

ARTIFICIAL INTELLIGENCE ANALYSIS IN SELECTED DATABASES: PRACTICES, CONCEPTS AND MEANINGS

ANÁLISE DE INTELIGÊNCIA ARTIFICIAL EM BANCOS DE DADOS SELECIONADOS: PRÁTICAS, CONCEITOS E SIGNIFICADOS

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ABSTRACT: The discussions and analyzes presented in this article bring up issues related to Artificial Intelligence (AI), with the main objective of knowing practices, concepts and meanings of the Artificial Intelligence in selected articles. With the analysis or review article, we seek to understand the existence or not of the concept and definition in published works, with a view to contributing to new perspectives on the theme. It is a study developed with theoretical and methodological support in the qualitative approach based on a review research, having as a data collection device the consultation in the database: SCIENCE DIRECT, SCOPUS, WEB OF SCIENCE, SCIELO and REDALYC, in a random way which consisted of the first five articles from the descriptor “Artificial Intelligence” (AI), placed in the search for the referred databases in April 2020. The theoretical framework was produced in the light of scholars in the subject in question, such as Machado (2019); Turing (1950); CRAGLIA (2018); Kaufman (2018); Simon (1950); Newell (1958); McCarthy (1969); among others. The research presented some latent aspects of the reality of Artificial Intelligence (AI), seeking to understand the challenges that are posed to this field of knowledge, especially with regard to the practices, concepts and meaning in the selected articles.

KEYWORDS: Artificial Intelligence, practices, concepts, meanings

SUMMARY: 1. First reflections: the context – 2. Methodological tessiture: pathways – 3. Theory and reality: a possible dialogue with the database – 4. Artificial Intelligence: in search of conclusions – 5. References

1 First reflections: the context

Artificial Intelligence (AI), since the time when the first reflections arose, has been debated, mostly by professionals in the area of information systems, education, neuroscience and law. Although it involves the other areas of knowledge, the absence of a concept, clearly explicit, made it possible not to treat Artificial Intelligence as purely machines and robots. From this evolutionary process about Artificial Intelligence, what has always emerged is the recognition in their respective areas, that the debate goes much further than discussions about information systems methods only.

Such discussions instigated us to research on Artificial intelligence, concepts, practices and meanings, seeking to dialogue with recent theoretical references, which deal with the subject in question. Such perspectives are embodied in two unsettling issues: to what extent do the selected texts show concepts, practices and meanings of Artificial Intelligence? How do these texts conceive of Artificial Intelligence?

For the British encyclopedia the definition of artificial intelligence is “... the ability of a digital computer or robotic device controlled by a computer to perform tasks normally associated with higher intellectual processes, characteristics of human beings such as the ability to reason, discover meaning, generalize or learn from past experiences. The term is used to refer to that branch of computer science that takes care of the development of systems equipped with such capabilities”. (Encyclopaedia Britannica)

The literature on artificial intelligence attests that its emergence took place in the 1950s with the aim of developing systems to perform tasks that, at the moment, are better performed by human beings than by machines, or do not have a viable algorithmic solution by conventional computing. We can synthesize its evolution from the data in table 1, which show the historical facts and their periods that contributed, directly or indirectly, to the development of artificial intelligence.

Table 1. Historical facts and constituents of intelligence Artificial from 1943 to the present day

HISTORICAL FACT	PERIODS
Evolution of Artificial Intelligence	1943 to 1956
Gestation	1952 to 1969
Very Enthusiastic Period	1966 to 1974
A Shot of Reality	80's
IA Becomes an Industry 90's	1990 to 2000

HISTORICAL FACT	PERIODS
Modern AI	2000 to the present day

Source: Elaborated from Machado, 2019

Still referring to historical evolution, the currents of thought from that time need to be considered, considering that

“The currents of thought that have crystallized around AI have been in gestation since the 1930s [Barr & Feigenbaum, 1981]. However, officially, AI was born in 1956 with a summer conference at Dartmouth College, NH, USA. In the proposal for this conference, written by John McCarthy (Dartmouth), Marvin Minsky (Harvard), and submitted to the Rockefeller foundation, the authors intend to carry out “a study for two months , by ten men, on the topic of artificial intelligence ”. Apparently, this seems to be the first official mention of the term “Artificial Intelligence ” [McCorduck, 1979]. Since its beginnings, AI has generated controversy, starting with its own name, considered presumptuous by some, until the definition of its objectives and methodologies. Ignorance of the principles that underlie intelligence, on the one hand, and the practical limits of the processing capacity of computers, on the other hand, has periodically led to exaggerated promises and the corresponding disappointments.” (MACHADO, 2019, p.31).

The paternity of artificial intelligence is attributed to McCarthy (1956) although well before (1934) this theme; it has been discussed without the perception of artificial intelligence (AI). It is worth to notice that McCarthy (1956) is attributed to the paternity of the term “Artificial Intelligence”, although, long before, this theme was discussed without the terminology of Artificial Intelligence. According to Freitas (2004), in 1934, Alan Turing, cited by Ginsberg (1993), proves from mathematical calculations, that the computer satisfies men's desire, as long as it is programmed for that purpose and with that approaching human capacity. It is worth mentioning the fact that Turing participated in the creation of the first computer and was considered the patron of Artificial Intelligence.

The discussion of Artificial Intelligence involves discussing, albeit briefly, intelligence and its implications in contemporary times. If we look for a definition in the dictionary about intelligence, we will have two explanations. The first involves the faculty of knowing, understanding and learning. The second, more comprehensively, represents the ability to understand and solve new problems and conflicts and to adapt to new situations. The

definition of artificial intelligence involves the artifact and intelligence implies thinking that, on the other hand, articulates with the representations of knowledge in the man / machine relationship. It is in this discussion of the complexity of thought and, at the same time, of the intelligence of complexity, noticing that

“The thought of complexity appears, therefore, as a building with many floors. The basis is formed from three theories (information, cybernetics and systems) and comprises the necessary tools for an organization theory. Then comes the second floor, with the ideas of VonNeumann, Von Foerster and Prologine on self-organization. This building, I intended to bring the supplementary elements, notably 3 principles, which are the dialogical principle, the recursion principle and the holographic principle.” (MORIN, 2000, p.28).

The definition of the term “artificial” involves artifice produced by the hand of man and not by nature. Therefore, an epistemological definition of intelligence and artificial suits is linked to post-humanity, since man will always develop artificial intelligence and transhumanity, which is artificial intelligence developed by a machine, goes beyond the debate. In line with Morin (2000), in terms of complex thoughts, the precursors of artificial intelligence assert that

“Gestalt's reaction took an opposite turn. He rejected the mechanistic nature of associationist doctrine but maintained the value of phenomenal observations. In many ways, the Wiirzburg school's insistence continued that thinking was more than the thinking of association has the direction given by the task or the whole subject. Gestalt psychology has developed this doctrine in genuinely new ways in terms of holistic principles of organization. Today psychology lives in a state of relatively stable tension between the poles of Behaviorism and Gestalt Psychology. We all internalized the main lessons of both: we skeptically treated the subjective elements in our experiments and agreed that all notions should eventually be made operational through behavioral measures. We also recognize that a human being is a tremendously complex and organized system, and that the simple schemes of modern behavior in critical psychology hardly seem to reflect this”. (NEWELL & SIMON, 1961, p.110).

By bringing the categories of intelligence, thought and artifice into the debate, we operate in the cognitive environment, which is the analysis of how people learn, or rather, how one learns, since we are also referring to machines and computers. That said, the representation of knowledge, even if partially, comes to the fore regarding the choice of the appropriate method. The table 2 below represents the knowledge representation paradigms and their definitions.

Table 2. Paradigms of knowledge representations and their definitions

PARADIGMS	DEFINITIONS
Procedural knowledge	Knowledge is represented in the form of functions / procedures. It establishes how to do something, methods of questioning; criteria for using skills, algorithms, techniques and methods.
Decision trees	Concepts are organized in the form of trees. The Decision Tree is one of the most practical and most used models in inductive inference. This method represents functions like decision trees
Distributed parallel processing	Connectionist models are used. It consists of dividing a task into independent parts and executing each of these parts on different processors. Basically it is necessary to: parallelize the algorithms; a mechanism for distributing processing across the various available processors; a mechanism for exchanging messages (information and data) between different processes.
Hybrid schemes	Any representation of the formalism that employs the combination of knowledge representation schemes.
Rules	Most known way to represent knowledge, currently used only on small systems, besides its usage on production systems for the purpose of coding condition-action rules.
Logic	One of the most primitive ways of representing human reasoning or knowledge.
Interferences	They examine existing rules and deduce new procedures when possible. There are several strategies for inferring new facts. One of them is "modus ponens", the most common, in which new facts are inferred in the database, and if the antecedent of the rule is true then the consequent is accepted as truth.
Networks	Knowledge is represented by a label of directed graphs whose nodes represent concepts and entities, while arcs represent the relationship between entities and concepts.
Frames or tables	Representation of knowledge based on structures, which categorize knowledge into object, attribute and value. Knowledge in object is the description based on its attributes.

Source: Adapted from Oliveira and Carvalho, 2008.

When it comes to the debate of artificial or human intelligence, knowledge is processed through implicit (subjective) or explicit (objective). The first is knowledge based on pillars, which classify knowledge into object, attribute and value. The second is knowledge that can be transmitted in formal and systematic language. It is formal knowledge, clear, regulated, easy to be communicated (Oliveira and Carvalho, 2008).

Especially since the 1950s, there was a proliferation of reflections and thoughts about Artificial Intelligence, as a result of the production and discourses unfolding of the researchers Hebert Simon, Allen Newell and John Mc Carthy. These precursors of artificial intelligence sought to correlate the theme with other areas of knowledge such as philosophy.

The term Artificial Intelligence (AI) was coined, for the first time, by McCarthy, at the Dartmouth Conference in 1956 in England, when several researchers met for the purpose of evaluating and providing the ability to solve problems (General problem solver) from the system of algorithm-oriented information. In short, algorithm means a sequence of systematized steps for solving problems.

With the evolution of Artificial Intelligence (AI) and inspired by a game (from the Victorian era in England) to guess sex, just by listening to people without seeing them, a test is created to identify the approach of the machine with the human being: the Turin,

“The ideal arrangement is to have a teleprinter communicating between the two rooms. Alternatively, the questions and answers can be repeated by an intermediary. The object of the game for the third player (B) is to help the interrogator. The best strategy for her is probably to give real answers. She can add things like I'm the woman, don't listen to him! 'to her responses, but it will be worth nothing as the man can make similar observations. Now we ask the question: 'What will happen when a machine takes the part of A in this game? 'Will the interrogator erroneously decide with the same frequency when the game is played like this, as he does when the game is played between a man and a woman? These questions replace our original, can machines think? (TURIN, 1950, p. 434).

Bringing the discussion of artificial intelligence to more current times we have to

“Recent developments in AI are the result of increased processing power, improvements in algorithms and exponential growth in the volume and variety of digital data. Many AI applications have started to enter everyday life, from machine translations, image recognition and music generation, and are increasingly deployed in industry, government and commerce. Connected and autonomous vehicles and medical diagnostics supported by AI are areas of application that will soon be common. There is strong global competition in AI between the USA, China and Europe. The US is leading for now, but China is catching up quickly and intends to lead by 2030. For the EU, it's not so much about winning or losing a race, but about finding a way to seize the opportunities offered by AI in a way that is centered on human being, ethical, safe and faithful to our fundamental values”. (CRAGLIA, 2018, p.1).

Another aspect that deserves consideration, in the contemporary world; are the types of applications of artificial intelligence. These are indicated in the data in table 3 with their respective meanings.

Table 3. Types of artificial intelligence application in contemporary times

TYPES	MEANING
Large-scale Machine Learning.	A major focus of this branch of research would be to make existing algorithms capable of working with extremely large databases.
Large-scale Machine Learning	A major focus of this branch of research would be to make existing algorithms capable of working with extremely large databases.
Reinforcement Learning	It focuses on decision making for AI applications and is a technology that will help programs of this type to improve the actions they perform in the real world.
Robotics	Developed through advances in machine perception, including computer vision, strength and tactile perception, much of which will be driven by Machine Learning.
Computer vision	This is the most prominent area of the aforementioned perception of machines.
Natural Language Processing	Also framed in the perception of machines, it is another area that shows great advances. Often accompanied by automatic speech recognition, it is fast becoming a commodity for languages with large data sets.
Collaborative Systems.	In it, models and algorithms are researched in order to help develop autonomous systems that can work collaboratively with other systems and with humans. This research depends on the development of formal systems of collaboration and studies the capacities necessary for the systems to become efficient partners.
Crowdsourcing and human computing	As human skills are superior to those of automated systems to perform many tasks, this line of research investigates methods for improving computer systems using human intelligence to solve problems that computers alone do not solve well.
Computational dimension of Artificial Intelligence	Including its incentive structures, especially in the economic and social field, through Game Theory and Algorithmic Social Choice
Internet of Things (Internet of Things or IoT).	A wide range of devices could be interconnected to collect and share sensory information.
Field of Neuromorphic Computing	This new computational structure would seek to improve the efficiency of the hardware and the robustness of the computational systems.

Source: Adapted from Gonçalves, 2019, p.39 (Dissertation)

In addition, several other disturbing and thought-provoking aspects highlight the need to spread the understanding of Artificial Intelligence and contribute as additional justifications for this research, such as: a) lack of clarity in the concept; b) misinterpretation and use of the term Artificial Intelligence; c) absence of articles that deal with the term in the

proper dimension of what may be Artificial Intelligence; d) lack of articulation between creativity and intellectual property; e) absence of perception of Artificial Intelligence as complexity, among others

It is thus, immersed in this context of discussion, that the object of this research arose, caused mainly by the authors' reflections. Such discussions instigated us to research on Artificial intelligence, concepts, practices and meanings, seeking to dialogue with 25 recent theoretical references, which deal with the subject in question. Such perspectives are embodied in two disturbing questions: to what extent do the selected texts show concepts, practices and meanings of Artificial Intelligence? How do these texts conceive of Artificial Intelligence?

Seeking to reflect on such concerns, the central objective of the article is to perceive, in the selected texts, how, when and if the term Artificial Intelligence appears, intending with the existing tensions between practices, concept and meanings. Still to unveil the object investigated here, other desires emerged from our reflections, namely: a) Identify the areas of knowledge where Artificial Intelligence is most public; b) Analyze the evolution of the Artificial Intelligence concept; c) Understand the dimension in which Artificial Intelligence is being worked.

Thus, the discussions and analyzes presented in this research express the reality of Artificial Intelligence in the light of theorists and authors endorsed in the subject in question, in a dialogue with the databases (SCIENCE DIRECT, SCOPUS, WEB OF SCIENCE, SCIELO and REDALYC), to understand the challenges that are posed to Artificial Intelligence, mainly with regard to practices, concepts and meanings.

2 Methodological tessitures: pathways

There were many steps for the methodological construction of this study. The first step was the awareness, on the part of the component teacher, of the reality of Artificial Intelligence as complexity, focusing our problem on the scientific production on Intellectual Property and Artificial Intelligence according to the dimensions in which they are presented in the databases consulted by the researchers. Then we reflect on this reality, in the light of several renowned authors and theorists on the subject. Finally, we chose the databases that would be consulted and established the searches in them as a random criterion, using the descriptor "Artificial Intelligence" and we used the first five articles in each database in March 2020 to subsequently feed our bank of data. All referential and technique broadened our view of the

subject in question and served as a guide for the construction of the theoretical bases of this article that brings the results of the research. This technique enabled the theoretical-empirical analysis.

3 Theory and reality: a possible dialogue with the database

For Minayo (1994) data analysis focuses on three basic objectives. The first seeks to establish an understanding of the data collected; the second seeks to confirm or not the research assumptions or answers to the questions asked; and the third is the expansion of knowledge on the subject in question, articulating it to the cultural context of which it is a part. In this vein, we can say that this stage highlights the achievement or not of the proposed objectives, points out the gaps and presents elements that were contemplated.

3.1 Practices, Concepts and Meanings of Texts: Definitions and Artificial Senses

Analyzing the reality of the diffusion of the term Artificial Intelligence, its concepts and meanings in the selected articles, we observe that the empiricism is, for the most part, the structure of the articles basis besides the authors who publish on the subject are foreigners and they define the term Artificial Intelligence as the interaction between man and machine without the proper deepening of the concept. as we will see later, one often wants to discuss the concept and do not even give a cognitive meaning in the development of articles, either in the titles of abstracts, or in the development of texts throughout the texts, in many cases.

Another fact that deserves to be highlighted, when analyzing the articles, is the fact that 48% of the selected articles do not discuss the epistemology of artificial intelligence and in some the theme, AI, is implied or mention is made of the precursors of artificial intelligence in the sense of contextualizing the theory.

Upon entering the selected texts, we observed that most of them lack a more in-depth conceptual discussion on artificial intelligence. This discussion is necessary because the biggest challenges in this field of knowledge involves: common sense and thinking. The discussion also implies other constituent and constituted categories, such as the intelligence of scientific knowledge and logical reasoning. The common sense can be defined as the set of understandings accepted in a certain place and time. Scientific knowledge represents

information related to science and deduction (part of the general to the particular), induction (part of the particular to the general) and abduction (part of premises) are fields of knowledge referring to logical reasoning. In the selected texts, we observe the inductive logic to justify the use and trajectory of Artificial Intelligence, which in general have two modalities: general artificial intelligence (Artificial General Intelligence - AGI), where the human-machine relationship takes place in a conscious and self-conscious way and the Artificial Superintelligent Inteligency - ASI), with the 3D printer as an example.

3.2 Practices, Concepts and Meanings of Texts: Penetrating selected articles

According to these previous conceptions, we understand that “Artificial intelligence” is a complex phenomenon on which there is little consensus regarding both theories and the most relevant dimensions for their analysis. "An alternative approach is to start with the intellectual mechanisms (for example, memory, decision making by comparing scores composed of weighted sums of subcriteria, learning, tree searching, extrapolation) and problems that exercise these mechanisms" (McCarthy, 1969, p.3). This complexity remains demonstrated in the selected articles, in which the authors had difficulties in defining artificial intelligence for its expanded field. To highlight this fact, we will place below the databases, references, abstracts prepared by the authors and reflections of the complete texts and revised by the authors.

Scielo

Periodical: Revista da Associação Médica Brasileira Jan 2020, Volume 65 N° 12
Páginas 1438 - 1441

Article: Artificial intelligence in the diagnosis of cardiovascular disease (2020)

Area: Health

Base: Scielo

This article was published in Revista da Associação Médica Brasileira in December 2019, volume n. 65, on page 1438. The mentioned work is divided into parts which includes introduction, results, discussion, conclusions and references. Although artificial intelligence is a fundamental aspect for the understanding of epistemological theories, the basis of analysis of

the text is based on studies of the application of AI in the detection of specific diseases and cases. The content of the text explains the impact and importance of AI for the adoption of new technologies in the health sector.

Periodical: Revista Direito gv mar 2020, volume 16 nº 1

Article: The future of law firms (and lawyers) in the age of artificial intelligence (2020)

Área: social Sciences

Base: Scielo

This article was published in Revista Direito, Volume 16, March 2020. The work is divided in 5 parts which includes introduction, results, discussion, recognition and references. Although artificial intelligence is a fundamental aspect for the understanding of epistemological theories, the basis of analysis of the text is based on constructivist studies regarding the study of specific actions, correlating the future of the legal profession and artificial intelligence. The content of the text explains the impact of subjective norms on the future of law firms and the intentions of professionals to live with the new technologies that, here, materialize in artificial intelligence.

Periodical: Revista de Derecho Privado. Jun 2020, Nº 38 Páginas 1-24

Article: Aplicabilidad de la inteligencia artificial y la tecnología blockchain en el derecho contractual privad

Artigo: Applied Social Sciences

Base: Scielo

This article was published in Revista de Derecho Privado, in June 2020, volume 16 and published on pages 1-24. The work is divided in 3 parts which includes introduction, methods, results, discussion, conclusions and references. Although cognition is a fundamental aspect for the understanding of epistemological theories, the basis of analysis of the text is based on the application of a logical-legal model regarding the study of specific actions aimed at the legal professional. The content of the text explains the impact and transformations from artificial intelligence and its use.

Periodical: Arquivos Brasileiros de Cardiologia Mai 2020, Volume 114 Nº 4 Páginas 718 - 725

Article: Inteligência Artificial em Cardiologia: Conceitos, Ferramentas e Desafios – “Quem Corre é o Cavalo, Você Precisa ser o Jockey” (2020)

Área: Health

Base: Scielo

This article was published in journal Arquivos Brasileiros de Cardiologia in May 2020, volume 114, pages. 718 to 725 with the indication ISSN 0066-782X Online version ISSN 1678-4170. The work is divided in 4 parts: introduction, development, conclusions and the reference section. The authors begin the text by discussing the definitions of artificial intelligence and its implications from a brief historical review of its emergence and application, as well as some fundamental concepts. Then the text goes into the construction and indication of several other models that are applicable to cardiology and health, and signals the seven challenges of AI in this sector, namely: limit of ethics; improvement of mathematical knowledge; obtaining healthy data; obtaining security; collaboration; dealing with error and data-based care management.

Periodical: Radiologia Brasileira. Abr 2020, Volume 53 Nº 3 Páginas 167 - 170

Article: Impact of artificial intelligence on the choice of radiology as a specialty by medical students from the city of São Paulo (2020) Área: Health

Base: Scielo

This article was published in journal Radiologia Brasileira, in April 2020, volume 53, pages 167 to 170, under ISSN 1678-7099. The work is divided in 4 parts, introduction, material and method, discussions, conclusion and the reference section. The article is the result of a survey conducted in São Paulo with medical students and sought to find out what the impacts of AI are in the radiology field. The research indicated that in the first moment the impact is negative with regard to the job market and in the second it takes professionals to technological qualification

Science Direct

Periodical: Revista Española de Cardiología Volume 72, Issue 12 December 2019 Pages 1065-1075

Article: Aplicaciones de la inteligencia artificial en cardiología: el futuro ya está aquí (2019)

Area: Health

Base: Science Direct

Identification article DOI No. 10.1016, published in journal Revista Española de Cardiología, Cardiología, Volume 72, December 2019, pages 1065 to 1075. The work is

divided in ten parts: introduction, data sciences, artificial intelligence, machine learning: techniques, machine learning: methodology, learning, advanced and the cardiac image, machine learning limitations, machine learning and classical statistics, machine learning limitations, machine learning and classical statistics: similarities and differences, legal and ethical aspects of artificial intelligence, artificial intelligence and cardiology, conclusions and references. The authors propose to discuss the relationship between artificial intelligence and the branch of cardiology, indicating professional and academic / scientific issues in the face of the reality of artificial intelligence.

Periodical: *Economía Informa* Volume 407 November–December 2017 Pages 56-86

Article: Análisis del Riesgo de Caída de Cartera en Seguros: Metodologías de “Inteligencia Artificial” vs “Modelos Lineales Generalizados”

Area: Applied Social Sciences

Base: Science Direct

Identification article DOI No. 10.1016, was published in journal *Economía Informal*, Volume 407, November 2017, pages 56 to 86. The work is divided in six parts: introduction, solvency project and our history, The risk portfolio loss: our study problem, proposed methodology and theoretical framework empirical application: medological parameters, empirical application: parametric and non-parametric methods in the analysis of portfolio decline, conclusions and references. The authors propose to test parametric and nonparametric statistical models and linear models in order to analyze the solvency capacity of an insurer's portfolios. The epistemological discussion of artificial intelligence goes beyond the whole study.

Periodical: *Revista Colombiana de Ortopedia y Traumatología* Volume 33, Issues 3–4 Sept–Dec 2019 P 61-63

Article: La conjetura de Poincaré, la Entropía y La inteligencia Artificial: What's up with the Poincarè conjecture, Entropy and Artificial intelligence (AI) (2020)

Area: Health

Base: Science Direct

This article was published in *Revista Colombiana de Ortopedia y Traumatología*, Volume 33, April 2020, pages 61 to 63. The work is not divided in parts and the author uses the flowing text to develop his reasoning: The basis of the text is the mathematical studies of the Colombian thinker “Poncaré” and the relationship with the need to develop and learn mathematics, since it is connected to the logarithms used for the development of artificial

intelligence. The training received in schools does not contribute to the understanding of the logical reasoning that is of fundamental importance for the development of models and the development of algorithms. The text does not discuss the definitions and concepts of artificial intelligence.

Periodical: Revista Iberoamericana de Automática e Informática Industrial RIA V. 8, Issue 4^o October–December 2011 Pages 405-417

Article: Arquitectura Basada en Inteligencia Artificial Distribuida para la Gerencia Integrada de Producción Industria (2011)

Área: Computer science

Base: Science Direct

This article was published in journal Revista Iberoamericana de Automática e Informática Industrial RIA, Volume 8, October 2011, pages 405 to 417. The work is not divided in six parts: introduction, background, integrated production management, general description of an architecture, case study, conclusion and references. The basis of the text is the case study in the oil field with the aim of maximizing production. According to the text, its objective is: with the implementation of a logical model (see Figure 10), it is intended to automatically calculate the configurations of the production units to maximize oil production in order to maximize the potential of the sector and minimizing costs. The discussion about artificial intelligence goes beyond the text. The text does not discuss the definitions and concepts of artificial intelligence.

Periodical: Estudios Gerenciales Volume 30, Issue 132 July–September 2014 Pages 259-266

Article: Inteligencia colectiva: enfoque para el análisis de redes

Area: Computer science

Base: Science Direct

This article was published in Estudios Gerenciales, Volume 30, September 2014, pages 259 to 266. The work is not divided in eight parts: introduction, intelligence as a Euristic goal; bees, termites and ants as social species; networks as social communities; self-organization: attributes of species and communities; application of the euristical goals; reflections and proposals for the study of collective intelligence; conclusions. The basis of the text is the study of entropy and the perspective of understanding the system as an organized whole. The discussion about artificial intelligence goes beyond the text and the only

approximation with artificial intelligence is the citation of algorithm and creativity. The text does not discuss artificial intelligence.

Redalyc

Periodical: Sociedade e Cultura, vol. 7, núm. 1, 2004, pp. 107-121

Article: A inteligência artificial e os desafios às ciências sociais

Área: Social Sciences

Base: Redalyc

This article was published in journal Sociedade e Cultura, vol. 7, in 2004, under DOI n. 10.5216, pages 107 to 121. The work is divided in six parts: introduction, emergence of artificial intelligence, automata not as social beings, but as instruments of group control, Ontologies that guide practices in the area of Artificial Intelligence, conclusion and references. The basis of the text is to discuss the impacts of AI on society and its consequences, one of which would be the monitoring process. The discussion about artificial intelligence is deepened from its origin to its concepts and definitions.

Periodical: Revista Pensamento Contemporâneo em Administração, vol. 12, núm. 1, 2018, Março, pp. 131-151

Article: Uso da iot, big data e inteligência artificial nas capacidades dinâmicas (2018)

Área: Computer science

Base: Redalyc

This article was published in journal Revista Pensamento Contemporâneo em Administração, vol. 12, March 2018, under DOI no. 10.12712 and ISSN n.19822596, pages 131 to 151. The work is divided in seventeen parts: introduction, Reference: Theoretical Fourth Industrial Revolution and Digital Transformation; IoT - Cloud Computing and Internet of Things; Artificial Intelligence (AI); Big data; Dynamic Capabilities; Research Construct; Methodology; Analysis and interpretation of results; Respondents Profile; Importance Matrix (current and future) x Performance; Dynamic Sensing Capacity (analyze the environment); Dynamic Seizing Capacity (seize opportunities); Dynamic Capacity Managing Threats / Transforming (manage threats and opportunities); Importance Matrix (current and future perspective) x Current performance; Digital Transformation Process using IoT, Big Data and AI technologies; Final considerations and references. The basis of the text is to discuss the impacts of AI, considering it as the fourth industrial revolution in society and the research concludes that organizations, mostly large and medium-sized companies (67.9%), in the State

of Rio Grande do Norte , in the perception of business and IT managers, are still in a process of initial use of the technologies (IoT, Big Data and AI) of the so-called digital transformation.

Periodical: Sociologias, núm. 5, enero-junio, 2001, pp. 58-79

Article: Inteligência artificial, tecnologias informacionais e seus possíveis impactos sobre as Ciências Sociais Área: Social Sciences

Base: Redalyc

This article was published in the journal Sociologies, no. 5, in January 2001, pp. 58-79, vol. 12, March 2018, under DOI no. 10.1590 and ISSN n.1807-0337. The work is divided in eight parts: introduction, The Artificial Social Intelligence; What can Sociology do for Artificial Intelligence? What contribution can AI and other informational technologies bring to the development of Sociology? Extension of the ability to read and classify texts; Artificial Intelligence and research using statistics; The extension of the human gaze; Artificial Intelligence and teaching: Computer programs; Transformation of teaching; Theory construction; conclusion and references. The basis of the text is to discuss the impacts of AI in all areas of knowledge, leading us to requalification due to IT. In general lines, research can be synthesized according to the author's own speech: the qualifications of social scientists will have to change in order to incorporate these technologies, it will also be necessary for the Social Sciences to develop a closer relationship with the computer sciences, because your researchers need us to develop products such as AI, and often, we will need to work together to be able to use information technologies to analyze the social world. The author discusses, and a lot, the definition of artificial intelligence.

Periodical: Galáxia, núm. 34, enero-marzo, 2017, pp. 5-19

Article: Comunicação e inteligência artificial: novos desafios e oportunidades para a pesquisa em comunicação

Area: Social Sciences

Base: Redalyc

This article was published in journal Galaxy, number 34, January / March 2017, under DOI no. 10.1590 and ISSN n.1982-2553, pages 05 to 19. The work is divided in seven parts: introduction; The Imitation Game; Characteristics and Consequences; The problem of other minds; Signs of Intelligence versus “Real Intelligence”; AI and Social Interaction; Artificial intelligence and communication theory and references. There are no conclusions or final considerations in the study. The basis of the text is to discuss the impacts of AI on the theory of communication, proposing some changes from the new challenge for the 21st century

which is to decide how the theory of communication will respond and accommodate these new challenges and social opportunities. Another challenge is qualification. The author discusses, and a lot, the definition of artificial intelligence.

Periódical: Boletim de Ciências Geodésicas, vol. 13, núm. 2, julio-diciembre, 2007, pp. 353-368

Article: integração de sistemas de informações geográficas e técnicas de inteligência artificial para auxiliar a tomada de decisão locacional do setor bancário (2007)

Area: Social Sciences

Base: Redalyc

This article was published in Boletim de Ciências Geodésicas journal, Vol. 13, n. 02, July / December 2007, under DOI no. 10.1590 and ISSN n.1982-2553, pages 353 to 368. The work is divided in nine parts: introduction; context; Methodology; Development of the Geographic Information System; Development of the Specialist System; Systems Integration; analysis of results; conclusions and recommendations; acknowledgments and references. The basis of the text is to discuss the result of a research involving two systems: Geographical Indication System - GIS and Expert System - SE, seeking to analyze the effectiveness of these two systems in indicating the best location for installing a bank and the study is carried out in Curitiba and the authors do not define and or discuss the term artificial intelligence that appears in the title, only.

Scopus

Periodical: ELSERVIER 2019, p. 1-38

Article: Explanation in artificial intelligence: Insights from the social sciences

Area: Computer Science

Base: Scopus

This article was published in ELSERVIER journal, in 2019, pages 01 to 38. The work is divided in seven parts: introduction; scope; Philosophical foundations - what is explanation? Social attribution - how do people explain behavior? Cognitive processes - how do people select and evaluate explanations? Social explanation - how do people communicate explanations? Conclusions; recognitions and references. The basis of the text is to discuss the interaction established between AI, the social sciences and the intermediate computer. In this article the author argues that explainable AI can benefit from existing models of how people define, generate, select, present and evaluate explanations. The author also reviewed what he believes to be some of the most relevant and important findings from social science research

on human explanation, and providing some insight into how this work can be used in explainable AI. In particular, for the author, one must take into account the four main findings observed in the introduction of his explainable AI models: (1) why the questions are contrasting; (2) explanations are selected (tend to be idle); (3) explanations are social; and (4) the probabilities are not as important as the causal links. The author acknowledged that the incorporation of these ideas is not feasible for all applications, but, in many cases, they have the potential to improve explanatory agents. The author defines and explains in detail artificial intelligence and its interaction with social science, the intermediary and the computer professional. The image below summarizes this thought.



Periodical: ELSERVIER 2019, p. 45-69, 2017

Article: Artificial cognition for social human – robot interaction: An implementation

Area: Social Sciences

Base: Scopus

This article was published in journal ELSERVIER, July 2016, pages 45 to 69. The work is divided in ten parts: introduction; the challenge between home-machine interaction; deliberative architecture and cognitive skills knowledge; support studies; Discussion: When artificial intelligence allows human-robot interaction; conclusion; knowledge of the model; acknowledgments and references. The basis of the text is to discuss a probable interaction between home machines and their implications from cognition. The conclusion that the authors presented a complete deliberative architecture designed for social robots and time is a perspective of the logical model in the search for a human-machine interaction. The authors discuss the term artificial intelligence

Periodical: ELSERVIER 2015

Article: Artificial intelligence technology combats suicide in veterans

Area: Health

Base: Scopus

This article was published in ELSERVIER journal, November 2015, occupies 04 pages and is written in flowing text. The work is divided in three parts: A frustrating and tragic problem; a new approach to an old problem; Protecting US veterans and there are no references. The basis of the text is the suicide crisis in veterans, which implies connecting traditional medicine with emerging technologies that have proven effective, both in suicide intervention and in mental health issues. The research is carried out through the Defense Advanced Research Projects Agency (DARPA) and the Durkheim Project analyzes unstructured linguistic data from social and mobile sources to predict mental health risks. The authors, in this text, do not define or discuss the term artificial intelligence that appears in the title and text.

Periodical: Engineering Applications of Artificial Intelligence, 2017, p. 423-432.
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Article: GMFLLM: A general manifold framework unifying three classic models for dimensionality reduction

Area: Computational Sciences

Base: Scopus

This article was published in journal Engineering Applications of Artificial Intelligence, in 2017, pages 423 to 432. The work is divided in six parts: introduction; Projections of locality preservation (LPP) to reduce dimensionality; The relationship among LPP, LDA, and MMC; General manifold framework unifying LPP, LDA, and MMC (GM-FLLM; Experiences; conclusion and references. In general the proposal of the article is to make analysis from models and concludes that in theoretical terms the GMFLLM makes it possible to maintain cooperation between the Discriminated dispersion intra / interclass matrix and affinity matrix of intra / interclass distance measurement Considered a platform to develop variants of the LPP, the GMFLLM was not able to build only the existing typical models, such as DLPP and DLPP / MMC, but also generates new ones. Implicitly, despite the existence of reflections on artificial intelligence, tests us with algorithms. The authors do not discuss and neither does the term artificial intelligence appear in the text. Article published in the journal Engineering Applications of Artificial Intelligence, in 2017, occupies pages 423 to 432. The work is divided into six parts: introduction; Projections of locality preservation (LPP) to reduce dimensionality; The relationship among LPP, LDA, and MMC; General manifold framework unifying LPP, LDA, and MMC (GM-FLLM; Experiences; conclusion and references. In general the proposal of the article is to make analysis from models and concludes that in

theoretical terms the GMFLLM makes it possible to maintain cooperation between the Discriminated dispersion intra / interclass matrix and affinity matrix of intra / interclass distance measurement. Considered a platform to develop variants of the LPP, the GMFLLM was not able to build only the existing typical models, such as DLPP and DLPP / MMC, but also generates new ones. Implicitly, despite the existence of reflections on artificial intelligence, tests us with algorithms. The authors do not discuss and neither does the term artificial intelligence appear in the text.

Periodical: Engineering Applications of Artificial Intelligence, 2017, p. 472-483.

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Article: The use of artificial intelligence combiners for modeling steel pitting risk and corrosion rate

Area: Computer Science

Base: Scopus

This article was published in journal Engineering Applications of Artificial Intelligence, in 2017, pages 471 to 483. The work is divided in five parts: introduction, literature review; methodology; experimental model; conclusion and references. The basis of the text is to discuss the use of artificial intelligence used for modeling risk and corrosion rate, using artificial intelligence as a technique to develop the model, however, the literature review proposed in the text is limited to discussing corrosion and not discusses the definition or conception of artificial intelligence. The authors conclude research that investigated the effectiveness of advanced methods of artificial intelligence approaches to increase accuracy in predicting corrosion corrosion risk in reinforced concrete and carbon steel rate. AI, single, joint and hybrid models were used. The pool models were built from four well-known AI techniques, including RNAs, SVR / SVMs, CART and LR. The hybrid AI model integrated a metaheuristic optimization algorithm inspired by nature (ie, intelligent firefly algorithm) and least squares SVR. The study concludes that the accuracy in predicting the risk of pitting and the rate of corrosion can be improved. The authors do not discuss the term artificial intelligence.

Web of Science

Periodical: Arbor: Ciencia, Pensamiento y Cultura. Arbor, 01 December 2013, Vol.189 (764), p.82.

Article: Computational creativity

Area: Computer Science

Base: Web of Science

This article was published in journal *Arbor: Ciencia, Pensamiento y Cultura*, in December 2013, V. 189, n. 764, page 82, under the identification DOI, n. 10.3989. The work is divided in five parts: introduction; computational creativity in music; computational creativity in the sciences; concluding remarks: apparently or really creative? Acknowledgments and references. The basis of the text is to evaluate computational creativity (indicating dealing with AI) in the music sector. The author concludes that ‘... Margaret Boden pointed out that, even if an artificially intelligent computer is as creative as Bach or Einstein, for many it would be only apparently creative, but not really creative. I fully agree with her on the two main reasons for this rejection. These reasons are: the lack of intentionality and our reluctance to give artificially intelligent agents a place in our society. The lack of intentionality is a direct consequence of the argument from Searle's Chinese room (Searle, 1980), which states that computer programs can only perform syntactic manipulation of symbols, but are unable to provide any semantics. This criticism is based on a misconception of what a computer program is. In fact, a computer program not only manipulates symbols, but also triggers a chain of cause-and-effect relationships within the computer causal relationships. However, it is also true that existing computer programs lack many relevant causal connections to display intentionality, but perhaps anthropomorphic and possibly future "embodied" artificial intelligences - which are agents equipped not only with sophisticated software, but also with different types of information. advanced sensors allowing to interact with the environment - it may have sufficient causal connections to display intentionality...” the author also concludes that computer programs are unaware of their achievements. However, he agrees “... with many AI scientists in thinking that lack of awareness is not a fundamental reason for denying the potential for creativity or even the potential for intelligence. After all, computers would not be the first example of unconscious creators, evolution is the first example, as Stephen Jay Gould (1996) brilliantly points out: “If creation requires a visionary creator, how can blind evolution build such splendid and new things? how do we ourselves? The author, in this text, does not define or discuss the term artificial intelligence in epistemological terms, but, he cites some precursors of artificial intelligence.

Periodical: *Writings - Fac. Filos. Let. Univ. Pontif. Bolivar. vol.24 no.53 Bogotá*
July / Dec. 2016.

Article: artificial intelligence re reemplazando al humano en psicoterapia?

Area: Health

Base: Web of Science

This article was published in journal. Writings - Fac. Filos. Let. Univ. Pontif. Bolivar. vol. 24, n. 53, in Bogotá in July / Dec. 2016, under ISSN no. ISSN 0120-1263 / ISSN: 2390-0032 (in line), pages 271 to 291. The work is divided in four parts: introduction; artificial intelligence today; framework of psychotherapy; conclusion and references. The basis of the text is to discuss the man-machine relationship based on tests that have already been carried out and defeated by artificial intelligence, such as chess games, checkers, Chinese games, among others. The conclusion reached by the authors is: "... With very sharp recognition systems, artificial intelligence could help us to detect paralinguistic content, such as gesticulation or the patient's tone of voice; so well, they could go unnoticed by a human being, who in a psychological assessment process would be of great help to achieve a Precise that this allows a more suitable framework for future therapy; in fact, today, something very similar is already being done with Watson, the computer that won Jeopardy in 2011 to be used in many other fields, including medicines, when it manages to "recognize small subtle flaws in verbal communication that may be the first sign of Alzheimer's disease ..." and finally "... Thus, with the passage of time and the line that separates the digital from the human being more and more tenuous, the functions of the 'synthetic therapist' as defined by Science, they would be increasing, but very difficult in cost of the disappearance of the interaction of a flesh-and-blood being with the capacity to feel, to empathize and, why not?, to err and improvise the march.. ". The authors discuss Artificial Intelligence without enter the field of the term epistemology.

Periodical: Duazary: Revista Internacional de Ciencias de la Salud / ISSN: 1794-5992 / Duazary, DOI N. 10.21676 / Vol. 15, No. 3 - 2018/337 - 346

Article: Artificial intelligence vs human intelligence

Area: Health Sciences

Base: Web of Science

This article was published in journal Duazary: Revista Internacional de Ciencias de la Salud, vol. 15, n. 3 - 2018/249 - 250, in 2018. The work is not divided in parts and consists of a two-page long text and at the end there are references. The authors discuss Artificial Intelligence in the perspective of supplanting intelligence (transition from post-humanity to transhumanity) in general lines the author summarizes his thinking as follows: the costs of artificial intelligence are presented as a limiting issue of their use. E "... A recent panel of experts revealed the effects of the application of artificial intelligence in different aspects of daily life, where great advantages are expected in the areas of transport, health-illness, education, security, employment and entertainment. But a futuristic look that comes on the scene is the

technological singularity, which is when machines repair themselves and think for themselves, and step could dominate humans. What if the uniqueness is governed by the laws of robotics? We may not have as many basic needs unfulfilled as they suffer. Many today: lack of drinking water and access to food, but those who live in large cities do not realize these needs, everything arrives at their doorsteps ...”) The discussion of artificial intelligence, but the author, does not enter the field of the term epistemology ...”

Periodical: Journal Title: Mundo Fesc

Article: Artificial intelligence and its contributions to medical physics and bioengineering

Area: Health

Base: Web of Science

This article was published in Journal Title: Mundo Fesc, June 2015, n. 9 pages 60 to 63. The work is divided in six parts: introduction; artificial intelligence; Medical Physics; bioengineering; conclusion and references. The basis of the text is to discuss the use of artificial intelligence and its application in some areas such as medical physics and bioengineering. From the authors' perspective Artificial Intelligence is a discipline that tries to: a) Understand intelligent entities; b) Provide a vehicle to build them, and c) Offer a tool to test theories about intelligence. The authors make a superficial rescue of the history of artificial intelligence, but, they do not argue in epistemological terms and come to the conclusion that “... We can say that AI is not a fashion; It is a discipline built from multidisciplinary contributions and fields of work, with its own theories and models. It attacks problems for which there are no computational algorithm-based methods that are acceptable. AI has allowed and will allow expanding horizons of human beings' resolution, expanding capacities, possibilities of its modeling for a better understanding of man as an intelligent being. Artificial intelligence can increase the capabilities of medical diagnosis, therapy and environmental protection. Likewise, it can help in the study of biological phenomena and human behavior.

Periodical: Journal Title: Ingeniería y Ciencia

Article: Estimation of mechanical properties of distaff using artificial intelligence.

Area: Computational Sciences

Base: Web of Science

This article was published in Journal Title: Ingeniería y Ciencia, in July / December 2011, n. 14, Vol. 7, pages 83 to 103, under ISSN N 1794–9165. The work is divided in ten parts: introduction; Artificial neural networks; genetic algorithms; petrophysical properties;

mechanical properties; tool development; application example; results; analysis of results; conclusion and references. The basis of the text is to discuss how two artificial intelligence techniques: neural networks and algorithms, were combined for the development of a computational tool used for the calculation of mechanical properties. The conclusion reached by the authors is as follows: "... It was possible to obtain a good adjustment in the resistance estimate for the three types of tests, despite the low volume of data used. The neural network model described shows that this can be a reliable model for determining mechanical properties using petrophysical information and requiring a set of experimental data obtained previously..." There is no epistemological discussion of artificial intelligence in the text.

After reading the selected texts, and verifying the presence and signaling of a conceptual discussion, the data in table 4 summarize the research findings and their implications

Table 4. Appearance or not of the term Artificial Intelligence in pre-textual and textual elements in selected articles / UFBA / 2020

PRESENCE OF THE TERM	PRESENCE OF THE TERM							
	AT TITLE %		AT ABSTRACT %		AT THE TEXT %		SIGNALS %	
SIM	19	76%	22	88%	21	74%	13	62%
NÃO	06	24%	03	12%	04	16%	12	48%
TOTAL	25	100	25	100	25	100	25	100

Source: Research data, UFBA, 2020.

In the data, we noticed that 48% of the articles selected and analyzed did not signal the discussion or definition of the term artificial intelligence or a synthetic theoretical framework; 24% of the articles analyzed if you want to include the term artificial intelligence in the title; 12% does not include the term in the abstract, although it does include it in the title and 16% does not present the term in the text. This post leads us to realize that there is a gap in the definition and conception of what is or will be: artificial intelligence. Another important fact is about the knowledge area where Artificial Intelligence is present. The information on the the table 5 give us the present situation.

Table 5. Quantitative by knowledge area at selected articles UFBA/Brasil-2020

KNOWLEDGE AREA	AMOUNT	%
Health	10	40
Social Sciences	8	32
Computer science	7	28
TOTAL	25	100

Source: Research data, UFBA/BRASIL, 2020

In them we can see that the health area is the one that has researched the most about artificial intelligence (40%) followed by the social sciences area (32%) and the computer sciences occupies the third place (28%). Although the theme of artificial intelligence is eminently in the area of computing, it is clear that the social and health sciences have focused on the theme of artificial intelligence and its use in society.

4 Artificial Intelligence: in search of conclusions.

Getting to the final context of the research, in search of “conclusions” about this path, which sought to answer the research questions, was a rich and thought-provoking experience, given that it is at this moment that the gaps, difficulties, achievements and possibilities of new ones emerge. investigations. In addition, we experienced in practice an exercise of cognitive reflection, articulating theory and practice, which enabled us to have a broad and sensitive view on the subject, making us develop in the face of this discussion.

Regarding the questions that guided this study, it is evident that the term “artificial intelligence” is present in most articles without a definition of the term or an expanded sense of artificial intelligence in the essence of the word. The absence of the term in the various articles analyzed leaves no doubt.

Along the way it was necessary to infer diagnoses, analyzes and interpretations so that we could establish a dialogue between the theory, considered as the foundation, and the practice explained by the authors in the articles. In these terms, it is possible to affirm that the objectives were satisfactorily achieved, as it contemplates the aspirations and desires in the search to know the practices, concepts and meanings of artificial intelligence in the selected texts.

In this dynamic and complex context of the research, it is essential to highlight some significant elements that were found throughout the investigation in response to the guiding questions of this research. The first one that caught our attention is the non-appearance of the term, artificial intelligence and its implications, in more than 48% of the analyzed articles and still appear in the database. Another aspect that is evident along the way refers to the reduced participation of Brazilian authors who deal with the theme, even though the theme is recent in the academic environment.

Another piece of evidence is linked to the methodological processes presented in the texts, which are mostly positivist and given the assumption of artificial intelligence, permeates in the various areas of knowledge, such as psychology, education, health, law, administration, mathematics, economics, civil construction, accounting and computational science.

The existing complexity, in the discussion of artificial intelligence, is justified by the fact that artificial intelligence involves the definition of the concept, practices and meanings of the term, requiring a multiplicity of inter and transdisciplinary knowledge. It is in this perspective that we envision the rethinking of artificial intelligence, whose challenge is to epistemologically discuss Artificial Intelligence (AI).

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