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LEGAL PERSONHOOD FOR AI AND ROBOTS

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Abstract. The growing integration of artificial intelligence (AI) and robotics into various sectors of society raises complex legal and ethical questions about their status within traditional legal frameworks. This study critically examines the concept of legal personhood for AI and robots by analyzing classical theories, pragmatic models, and emerging policy proposals. While traditional theories tie personhood to autonomy and moral agency, pragmatic approaches suggest that functional legal recognition may be necessary to address accountability gaps created by autonomous systems. The study advocates for establishing a new category of "electronic agents" endowed with limited rights and strict liabilities, designed to facilitate legal interactions without undermining human dignity or rights. Through doctrinal and comparative legal analysis, this research highlights the urgent need for international harmonization of AI regulations to prevent jurisdictional fragmentation. The findings support a cautious, balanced expansion of legal subjectivity that accommodates technological evolution while preserving core ethical principles. By proposing practical, ethically sound frameworks for AI legal integration, this study contributes to the broader discourse on the future of law in an AI-driven world.

Keywords: artificial intelligence (AI), legal personhood, electronic agents, liability and accountability, human dignity, international harmonization, legal theory and technology

Introduction

The rapid evolution of robotics and artificial intelligence (AI) has profoundly transformed contemporary society, influencing industries such as medicine, finance, transportation, and education. These systems now perform complex operations independently, challenging conventional notions of agency and liability in legal systems. As AI technologies become more deeply integrated into societal and economic frameworks, legal questions regarding their status and liability have come to the forefront.

Legal personhood, a cornerstone of Western legal traditions, has historically been associated with rational and autonomous human beings. However, legal scholars have demonstrated that personhood is not limited to inherent

human attributes and can be extended to non-human entities to meet societal needs. For instance, corporations have been recognized as legal persons to facilitate commercial transactions [1]. More recently, a flexible model of personhood, known as the "bundle theory," has been proposed, suggesting that legal personhood comprises a set of legal incidents that can be selectively allocated to various entities based on functional needs rather than metaphysical properties [2].

Technological advancements have intensified the need to reassess the boundaries of legal personhood. AI systems, by acting autonomously and affecting third parties, pose significant accountability challenges. In cases where autonomous AI systems cause harm or engage in transactions, traditional legal categories often fail to assign liability. This accountability gap has prompted some scholars to consider granting limited legal personhood to robots and AI when their actions result in significant societal harm [3]. For example, the European Parliament has debated the concept of "electronic personhood" for highly autonomous robots to address such gaps [4]. This study critically examines the prospects, models, and implications of extending legal personhood to robots and AI. It seeks to determine whether and to what extent AI systems should be recognized as legal persons within existing or prospective legal frameworks, evaluate various models of recognition proposed by scholars and policymakers, and assess the risks and societal implications of such legal innovations. Sepanov proposes a functional hierarchy of legal recognition that enables AI systems to participate in legal processes without equating them to human subjects [5].

The research questions guiding this study are as follows:

1) Can robots and AI be recognized as legal persons under current or newly developed legal systems?

2) Under what models and limitations might legal personhood for AI be achieved?

3) What are the risks and benefits of conferring legal personhood on AI systems?

By addressing these questions, this research contributes to the growing legal and philosophical discourse on AI governance and the development of legal subjectivity.

Materials and methods

This research employs a doctrinal legal research methodology, critically evaluating primary and secondary legal materials on legal personhood and artificial intelligence (AI). Primary sources include national legislation, international treaties and conventions, and policy documents from the European Union (EU), the United States, and Uzbekistan. Secondary sources comprise research papers, monographs, and comparative legal analyses, forming the theoretical foundation of the research.

A comparative methodology is used to examine how various jurisdictions conceptualize and regulate AI systems in relation to legal personhood. Particular attention is given to EU initiatives, such as deliberations on electronic personhood and the AI Act, alongside Uzbekistan's national strategies for advancing AI technologies in the absence of a dedicated AI-specific legal framework. Uzbekistan has adopted several strategic legal documents to regulate AI, including Presidential Decree PD-6079, which approves the "Digital Uzbekistan – 2030" strategy; PD-4996, which supports infrastructure development; PD-5234, which introduces a special regulatory sandbox regime; and PD-358, which affirms a national strategy for AI development through 2030 [6]. Additionally, philosophical theories, such as the bundle theory of personhood, are applied to contextualize the findings.

A critical synthesis approach is also employed to evaluate prevailing models of legal accountability for AI, including analogies to the corporate model and strict

liability frameworks. By integrating doctrinal, comparative, and critical methodologies, this research aims to provide a balanced and comprehensive analysis of the feasibility and implications of granting legal personhood to robots and AI.

Research results

The legal personhood of robots and artificial intelligence (AI) is a highly debated topic, with academic perspectives grouped into three main categories: rejection of legal personhood, advocacy for functional personhood, and compromise models supporting limited legal recognition with strict prerequisites. A significant body of literature opposes granting legal personhood to robots and AI systems, arguing that AI lacks the inherent properties traditionally associated with personhood, such as autonomy, consciousness, intentionality, and moral agency.

Critics assert that legal personhood is intrinsically tied to entities capable of understanding and fulfilling obligations and entitlements within a moral and societal context. Marshall argues that, despite AI systems' ability to operate and make decisions independently, they rely on human-programmed algorithms and lack genuine self-awareness or ethical judgment [3]. Granting legal personhood to such systems could erode the moral and societal foundations of legal subjectivity.

Other scholars highlight the risks of anthropomorphizing AI, warning that legal personhood may create societal confusion about the capabilities and limitations of these technologies [7]. Assigning legal personhood to AI without corresponding moral agency could undermine the essence of rights and duties, significantly challenging justice and accountability mechanisms.

In contrast, some scholars advocate for functional or instrumental legal personhood for AI, arguing that personhood should not depend on consciousness or moral agency but on the practical needs of legal systems to allocate rights and duties effectively. Burylo notes that modern legal systems have long recognized non-human entities, such as corporations and foundations, as legal persons [1]. Similarly, granting robots and AI limited legal personhood in specific contexts—such as entering contracts, holding assets, or bearing liability—could address accountability gaps and enhance legal clarity.

Negri supports this functionalist perspective, observing that AI systems increasingly perform tasks subject to legal regulation, such as executing contracts and making financial market decisions [4]. Limited personhood enables AI entities to participate in legal relationships without receiving moral or political rights reserved for natural persons. This model is practical, allowing legal systems to adapt to technological advancements without redefining human-centric ethical principles.

A compromise approach, often termed "electronic personhood," proposes a unique legal status for AI systems tailored to their technological nature and societal role, with strict regulatory controls. Burylo and other advocates suggest that electronic personhood would not equate AI with humans or corporations but establish a sui generis legal category to address AI-specific risks and interactions [1].

The 2017 resolution of the European Parliament recommended the legal classification of advanced autonomous robots as "electronic persons" to be held accountable to pay compensation in case of causing any harm [8]. This proposal seeks legal certainty in liability without attributing human-like dignity or rights to AI systems. The compromise model balances innovation incentives with societal safeguards, prioritizing human rights while adapting legal frameworks to technological change.

A notable case of AI legal recognition is Saudi Arabia's 2017 decision to grant citizenship to Sophia, a robot developed by Hanson Robotics. As the first robot to receive state citizenship, Sophia sparked

global debate about the implications of assigning human-like legal statuses to non-human entities [4]. Beyond its symbolic nature, this action highlighted tensions between technological showmanship and legal coherence, underscoring the lack of consistent criteria for attributing rights and responsibilities to AI systems. Scholars have analyzed this gesture as both a publicity stunt and a signal of evolving concepts of citizenship and legal identity beyond biological boundaries [9].

The European Parliament's 2017 resolution further advanced the electronic personhood concept, proposing a registration system, mandatory insurance for high-risk robots, and guidelines for liability attribution [8]. Though not legally binding, this initiative marked a significant step toward integrating AI into legal frameworks while maintaining clear distinctions between human and machine rights. It also emphasized transparency, ethical programming, and safeguards to prevent AI misuse [7].

The DABUS case represents a landmark in the debate over AI legal subjectivity in intellectual property law. DABUS, an AI system developed by Stephen Thaler, generated two inventions without direct human input. Patent applications listing DABUS as the inventor were rejected by jurisdictions, including the United States, the United Kingdom, and the European Patent Office, which held that only natural persons can be inventors under current laws [10]. However, the DABUS case sparked widespread discussion about the adequacy of existing legal definitions in light of AI creativity and the potential need for reform to recognize AI contributions. Nekit, Tokareva, and Zubar extend this debate, suggesting that AI systems could legitimately hold intellectual property rights when human input is minimal or absent [11].

Analysis of these debates and examples yields several key findings relevant to AI and robot legal personhood. First, legal systems increasingly distinguish between *moral personhood*, reserved for humans, and *functional legal personhood*, which may be extended to non-human entities based on societal needs. An emerging legal perspective recognizes the complexity of AI behavior and advocates for flexible frameworks that allow partial personhood in specific domains, such as liability and intellectual property [12].

Second, corporate personhood provides a useful but limited analogy. While corporations, lacking consciousness, are treated as legal persons for functional purposes, they are ultimately directed by human agents. In contrast, autonomous AI systems may act without direct human control, necessitating modifications to corporate models for a coherent AI legal status [4]. AI-generated outputs are already creating legal ambiguity in areas like authorship and inventorship, complicating legal uniformity across jurisdictions [13].

Third, adopting a functional or electronic personhood model requires careful design to avoid moral confusion and maintain clear distinctions between humans and machines. Legal recognition should be purpose-driven, focusing on accountability, transaction facilitation, and risk management, without granting AI systems political rights, human dignity, or fundamental freedoms reserved for natural persons.

Finally, the debate reveals that challenges surrounding AI legal personhood are not only technical and legal but also deeply ethical and philosophical. Societies must address questions about the nature of agency, responsibility, and the boundaries of legal subjectivity in an era where human-created systems increasingly mirror, and sometimes surpass, human capabilities.

Analysis of research results

Classical legal and philosophical theories, particularly those of Immanuel Kant and Georg Wilhelm Friedrich Hegel, have profoundly shaped traditional

understandings of legal personhood. Kant associated personhood with rational autonomy, the ability to self-legislate moral laws, and self-consciousness, arguing that beings incapable of moral agency, such as animals or machines, cannot be considered persons. Similarly, Hegel emphasized self-consciousness and the recognition of rights and duties within a social framework as prerequisites for legal personhood.

Modern theorists, such as Kurki, have revisited and reformulated legal personhood. Kurki's bundle theory posits that personhood is not an indivisible status tied to metaphysical attributes but a flexible set of legal capacities or incidents [2]. This model supports a functional approach to legal subjectivity, allowing specific rights and responsibilities to be assigned to entities lacking full moral agency. In a 2023 update, Kurki introduces modular personhood, suggesting that AI may hold certain rights and obligations in specific legal domains (e.g., taxation, liability) without being a general legal person [14]. Applying Hohfeld's model of legal relations, Kurki demonstrates how AI can bear duties or liabilities without possessing rights. Sepanov further proposes a functional hierarchy of legal participation, where AI systems occupy limited legal zones, such as financial or operational accountability, but are excluded from domains requiring moral agency [5].

Despite the influence of Kantian and Hegelian theories, relying solely on human-centric criteria like autonomy and self-consciousness poses challenges for addressing AI systems. While AI entities exhibit independent operation and complex decision-making, they lack subjective experience, intentionality, and moral reasoning. As noted in *Excavating Foundations of Legal Personhood*, consciousness and self-awareness remain elusive for AI, potentially unattainable. Applying rigid anthropocentric standards risks excluding AI from legal frameworks needed to address their growing societal roles.

Traditional models also fail to account for operational realities where AI systems generate significant legal, economic, and social consequences. Denying AI any legal status based on human-centric philosophical benchmarks may undermine accountability and coherence in an AI-driven society.

To address these limitations, scholars propose a pragmatic shift toward a limited liability framework for AI, analogous to corporate liability structures. This model would treat AI systems as limited legal actors capable of bearing obligations and responsibilities without equating them to natural persons. Bozarov suggests a civil law-based approach, framing AI as a socially dangerous instrument, akin to keeping wild animals or operating hazardous facilities [15]. Such a framework would assign liability for AI-caused damages, facilitate contractual engagements, and regulate economic transactions involving autonomous agents.

This approach acknowledges that, like corporations, AI entities can be legally effective without consciousness or moral awareness. By prioritizing functionality over metaphysical characteristics, legal systems can adapt to technological realities while preserving the moral status of human beings.

A key distinction exists between granting AI limited legal agency and conferring full legal personality. Pagallo argues that AI systems could function as legal agents—entering contracts, holding property, and assuming limited liabilities—without receiving full personhood akin to natural or corporate persons [7]. Full legal personality entails broader rights and obligations, including political participation and human rights protections, which would be inappropriate for non-conscious entities.

Recognizing AI as specialized legal agents with narrowly tailored competencies ensures accountability without disrupting human-centric legal principles. This middle-ground approach balances practical needs with philosophical coherence.

A significant ethical challenge in granting AI legal recognition is protecting human dignity, the foundation of human rights frameworks. Extending similar statuses to machines risks diluting these principles and undermining human rights law. Legal recognition of AI must be carefully circumscribed to focus on operational necessities—such as liability and risk management—without granting moral or political rights reserved for humans.

Anthropomorphizing AI, attributing human-like qualities to machines, poses another ethical risk. Media portrayals often exaggerate AI's capacities, fostering unrealistic expectations or undue trust [4]. Legal frameworks must resist anthropomorphic tendencies and maintain a clear distinction between biological persons and artificial entities to avoid complicating regulation or weakening human safeguards.

To reconcile theoretical, pragmatic, and ethical considerations, scholars and policymakers propose a distinct legal category for AI: "electronic agents." Electronic agents would be recognized as limited legal subjects with narrowly defined rights and obligations tailored to their operational roles, enabling them to:

- Hold and manage assets necessary for their functions;
- Enter and execute contracts under specified conditions;
- Bear strict liability for damages caused by their autonomous operations.

Electronic agents would not possess political rights, human dignity, or moral standing. Their legal capacities would be instrumental, facilitating transactions and ensuring accountability without granting full personhood. The growing autonomy of AI systems risks creating culpability gaps, raising concerns about whether traditional legal systems can address responsibility without redefining legal personhood [16].

Establishing electronic personhood requires strict regulatory limitations, including:

- Prohibitions on granting AI voting rights, political representation, or eligibility for public office;
- Restrictions on recognizing AI as bearers of fundamental human rights;
- Mandatory insurance schemes to cover liabilities from AI operations;
- Requirements for human oversight and accountability in AI design, deployment, and operation.

By delimiting electronic personhood, legal systems can harness AI benefits while safeguarding ethical and societal values.

As AI technologies evolve, legal frameworks must adapt dynamically. Emerging AI systems display complex decision-making, creativity, and adaptive learning, challenging definitions of agency and responsibility. *Analysis of the Legal Subject Status of Artificial Intelligence* emphasizes that technological innovation necessitates rethinking legal subjectivity. Future legal systems may accommodate a spectrum of subjectivities—from natural persons to corporate entities to artificial agents—each with tailored rights and duties reflecting their ontological and functional realities.

This reconfiguration of legal subjectivity must be guided by coherence, ethical integrity, and societal benefit. Legal systems should avoid premature expansions of personhood while preventing regulatory gaps that undermine accountability and justice.

Given the global nature of AI development, international harmonization of legal standards is imperative. Divergent national approaches risk jurisdictional chaos, forum shopping, and regulatory arbitrage. A harmonized international framework could:

- Establish baseline standards for AI safety, accountability, and transparency;
- Define conditions for recognizing AI as electronic agents;
- Promote interoperability of legal regimes for cross-border AI applications and trade.

Initiatives like UNESCO's Recommendation on the Ethics of Artificial Intelligence and the EU's AI Act represent progress toward consensus. However, broader global efforts are needed to address the multifaceted challenges of autonomous AI systems. UNESCO's AI Ethics Principles are essential for steering AI governance toward inclusive, human-centric standards across jurisdictions [17].

Conclusion

The exploration of legal personhood for artificial intelligence (AI) and robots underscores the profound transformations that technological innovation imposes on traditional legal frameworks. Classical theories, rooted in human attributes such as autonomy, rationality, and moral agency, remain essential for protecting human dignity but are increasingly inadequate for addressing the practical realities of autonomous systems in society.

This study finds that strict adherence to human-centric criteria risks creating accountability gaps and regulatory voids in an AI-driven world. Despite lacking consciousness or moral reasoning, AI systems perform tasks and make decisions with significant legal and social consequences. Consequently, pragmatic models, particularly limited legal personhood or "electronic agency," offer a viable path forward. By recognizing AI systems as functional legal entities—without granting moral or political rights—society can promote technological innovation while preserving human-centric legal principles.

Establishing a specialized category of "electronic agents" would enable AI systems to hold limited legal capacities, such as entering contracts and bearing strict liability for damages caused. This approach safeguards human dignity while ensuring legal adaptability to technological advancements. However, strict regulatory limitations are essential to prevent conceptual confusion and ethical violations, including prohibitions on attributing human rights or political entitlements to machines.

Ethical considerations are paramount. Legal recognition must avoid anthropomorphizing AI, which could obscure the true nature of these technologies and mislead public perceptions. Regulatory approaches should be grounded in a functional understanding of AI's capabilities, not emotional or symbolic attributions of personhood.

Furthermore, this study emphasizes the critical need for international harmonization. AI systems operate transnationally in complex economic and social environments. Without consistent global standards, jurisdictional fragmentation, regulatory gaps, and enforcement challenges will escalate. Coordinated international efforts are necessary to develop coherent, equitable, and effective regulatory frameworks for AI's legal status.

Looking ahead, technological evolution will continue to challenge the boundaries of legal subjectivity. Legal systems must respond flexibly while maintaining clear ethical boundaries. The emergence of sophisticated artificial agents will necessitate ongoing reassessment of rights, responsibilities, and liabilities among human and non-human actors.

In conclusion, while conferring full legal personhood on AI and robots remains inappropriate and ethically problematic, developing a functional, limited form of legal subjectivity is a necessary and balanced response to the growing role of autonomous systems. Future legal frameworks must be crafted with foresight, precision, and a steadfast commitment to safeguarding human values in an increasingly technological world.

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