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LEGAL REGULATION OF ARTIFICIAL INTELLIGENCE WORLDWIDE

Abstract: Artificial Intelligence (AI) represents a phenomenon at the center of global scientific attention. Its immense potential to fundamentally transform all sectors of society is accompanied by numerous risks that require a regulatory response on a country basis. Accordingly, there is a noticeable international momentum toward the creation of legal framework for AI. However, from the legislative activities of international organizations to the initiatives of individual states, there is no unified stance or universally accepted instrument for regulating AI. Numerous regulatory instruments, including laws, conventions, principles, guidelines, decrees, and ethical standards are in use, which are rarely applied systematically and comprehensively, and more often in a sectoral and indirect manner. Nevertheless, a pioneering and revolutionary step has been taken by the European Union with the adoption of the Artificial Intelligence Act, popularly known as the Artificial Intelligence Law. This paper analyzes existing individual legislative initiatives and suggests the anticipated significant influence of the AI Law as a model for legislation across the international community.

Keywords: *artificial intelligence, Artificial Intelligence Act, European Union law, Artificial Intelligence regulation, model law.*

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1. Introduction – Defining the Concept and Importance of Artificial Intelligence

Artificial Intelligence (hereinafter: AI) represents a phenomenon that has captured the attention of every segment of scientific discourse in recent years, including the one concerning legal regulation. The use of AI is transforming industries, business ecosystems, public administration, security, culture, healthcare, etc. Accordingly, numerous questions arise for each country, requiring the establishment of a regulatory framework to ensure the ethical and proper use of AI, as well as the implementation of control over AI systems.

According to estimates by American consulting firms, the AI market is expected to reach a value of as much as $1.339 trillion by 2030, and in the United States, one in four companies has already integrated AI into their daily operations (*MarketsandMarkets, Artificial Intelligence Market Report*, 2024). The automation and the evolution of professional roles have become everyday realities, as AI continues to redefine norms across all sectors. From virtual assistants (such as Siri, Alexa, or Google Assistant) to sophisticated algorithms that power recommendation systems, AI has drastically changed the way we interact with technology. AI systems also include recommendation engines (e.g., those used by streaming services like Netflix), applicant selection systems, autonomous vehicles, smart home devices, and content generation tools that process and create text, images, or video (e.g., *GPT-4), among many others.* All of this clearly illustrates that the potential of AI is vast, perhaps even difficult to fully comprehend.

Nevertheless, despite the evident importance of AI, there is no universally accepted definition in existing literature (Scherer, 2019, p. 542). AI is often described as the simulation of intelligent behavior by computers and the ability of machines to imitate human behavior, in terms of developing the capacity to interpret, learn new behaviors, and perform tasks with little or no human intervention (Guida, 2022, pp. 315–355). In this sense, AI involves the use of machines that learn from data and develop intelligence comparable to that of humans. Additionally, The Council on AI at the Organization for Economic Cooperation and Development (hereinafter: OECD) defines AI as a system based on

machine operations which, for a given set of goals defined by humans, can generate predictions, recommendations, or decisions that influence not only virtual but also real-world environments.

The importance and characteristics of AI, including its reliance on data, capacity for self-learning and autonomy, as well as inherent unpredictability, clearly point to the need for legal regulation. Since AI systems exhibit elements of autonomous behavior, they are by nature unpredictable, and their functioning often lacks transparency due to the so-called "black box" effect. Numerous legal questions arise in connection with this phenomenon, such as the need to reconsider the traditionally understood concept of liability for damage (Mijatović, Gajinov, Tomić, 2024). In addition, the significant risks and factors associated with AI call for public caution and an adequate regulatory response. These include the potential for malicious use, the spread of disinformation, the risk of job loss, the shortage of AI specialists, and the risk of monopolization in the development and control of the AI sector.

These considerations help explain the current global momentum toward the formulation of legal frameworks for AI. Naturally, each country will define its specific legislative policy in accordance with its own needs. In this context, the selection of legal instruments is also highly diverse. [2] There are traditional laws and legislative initiatives aimed at comprehensively regulating AI at the national level. However, in most cases, regulations are currently being adopted in two main forms: (1) through strategies, principles, action plans, and ethical codes, or (2) by partially incorporating AI-related matters into existing laws within relevant sectors, as has been done, for example, in New Zealand. The reasons for this approach vary in nature. Some countries still lack the logistical and financial capacity to implement ambitious regulatory measures related to AI. Other countries are reluctant to impose strict regulations that might hinder the development of the AI market, while some believe that laws adopted in this area will soon become obsolete due to the inability of legal systems to keep pace with rapid technological advance-

[2] Serbia, according to the objectives set forth in the Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the period 2025 to 2030 (hereinafter: the AI Strategy), anticipates the adoption of legislative acts related to AI.

ment. Nevertheless, in this regard, the European Union (hereinafter: EU) has made a groundbreaking step by adopting the Artificial Intelligence Act (2024, hereinafter: AI Act). This regulation is expected to become a model, serving as a regulatory benchmark and fundamental legislative inspiration for countries worldwide, irrespective of whether the provisions of this unprecedented legal initiative are adopted verbatim or amended.[3]

2. Global Legislative Initiatives on Artificial Intelligence

Certain international organizations have been actively working for years to shape the regulatory landscape for AI. In this regard, it is important to highlight the achievements of the Organization for Economic Co-operation and Development, which issued the first version of the AI Principles in 2019, followed by a second version published. Additionally, the International Organization for Standardization has released a large number of AI standards, while the Council of Europe's efforts led to the adoption of the 2024 Framework Convention on Artificial Intelligence, Human Rights, Democracy, and the Rule of Law, which currently has eleven signatories, including the EU and the United States.

As for individual countries, different approaches to AI regulation can be observed. When it comes to the three most prominent systems, it may be said that the United States focuses on protecting the values of the AI market; in the People's Republic of China, the existing regulatory framework emphasizes the role of the state and its control over AI development, whereas in the European Union, the regulatory approach is based on and centered around the protection of human rights (Bradford, 2023).

With the exception of the European Union, which has adopted the first formal, comprehensive, and sanction-backed regulation with direct

[3] Although the instrument by which the EU regulates the issue of artificial intelligence was adopted in the form of a regulation, the English term "AI Act" has already become established. In Serbia, the term "Law on AI" is also commonly used, as is evident from the AI Strategy, and the author will use this term accordingly.

applicability across all 27 Member States, AI regulation is still in its early stages in most countries. In fact, many countries continue to leave the AI field only partially regulated, unregulated, or governed by broad legislative strokes due to different reasons mentioned earlier. Nevertheless, a few countries have taken more decisive steps and committed to drafting comprehensive AI legislation. For instance, in January 2025, South Korea adopted the Artificial Intelligence Act, which is set to enter into force in January, thus becoming the second country in the world to pass such a law. In Brazil, legislative efforts toward an AI Act have been underway for several years, with its adoption anticipated by the end of .

Conversely, on the so-called non-legislative end of the AI regulation spectrum, The People's Republic of China long relied on its Next Generation AI Development Plan, adopted as early as 2017 . Subsequently, in 2023, it adopted a set of regulations entitled the Interim Measures for the Management of Generative Artificial Intelligence Services. The United Kingdom has so far hesitated to adopt definitive AI legislation, arguing that such laws could hinder sector growth and quickly become outdated due to ongoing technological advancements. However, this does not mean that the country has left the field unregulated. In fact, as many as 61 AI-related instruments have been adopted, though none comprehensively or coherently regulate the matter through legislation; instead, regulation is approached through plans and strategies. The most recent significant initiative is the 2023 White Paper titled A Pro-Innovation Approach to AI Regulation .

The United States' approach to AI regulation is shaped by several factors. Notably, the U.S. is home to some of the largest companies in this field, such as OpenAI, Google DeepMind, Microsoft, and Meta, and significant investments are made to develop AI with the goal of achieving dominance in the global market. The U.S. still lacks a comprehensive AI law; instead, its strategy relies on a multitude of fragmented regulations – currently amounting to 82, with governance policies and guidelines being the most prevalent (*AIPRM, AI Laws Around the World*, 2024). Some of the most important federal acts include the National Artificial Intelligence Initiative Act of 2020 and the January 2025 presidential executive order titled Removing Barriers to American Leadership in AI . This executive order expresses a political preference for deregulation of

AI, prioritizing innovation over risk mitigation. At the level of individual U.S. states, pioneering regulations have been introduced by Colorado, Illinois, and California. In this context, Colorado's AI Act of 2024 is highlighted as particularly significant within the global convergence of AI regulatory systems, as it adopts many aspects of the groundbreaking EU Artificial Intelligence Act, which will be examined further below.

3. The Artificial Intelligence Act – Proof of the European Union's Leadership in Digital Regulation

The European Union has long been recognized as a global leader in digital regulation. Achievements in EU law concerning issues such as internet governance and data protection have become foundational and legally inspirational for legislators worldwide (Greenleaf, Cottier, 2020, 24–26). With regard to AI, the EU has adopted the Artificial Intelligence Act with the explicit goal of establishing a global gold standard for regulating this area (Almada, 2025a, 1). With a population exceeding 400 million and a GDP per capita twice the global average, the EU's single AI market is highly attractive. It is therefore reasonable to expect that this regulation, as the first of its kind, will hold exceptional significance as a legislative model on a global scale.

3.1. The Artificial Intelligence Act – Scope, Application, and Objectives

After lengthy negotiations between the European Parliament and the Council of Europe regarding the draft regulation, the Artificial Intelligence Act finally entered into force on August 1, 2024 . The first set of rules, concerning the prohibition of AI systems deemed to pose unacceptable risks, went into effect on February 2, 2025 . The remaining provisions are set to come into effect gradually and in phases, with deadlines for certain matters extending up to August 2031. The AI Act is a comprehensive regulation – the official English text spans 144 pages, contains 113 articles and 13 annexes, and is directly applicable in all 27 Member States.

The AI Act defines artificial intelligence as a system based on machines that, due to explicit or implicit objectives, derive methods from the input they receive to generate outputs such as predictions, content, recommendations, or decisions, which may affect physical or virtual reality. This regulation relies on an ex-ante assessment by the legislator (Almada, 2025b, 113) and identifies four levels of risk: 1) unacceptable (involving a prohibition on the use of AI), 2) high (subject to strict regulatory systems), 3) limited (requiring transparency obligations), and 4) minimal (which entail no special obligations). Accordingly, this regulation establishes rules or prohibitions on the use of certain types of AI systems, as well as measures to support innovation, with particular focus on small and medium-sized enterprises. It also regulates penalties for non-compliance, with fines of up to 35 million euros or 7% of annual global turnover.

This regulation applies to a wide range of entities, including providers, manufacturers, importers, distributors, and users of AI systems. It covers both the private and public sectors, and applies to entities based within the EU as well as those headquartered outside the EU. Specifically, this act is to be applied on an extraterritorial basis to any individual or organization implementing AI systems that affect individuals within the EU, regardless of where the company is established.

Through the AI Act, the EU has set both internal and external objectives. Internally, the AI Act aims to create a unified EU market for AI (Recital 1) and to ensure legal certainty and the adoption of AI technologies while safeguarding values such as fundamental human rights, democracy, and the rule of law (Article 1 1). Externally, the Act is expected to promote the spread of a "human-centric approach to AI" and the development of "trustworthy AI" (Recital 8). Additionally, the Act reflects the EU's intention to compete (at least on a regulatory level) with the United States and China, the global leaders in harnessing AI (Draghi, 2024).

3.2. The Artificial Intelligence Act – Significance and Prospects as a Model Law

The Artificial Intelligence Act has already entered legal history as the first comprehensive instrument regulating AI with an explicit sanctioning policy, designed to serve as the gold standard and cornerstone for AI regulations worldwide. Naturally, mere adoption of this regulation into national legislations without extensive adaptations cannot be expected for several reasons. Firstly, this regulation was drafted with the specific context of EU institutions, member states, and agencies in mind. Furthermore, individual countries will seek to assert their own regulatory particularities as an expression of their "digital sovereignty," and will likely follow the regulatory models of their geopolitical allies (Almada, 2025a, 13). As noted, the EU is nonetheless a leader in digital regulation and already enjoys an excellent global reputation in legislative matters. The adoption of the AI Act marks a revolutionary step in the regulation of this field. The scope of this Act extends beyond the EU member states to include numerous other countries – such as Serbia, which aspire to become part of this *sui generis* community, as well as all states whose entities come into contact with the EU's AI legal regime. The combination of this extraterritorial effect and the anticipated Brussels effect will undoubtedly lead to the adoption of patterns from the AI Act in many legal systems. Given the substantial costs of developing such legislation, every country will likely welcome this Act as a legal inspiration and readily utilize a ready-made instrument whose practical application can be closely monitored.

4. Conclusion

Artificial intelligence has become a dominant phenomenon in recent years within the scientific discourse of the legal domain. Due to the immense significance of AI, both realized and anticipated, we are currently witnessing global momentum toward the formulation of legal frameworks for AI.

However, in this regard, countries adopt different approaches based on varying perceptions of their primary regulatory interests and the instruments to be employed. Notably, there is a wide range of legal measures in use, ranging from conventional laws (as exemplified by South Korea and soon Brazil) to strategies, principles, plans, and ethical codes, or, alternatively, the partial sectoral incorporation of AI-related matters into existing laws of related fields (as is the case in New Zealand). The reasons for this approach vary in nature. First and foremost, some countries still lack the logistical and financial capacity to implement ambitious regulatory measures regarding AI. Other countries are reluctant to impose strict regulations that might hinder the growth of the AI market, while some believe that any laws adopted in this area will soon become obsolete due to the inability of legal frameworks to keep pace with rapid technological advancement (a rationale embraced by the UK government).

At this point, it seems most important to highlight AI regulation in the three leading systems: the United States, the People's Republic of China, and the European Union. In the U.S., the approach is market-driven, and there is still no comprehensive federal legislation governing this matter; such regulation exists only as exceptions in certain states like Colorado and California. Moreover, the most recent action by the presidential administration in early 2025 involved issuing an executive order proclaiming the intention to remove barriers to AI development and endorsing deregulation as the correct principle to encourage innovation. In China, the central focus of AI regulation is state control over the sector. The latest major step taken was the adoption of the 2023 Interim Measures for the Administration of AI-Generated Services. Finally, in an effort to match the United States and China as dominant powers in AI development, the European Union has chosen to leverage its advantage as a leader in digital regulation, adopting an approach primarily based on the protection of rights. In this context, a revolutionary step was taken in 2024 with the adoption of the Artificial Intelligence Regulation (commonly referred to as the Artificial Intelligence Act), which has direct application across all 27 member states, as well as extraterritorial effect on entities outside the EU under certain conditions. The AI Act is founded on risk assessment and correspond-

ing legal regimes that addressees must comply with to avoid severe penalties. This regulation explicitly expresses the intention to establish a global gold standard for human-centric AI governance. Considering the EU's previous successes in this field, the AI Act is expected to become a model and regulatory benchmark for countries worldwide, irrespective of whether the provisions of this unprecedented legal endeavor are adopted verbatim or amended.

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