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THE ARTIFICIAL INTELLIGENCE APPROACH UNDER BAHRAINI AND COMPARATIVE LAW

A ABORDAGEM DA INTELIGÊNCIA ARTIFICIAL SOB A LEGISLAÇÃO DO BAHREIN E A LEGISLAÇÃO COMPARATIVA

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Abstract
Artificial Intelligence (AI) is an advanced field of computer science focused on developing machines and systems capable of performing tasks that require human-like intelligence. It encompasses various subfields, including Machine Learning and Deep Learning, with the latter often associated with recent advancements in neural networks. The rapid expansion of AI across industries is driven by the availability of vast datasets and improvements in computational power, enabling automation, innovation, and enhanced decision-making. However, the legal and regulatory landscape surrounding AI remains complex and evolving. A unified legal definition is yet to be established, as regulations must consider the diverse applications and implications of AI systems. Current efforts, particularly in the European Union, show promise in addressing AI governance, though legislative clarity is still a work in progress. As AI continues to shape technology, business, and creativity, responsible development and regulation will be critical to ensuring ethical and equitable deployment.

Keywords: Artificial Intelligence. Artificial General Intelligence. Artificial Intelligence. Artificial Intelligence. Artificial Intelligence. Reactive Machines. Limited Memories.

Resumo
A Inteligência Artificial (IA) é um campo avançado da ciência da computação focado no desenvolvimento de máquinas e sistemas capazes de realizar tarefas que exigem inteligência semelhante à humana. Ela abrange vários subcampos, incluindo Aprendizagem Automática e Aprendizagem Profunda, com esta última frequentemente associada aos recentes avanços nas redes neurais. A rápida expansão da IA em todos os setores é impulsionada pela disponibilidade de vastos conjuntos de dados e melhorias no poder computacional, permitindo automação, inovação e tomada de decisões aprimorada. No entanto, o panorama jurídico e regulatório em torno da IA continua complexo e em evolução. Ainda não foi estabelecida uma definição jurídica unificada, uma vez que os regulamentos devem considerar as diversas aplicações e implicações dos sistemas de IA. Os esforços atuais, particularmente na União Europeia, mostram-se promissores na abordagem da governança da IA, embora a clareza legislativa ainda esteja em desenvolvimento. À medida que a IA continua a moldar a tecnologia, os negócios e a criatividade, o desenvolvimento e a regulamentação responsáveis serão fundamentais para garantir uma implantação ética e equitativa.

Palavras-chave: *Inteligência Artificial. Inteligência Artificial Geral. Inteligência Artificial. Inteligência Artificial. Inteligência Artificial. Máquinas Reativas. Memórias Limitadas.*

1 INTRODUCTION

Artificial Intelligence (AI) is an advanced branch of computer science that aims to design machines and systems capable of performing tasks that require human-like intelligence. The field encompasses two main subcategories: Machine Learning and Deep Learning. In recent years, with the advancement of neural network technologies, AI has often become synonymous with "supervised deep learning."

AI is transforming the fields of technology and business, being used in a wide range of industries and affecting almost all aspects of creativity. This growth is attributed to the availability of vast amounts of data and advances in affordable computing power.

However, a unified legal definition of AI remains elusive. Regulation must take into account the contexts in which AI intervenes and its impact, as well as the responsibilities of developers. Regulatory bodies are expected to consider different aspects, not just autonomy. Currently, EU regulations take a promising approach, although legislative discussions may show that there is still a long way to go before a clear legislative vision is reached.

2 DEFINITION OF ARTIFICIAL INTELLIGENCE LINGUISTICALLY

Artificial Intelligence Linguistic, also known as Natural Language Processing (NLP), is a branch of Artificial Intelligence (AI) that focuses on the use of deep learning, knowledge, logical reasoning, mapping, and cognition. This field aims to enable machines to emulate human thought and its diverse skills. Though artificial intelligence is different from human intelligence, it is dependent on it and acts as a substitute for it. AI reflects the ability of machines and devices, supported by advanced software, to perform a variety of tasks and actions to achieve certain goals, reach conclusions, and make decisions automatically and independently, without the need for human intervention.

Artificial Intelligence (AI) is based on the principle theory that the mental capacity of humans can be imitated by machines. This means that these systems can interact with human activities, which were previously considered to be the exclusive domain of humans due to their intelligence and resourcefulness. As a result, machines are able to learn independently and perform many of the mental and behavioral tasks performed by humans, allowing them to effectively mimic human functioning models.[1]

On other hand Barr and Feigenbaum defined artificial intelligence as "the field of computer science concerned with the design of intelligent computer systems that exhibit intelligent characteristics of human behavior." [2] Moreover, Minsky describes AI as "the science that enables machines to do things that would require intelligence if performed by humans."[3]

Others believe that AI is computer science, a science and technology based on sciences such as computer science, linguistics, psychology, psychology, mathematics and engineering. In fact, it is the product of the achievements of the human mind, the product of human civilization in every time and anywhere.

According to Dart - mouth, artificial intelligence is defined as "a field of study related to the demonstration of intelligence in machines, which includes the ability to think, learn, understand, and apply meaning".[4]

Despite its lack of widespread familiarity of artificial intelligence, as some Arabian jurisprudence suggests, AI is the technology that will change all areas of life. It is a broad tool with multiple uses and domains that enables people to rethink how they integrate information, analyze data, and use the resulting insights. To improve decision-making, we hope that with this comprehensive overview we may be able to explain AI to an audience that includes policymakers, opinion leaders, and interested observers, and show how AI is already changing the world."[5]

On the other hand, in the United Kingdom, the Judicial Council's Select Committee on Artificial Intelligence recently released a report that uses this definition: "technologies that have the ability to perform tasks that may require human intelligence, such as visual perception, speech recognition, and language translation." [6]

However, this definition is problematic due to the fact that it relies on comparing AI to human intelligence, a concept that is difficult to define precisely. It also ignores an important aspect of beneficial developments in AI, such as the utilization of vast

computing power to perform tasks that are beyond the capabilities of humans.

Within the European context, the EU Commission has proposed a definition that describes systems that exhibit intelligent behavior by analyzing their environment and taking certain actions with a degree of autonomy to achieve specific goals. as well as in the United States, the Future of AI Act, which establishes a federal advisory committee, defines it as “any artificial system that performs tasks under variable and unpredictable conditions, without significant human supervision, or that is capable of learning.

The more similar systems are to humans in performing tasks, the more intelligent they are.

However, the definitions provided by the EU and the US face the same challenge of linking AI with human intelligence. The EU Commission's wording introduces the concept of “autonomy” as a possible approach for future legislation.

Some researchers refer to the definition of AI as “a field of study that focuses on the manifestation of intelligence in machines, including the ability to think, learn, understand and apply meaning”.

3 DEFINITION OF ARTIFICIAL INTELLIGENCE IN LEGAL TERMINOLOGY

The Bahraini legislature issued the Electronic Letters and Transactions Law No. (54) of 2018, which represents a comprehensive update of the repealed Electronic Transactions Law of 2002. This law aims to expand the scope of transactions that can be conducted electronically, which contributes to the creation of an advanced and secure E-economic environment for online transactions. The law is also in line with the latest developments in the fields of technology and law, reflecting the trend towards enhancing efficiency and security in electronic transactions.[7]

Moreover, Legislative Decree No. (45) of 2021 was issued, Designating the Competent Administrative Authority for the Electronic Communications and Transactions Law promulgated by Legislative Decree No. (54) of 2018. This decree designates the Communications Regulatory Authority (CRA) as the competent administrative authority for the Electronic Communications and Transactions Law. Also the Decree-Law No. 55 of 2018 on Negotiable Electronic Records was also issued. The provisions of this law apply to negotiable electronic records, including the conditions to

be met for the recognition of such records and the legal implications thereof.

It is worth noting that the Bahraini legislator is considered a pioneer in this context by issuing the Electronic Transactions Law in 2002, which was replaced by the Law on Letters, Electronic Transactions and Negotiable Records No. (54) of 2018, the second article of which stipulates that:

a. A legal requirement to retain or provide the original of a document, record or information in electronic form is satisfied where:

1. There exists a reliable assurance as to the integrity of the information contained in the electronic record, from the time it was made in its final form, whether such information was in its original form in a document in writing or as an electronic record;
2. Where the document, record or information is to be provided to a specific person, the electronic record that is provided to the person is capable of being displayed to such person; and
3. The relevant public body, which has jurisdictional oversight over the relevant activity, has consented to the provision or retention in the form of an electronic record and any additional requirements specified in a regulation by such competent public body in respect of the provision and retention are complied with.

a. For the purpose of paragraph (1) of subsection (a):

1. The criterion for assessing integrity is whether the information in the electronic record has remained complete and unaltered, apart from the introduction of changes that arise in the normal course of communication, storage and display of the information; and
2. The standard of reliability shall be assessed in light of all the circumstances in which, including the purpose for which, the record was generated.

b. A person may satisfy the requirement referred to in subsection (1) by using the services of any other person.

The issue is that there is no final text of the AI law, as technical work will continue to finalize the details of the new EU regulation. Once this work is finalized, the Presidency will present the consensus text to member state representatives for approval.[8]

Notably, a cyber personality would be legally quite different from the legal personality granted to administrative entities or corporations, as these entities are run by

humans. On the contrary, robots will operate according to an autonomous, automated thinking process, not a human one.

This raises the question of how Bahraini lawmakers will grant personality and capacity to intelligent robots to manage themselves without the need for human management in the future. The rules governing robots are not based on the general legal rules that regulate the actions of humans, especially since we are in a transitional phase towards enabling artificial intelligence, which means that they will not remain under the management of their human owners.

Special legal rules will be granted to robots only when their self-developed capacity reaches a level where cyberpunks can be held liable for damages caused by their activities. Science fiction may become reality in the near future, creating new legal issues that may lead to a re-evaluation of existing laws.

The scenario of developing an AI capable of thinking, learning and adapting, and then fully relying on autonomy, runs counter to the current rules of liability. In this case, the causal relationship between AI errors and manufacturing or operational management would disappear, raising questions about the viability of the entire legal system in the future.[9]

The emergence of new generations of intelligent AI robots, including the so-called "Internet of Things," will further complicate matters. This system connects smart objects, allowing them to mutually exchange information and instructions. This will create a smart social loop capable of carrying out integrated processes, such as the production of cars, without any human intervention. This will result in the emergence of a group of electronic people who communicate and interact with each other based on the hyper-evolution, adaptation, and self-learning of robots.[10]

The World Intellectual Property Organization (WIPO) has provided a definition of artificial intelligence as "a field in computer science that focuses on the development of machines and systems capable of performing tasks considered to require human intelligence, with little or no human intervention."[11]

It has also been defined as "the set of efforts to develop information systems to make them think and act in a manner similar to human nature, and that these systems accomplish tasks in an integrated coordinated manner in light of their experiences and understandings in order to realize decision-making".

Based on the previous definitions, a definition of AI can be formulated as follows: “A science that focuses on empowering machines through programs capable of performing operations that require intelligence by simulating the characteristics that characterize the intelligence of the human mind.”[12]

In general,[13] AI is based on three main pillars:

1. Learning: By collecting data and creating rules, known as algorithms, that determine how to transform data into actionable information.
2. Logic: Choosing the most appropriate algorithm to successfully complete the task.
3. Self-correction: By continuously adjusting algorithms to ensure the most accurate results whenever possible.

4 CONCLUSIONS

1. the prevalence of artificial intelligence technologies in all aspects of daily life and in all disciplines.
2. Artificial intelligence relies on self-learning algorithms and thus will have the ability to think, make decisions, and execute them autonomously.
3. The lack of sufficient legislation that protects society from the crimes of AI technologies, and sets controls on the limits of these technologies.
4. Increased violations of human privacy and invasion of private life in light of AI technologies, taking advantage of the user's lack of full knowledge about them.

4.1 Recommendations

1. Legislation should be enacted to regulate the production and development of AI technologies and set standards for crimes committed through them.
2. Encourage the use of AI technologies in all fields, as they represent the future.
3. Agree on a unified definition of AI and define its scope in the field of justice, as the first steps of legal regulation begin with the definition of the thing.

4. Encourage the exploitation of AI technologies - specifically - in the fields of justice and security, to achieve the greatest amount of transparency and equality, which is available through these technologies.
5. Monitor all types of AI entities that are imported from abroad or manufactured in Bahrain through experts to examine these entities before and during use, so that they are not exploited to commit crimes.
6. Establishing an independent court that includes everything related to modern electronic means.
7. Establishing a joint Gulf center to record and archive artificial intelligence inventions that are being tested on the ground, to study them and record any incidents committed through them and the details thereof.

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Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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