landmark change in Chinese government policy, with the emergence of terms such as "mass entrepreneurship" and "mass innovation". The Chinese government, through the State Council, adopted measures to actively promote the creation of technology incubators, entrepreneurship areas and initiatives aimed at attracting private venture capital investment:

> Uma característica das políticas públicas é a existência de planos como os quinquenais ou, no caso da IA, o Development Plan for a New Generation of Artificial Intelligence, de 2017. Outra característica é que, na China, os objetivos são traçados pelo governo central, mas a implementação fica a cargo dos milhares de prefeitos e agentes públicos municipais espalhados pelo país. Os municípios criaram escritórios onde os empreendedores em potencial poderiam sanar todas suas necessidades para registrar suas firmas. Um fluxo de subsídios criou 6,6 mil novas incubadoras de startups, quadruplicando o total existente (LEE, 2018, p. 52)

Published by the State Council of the Popular Republic of China, the National Artificial Intelligence Plan (NIAP) of July 20th, 2017, announced the objectives of

China to promote research and facilitate the adoption of technology in a wide range of sectors, not only in the economy, but also in national security, the environment and social welfare. Its guidelines emphasize the need to drive innovation and promote changes towards an "intelligent" economy and society through artificial intelligence. The PNIA sets the goal of China reaching levels equivalent to competing for global leadership in 2030, in terms of building an "intelligent society" (HIRATUKA, DIEGUES, 2021, p. 9–10).

The American AI Initiative was launched by the signing of the Executive Order No. 13,859 by the President Donald Trump on February 11th, 2019. This initiative was established by the National Artificial Intelligence Initiative Act of 2020 (NAII), and it is based on six strategies: improving artificial intelligence innovation, promoting trustworthy AIs, creating training and education opportunities through AI, improving infrastructure through new technologies, incorporating artificial intelligence into the private sector in order to improve established systems and promoting an international environment allied to advances in the field (NONATO, 2023, p. 89–90).

Moving forward, in 2020 the United States issued the AI in the Government Act of 2020 and the Executive Order No. 13,960, which promoted the safe use of artificial intelligence in the federal government, implementing principles, convening internal bodies with the task of improving their expertise in implementing AI in government agencies and contributing to the instruction of agencies responsible for cataloging cases involving the use of this type of intelligence. In 2020, the first regulatory guidance on AI focused on its development in the private sector was also made official (EXECUTIVE ORDER, 2020).

In Brazil, some courts are already starting to use artificial intelligence as a tool to assist in the screening of cases and trials. Although far from the level of development observed in the American experience, the focus is on the digitization phase of processes and data mining.

The first steps have already been taken, and the courts that stand out most in this field are the Superior Labor Court (TST), the Superior Court of Justice (STJ) and the Supreme Federal Court (STF). Some courts, such as those in the states of Alagoas, Minas Gerais, Rondônia, Acre, Pernambuco and Rio Grande do Norte, have also developed specific tools involving the use of artificial intelligence (D'ALMEIDA et al., 2020, p. 13–14).

The National Council of Justice (CNJ) is responsible for coordinating various projects that involve the development of artificial intelligence systems by individual courts. These projects include analyzing the specific needs of each court, as well as assessing the technical skills of the technology teams. The aim is to create in-house systems capable of performing functions such as summarizing texts and classifying procedural documents (SALOMÃO, 2020).

On August 21st, 2020, after seventy-two projects implemented or under development, Resolution No. 332 of the National Council of Justice (CNJ) was published, establishing that artificial intelligence is at the disposal of the Judiciary with the aim of promoting the well-being of the jurisdictions and ensuring an equitable provision of jurisdiction, as expressed in its article 2. The Resolution emphasizes the importance of respect and compatibility with fundamental rights, as well as the need to avoid discrimination, promotes diversity and solidarity, aiming to eliminate or reduce the marginalization of individuals, oppression and judicial errors resulting from prejudice (PIRES, 2021, p. 504).

In 2018, the STF was responsible for creating VICTOR, an artificial intelligence developed in partnership with the courses on Law, Software Engineering and Computer Science at the University of the city of Brasilia (UnB). It had a cost-benefit of approximately 1.6 million reais for installation and maintenance, and can automatically and autonomously analyze all extraordinary appeals sent to the Court and identify those related to issues of general repercussion (VERAS, BARRETOS, 2022, p. 11). Maia Filho and Tainá Junquilho explain how it works:

> A nova ferramenta que está sendo desenvolvida tem a finalidade de realizar o juízo acerca da repercussão geral no STF, avaliando a totalidade dos recursos extraordinários e agravos em recursos extraordinários que chegam à Corte, e investigar se cumprem o requisito determinado pelo art. 102, § 3º, da Constituição Federal, ou seja, se se vinculam a algum tema de repercussão geral. Nesse sentido, o projeto do STF pode vir a se constituir em poderosa ferramenta de utilização de IA que afetará positivamente o desenvolvimento do controle de constitucionalidade difuso realizado pela Corte (MAIA FILHO; JUNQUILHO, 2018, p. 222).

It can therefore be concluded that, despite the accelerated development of artificial intelligence, both in Brazil and in the rest of the world, each system has its own peculiarities and is not yet evolved enough to occupy the role of civil

servers and judges responsible for making decisions of merit capable of profoundly influencing the lives of citizens. Artificial intelligences must adapt to the functioning of today's society and grow as it adapts, with their benefits and harms taken into account when they are incorporated into the various fields of work.

3   RISKS AND BENEFITS

Artificial intelligence brings with it a series of unavoidable factors that will have to be confronted if humanity decides to continue moving towards its evolution. Thus, this chapter will explore the risks that must be faced during its use, as well as its benefits, important points to consider in order deciding whether it is really possible to trust automated decisions made by machines.

Listed as one of the great benefits of artificial intelligence, procedural speed can be defined as agility in resolving judicial and legal issues, in other words, it refers to efficiency and speed in conducting procedures. Speed measures help us to understand the progress of cases, whether they are reaching the desired speed and whether the number of pending cases is decreasing. It covers variables such as productivity, time, and the number of cases accumulated and the complexity of the cases (NIETO, 2015, p. 114).

Despite the importance of procedural speed, it is essential to balance it with legal certainty. The parties involved are entitled to a timely resolution of their cases, without undue delay, but they must also have the opportunity to present their evidence, arguments and defenses fully and fairly. This ensures that judicial decisions are well-founded (LUCHETA, 2021, p. 676).

It can be seen that artificial intelligence, when incorporated into the judiciary and other fields of study, displays a value of rationality. It is capable of analyzing volumes of data unattainable by individuals in a short period of time, without tiring or being affected by human emotions. This broadens the scope of rationality, allowing AI to make decisions based on a vast set of information (ROQUE, 2019, p. 394).

The machine will never know one of the parties to the process, nor will it have emotional connections with them, always respecting the distance mentioned above. Decisions made by artificial intelligence can be more transparent and subject to review. They can be verified more easily by peers and courts, which will be able to compare them to thousands of other decisions in similar cases, helping to reduce authoritarianism and arbitrariness (ROQUE, 2019, p. 394).

Although this information makes valid and true points, it is important to recognize that artificial intelligence cannot be considered a totally neutral and objective entity in itself. After all, human subjectivity influences it when it is created and when it feeds on data provided by human beings. If the data is biased and does not represent reality, the machine can reproduce decisions with prejudiced or mistaken biases.

Decisions made by machines equipped with artificial intelligence cannot automatically be considered impartial, as they are not free from human influence. The data that feeds the machine is the product of human interpretations and, consequently, the intention of the programmers, the quality of the data and even the complexity of the algorithm can lead artificial intelligence to make a subjective decision that violates the law, in what is known as "biased algorithms" (ROQUE, DOS SANTOS, 2021, p. 67):

> Com efeito, os algoritmos enviesados são aqueles que apresentam padrões deturpados em sua formação e se mostram bastante perigosos. Sob a falsa aparência de neutralidade, acabam por perpetuar vieses difíceis de serem percebidos, eventualmente até mesmo por seus programadores, carecendo da transparência necessária. O resultado é a legitimação, por meio da tecnologia, de tratamentos desiguais e discriminatórios, que se encontram como um dado real na sociedade e acabam sendo absorvidos pelos algoritmos (ROQUE, DOS SANTOS, 2021, p. 67).

Machine learning models can generate results that are difficult to understand and do not reveal why a specific decision was made. This leads to the idea of a "black box", a term used to explain the lack of transparency regarding the decision-making process of intelligent tools. The aim is to create a tool that provides accurate results and at the same time incorporates ethical values. It needs to be able to explain how the machine process works, thus avoiding the spread of discriminatory and prejudiced decisions (JUNQUILHO, 2022, p. 93).

A serious incident that demonstrates algorithms perpetuating racial prejudice occurred in the United States, with the situation involving Vernon Prater, a forty-one-year-old man, and Brisha Borden, an eighteen-year-old woman. Prater was caught stealing from a hardware store, causing $86.35 in damage to the victim. He had already been convicted of armed robbery and other criminal offenses. Borden, on the other hand, was late to take her sister to school, took a scooter belonging to a six-year-old boy, and was caught red-handed, falling off the bike

and being arrested for robbery. Both were evaluated by a computer program that used algorithms to predict the likelihood of people committing new crimes in the future. Borden, a black woman, was classified as high risk (rating 8), unlike Prater, a white man, who was classified as low risk (rating 3). It is clear that the algorithm, when assessing these people, discriminated against them based on their race (ANGWIN et al., 2019).

Therefore, it is understood that machines can hardly take into account all the moral, ethical and philosophical complexities, as well as the different beliefs that human beings carry. This limitation has a direct impact on information processing and decision-making. As a result, in order to avoid the reproduction of prejudice and discrimination, it is of the utmost importance that the development and implementation phases of algorithms are inclusive, especially with regard to data related to ethnicity, religious beliefs, socioeconomic status, genetic information, among other aspects (ANDREASSA JR, DE OLIVEIRA, 2021, p. 286-287).

Thus, in the virtual environment, especially with regard to artificial intelligence, the legal protection of privacy plays an essential role. It cannot be considered that the risks to privacy derive only from public power, since private power, mainly through large technology companies, poses constant threats to privacy. In this context, the individual is at a visible disadvantage in relation to these centers of power, since it is clear that there is a huge disparity in power between the individual and the public sector or the organizations that collect, manage and manipulate sophisticated technologies (FACHIN, J., FACHIN, Z., DA SILVA, D; 2022, p. 372-373).

So, the accelerated dissemination and sharing of data in our current technological environment is evident. Not only does data collection take place on a large scale, but the same data sets are used by several companies operating in different sectors. This transfer of data happens among companies at an accelerated rate, often as fast as the collection of new data itself, and is often carried out by collecting information online. This data is then combined in various ways in order to establish correlations between individuals and improve or hinder their chances of obtaining positive results in various situations. They are carried out in a cascade effect, as previous responses and findings are used by other companies to make new connections and analyses (PASQUALE, 2015, not paginated).

The idea that it is essential to allow some degree of human control over decisions made in an automated way is supported by several data protection laws, most notably the General Data Protection Regulation (GDPR), legislation that came into force in 2018 to unify data protection rules in the member countries of the European Union, and the General Data Protection Law (LGPD), Brazilian legislation that came into force in 2021 and it establishes rules and guidelines for the processing of personal data in the country (ALMADA, MARANHÃO, 2023, p. 388).

Desai and Kroll, 2017, seek to offer some possible regulatory solutions that are capable of dealing with the lack of transparency in algorithms. Legally, transparency relates to the ability to examine the system, understand its operation, behavior and results. This allows those responsible for results that do not comply with the law (or with parameters considered acceptable) to be held accountable in the political and legal context. Thus, researchers argue that collaboration between legal experts (such as jurists) and computer science experts is seen as essential to address legal issues related to transparency and the functioning of algorithmic systems, especially when it comes to automatic discrimination (FRANQUEIRA, 2019, p. 18).

Another extremely important point concerns the potential structural unemployment in society caused by the rise of artificial intelligences. The more machines do the jobs previously performed by human beings, the more jobs begin to disappear, potentially causing an economic crisis in the social structure. Firstly, artificial intelligence makes it possible to replace workers with intelligent software and robots, which perform actions in a highly efficient manner, often bordering on perfection. Added to this is the fact that companies can significantly reduce their physical space by using intelligent applications instead of human beings at work (ESTRADA, 2017, p. 2).

Another advantage that companies can enjoy is a reduction in electricity, labor and water costs, as the number of workers on their premises will be reduced, and consequently the tax burdens they face will also be lower. Unfortunately, labor unions end up losing influence with the advance of machines, especially when negotiations involve issues related to not laying off employees. It should be noted that companies that do not adapt to this new reality of using artificial intelligence risk are overtaken by those that do, or risk even going bankrupt (RUTKIN, 2014, not paginated).

However, despite concerns about the technological impact on labor relations, Antonio Carlos Aguiar, 2020, says that there are measures that can be taken to minimize unemployment caused by automation. These include the establishment of standards between companies and governments for strategic action, the careful implementation of AI, the creation of new forms of worker protection, the systematic measurement of the impact of AI in different sectors, and professional development that integrates and understands technology, among others (AGUIAR, 2020, p. 78).

Thus, since excluding the existence of robot work in society is not a viable alternative, given its incorporation into practically all social sectors, it is necessary to focus on strategies that seek to minimize the unemployment rate, such as rules signed between governments and companies that ensure worker protection and participation within the context of AI installation, as well as vocational courses that are capable of educating workers in terms of understanding how artificial intelligences work.

FINAL CONSIDERATIONS

Artificial intelligence is an inevitable technology. It has been worked on for decades, growing and developing little by little, while integrating into humanity almost imperceptibly. The actions that guide individuals in their work, leisure and everyday activities increasingly incorporate artificial intelligence principles.

Research in the field of artificial intelligence seeks to replicate human cognitive capacity, developing machines that are capable of solving problems, devising solutions and making decisions autonomously. The aim is to improve the rationality of robots by incorporating intelligence into them. In order to make this possible, the proper feeding of data to the machine plays a crucial role. The existence of a mechanism that allows the software to learn and plan in a similar way to the human capacity is based on data that is artificially supplied. In addition, the importance of conducting tests and supervising the activities of the machine is highlighted as essential measures in preventing failures.

However, understanding how AI works requires knowledge of the concept of algorithms. An algorithm refers to a set of mathematical instructions, a sequence of operations designed to achieve a specific result within a certain timeframe. The growth of the algorithm is interrelated with its level of complexity, i.e. the ability to deal with a range of situations related to its purpose. If the algorithm doesn't follow the structure given to it line by line, the goal is not achieved.

The Turing test, similar to the imitation game, is an essential piece of research in the history of artificial intelligence and is still relevant today. It involves three participants: two people and a computer. The aim is to determine whether the machine can behave with intelligence comparable to human intelligence, impersonating a human being and successfully fooling the human interrogator of the test.

From the research and formulation of algorithms, researcher Arthur Lee Samuel inaugurated a subfield of Artificial Intelligence by introducing the term "machine learning". By following guidelines, algorithms make predictions or choices based on data. These models are developed based on sample inputs, highlighting the ability of machines to learn and improve their performance over time. Their algorithmic structure does not depend exclusively on data selected by operators. In this context, the system learns through its interactions with the external environment, rather than relying on specific manual programming. Deep learning, on the other hand, refers to a specific technique within machine learning that uses deep neural networks to automate the extraction of characteristics.

The judiciary faces significant challenges to improve its efficiency, using approaches such as micro systems and legislative reforms. However, its adaptation has been limited. It is therefore proposed that artificial intelligence could be a more effective alternative to provide timely delivery of judicial services, recognizing its potential capabilities in the face of the limitations of conventional approaches.

The robots used in courts have prediction methods based on probabilities, analyzing the results of court decisions related to the type of case, court and amount involved. Although these analyses contribute to speeding up proceedings, machine learning systems do not yet take into account the specific normative justifications of the case. It can therefore be concluded that these systems have not yet evolved sufficiently to replace civil servers and judges in making merit decisions that have a profound impact on the lives of citizens.

This current technological change is transforming working models and, consequently, relations between employees and employers. The replacement of human labor by artificial intelligence systems generates resistance among the working class, as it results in job cuts, mass layoffs and the high productivity of machines compared to human beings.

After researching its history, how it works and its application, we have come to the conclusion that this technology was designed to help mankind perform functions quickly, saving time and resources. However, it is not only beneficial. This is why its development cannot be carried out without supervision and control by professionals in the field, because, to paraphrase the words of researcher Stephen Hawking, artificial intelligence could be the greatest event in history, but it could also be the last, if the risks are not avoided.

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