International Journal of Innovation, Creativity and Change. www.ijicc.net
Volume 17, Issue 2, 2023

Towards Granting of Legal Personality to Autonomous Robots in the UAE

Shuq Hussein[1], Mahmoud Fayyad[2], [1]Assistant Prof, College of Law, University of Dubai, UAE, [2]Associate Prof. College of Law, University of Sharjah, UAE, Email: *[1]sshweki@ud.ac.ae, [2] mfayyad@sharjah.ac.ae

The Dubai Digital Government launched its recent guidelines, which call for artificial intelligence systems to be subject to legal accountability. This study discusses the extent to which autonomous robots can be granted legal personality in UAE law and the consistency of this approach with the provisions of Islamic jurisprudence. This research paper answered two main questions: First, the extent to which these guidelines are considered the beginning of work on granting legal personality to AI systems in the UAE. Second, what form of legal personality can be given to autonomous robots in UAE law to be consistent with the provisions of Islamic jurisprudence as a primary source of legislation in the country? The research concluded the impossibility of considering autonomous robots as a "thing" and classifying them within the concept of "persons." It also concluded that it is possible to give them legal personality according to two legislative solutions: granting them partial or incomplete performance eligibility like minors.

Keywords: *Artificial intelligence, Legal capacity for robots, Emirates law, Robots in Islamic law*

DOI: 10.53333/IJICC2013/17161

Introduction

The UAE is a forerunner among Arab countries in adopting technology and incorporating autonomous robots into all aspects of daily life. It employs autonomous robots for cardiac catheterization and surgeries, automated police and rescue robots on Dubai beaches, and the "Hamad" robot serves customers to complete many transactions for the Federal Authorities for Identity, Citizenship, Customs, and Port Security. Also, self-driving cars and flying taxis are increasingly in use and are expected to account for 54 % of transportation by 2030, while robots also clean the metro stations in Dubai. According to the World Economic Forum, the UAE is ranked first in the region and 19th globally on the government's AI readiness index. According to estimates from the Annual Investment Meeting 2019 (AIM), the UAE ranks sixth globally in ICT adoption (Klaus Schwab, 2019), and Dubai ranks first globally in attracting foreign direct investment (FDI) for AI and robotics("Annual Investment Meeting (AIM)," 2019). Also, the UAE ranked sixth in the global Smart Service Index, surpassing the United States, the United Kingdom, and South Korea(Global Smart Services Index, n.d.)

To keep up with this national approach, the UAE issued its national AI plan in October 2017 to become a global leader in AI by 2031. The plan is aimed at the state becoming a leader in AI investments in various sectors so that the state relies on AI for government services and data analysis. The strategy announced its objectives: build the country's reputation as a destination for artificial intelligence, increase the UAE's competitive assets in priority sectors by deploying artificial intelligence, and develop a fertile ecosystem for artificial intelligence. It also aimed at adopting AI in proceeding services to customers with government institutions, attracting and training talents for future jobs related to artificial intelligence applications, and attracting distinguished researchers at the global level to artificial intelligence sciences(Artificial Intelligence Office, n.d.)

In 2017, in light of this strategy, the world's first Ministry of AI was created. The Crown Prince of Dubai also launched the "Dubai 10X" initiative, which aimed to make the emirate of Dubai ten years ahead of the rest of the world's other cities in the field of AI(*Dubai 10X – An Initiative of Dubai Future Foundation*, n.d.) In October 2019, the Abu Dhabi government launched the world's first AI university, the Mohammed bin Zayed University, for artificial intelligence. The Dubai Digital Government, represented by the Ministry of AI, has also issued artificial intelligence ethics guidelines that require AI systems to be fair, transparent, and accountable so that AI systems would be liable for any harm caused to others.

The legal capacity of AI systems requires granting legal personality to these systems, which lacks any explicit provision in the texts of the UAE Civil Transactions Law. Articles 71 and 92 of this Code explicitly recognized the legal capacity for natural and legal persons, respectively. In

DOI: 10.53333/IJICC2013/17161

contrast, the texts of this Code are silent about recognizing the legal capacity for things with some degree of self-will in conducting with others.

In light of this result, this study aims to show how to liable the AI systems in the absence of explicit legal texts recognizing the independent legal capacity of these entities. The study also aims to investigate the importance of granting this capacity and identifies similar legal entities that can be measured to grant this capacity in light of UAE law and jurisprudence trends. It also identifies the proposed legislative solutions to give the legal capacity to AI systems and the form and pattern of this legal personality under the general legal rules.

Answering these questions requires dividing this research into two parts. The first part investigates the legal status of autonomous robots in the UAE law, while the second part discusses the proposed legislative solutions to grant legal capacity for autonomous robots.

2. The legal nature of autonomous robots in UAE law

The legal nature of autonomous robots is one of the most critical challenges facing contemporary jurisprudence. This challenge is because these robots seem to be things; they are machines based on their structure and working system. On the other hand, they are close to normal human beings because of their ability to conduct with others independently and manage their functions without human control. This part of the study examines the applicability of the concept of "thing" to autonomous robots under UAE law. The second part shows how granting legal personality to autonomous robots is possible.

2.1- Applying the concept of "thing" to autonomous robots

Like the trends of comparative legal systems, UAE law classifies artificial intelligence systems as things even if they have intelligence like human intelligence. This approach is entirely consistent with the principles of Islamic Sharia, which granted the legal capacity- as a general rule- to the natural man and thus gave him the ability to acquire rights and assume obligations. The UAE law also classifies autonomous robots as movable properties based on Article 102 of the Civil Transactions Law.

Art. 102: "anything of a permanently fixed nature that cannot be removed without damaging or altering its surroundings shall be regarded as real property. Everything else shall be regarded as movable property".

Therefore, these AI systems are under man's control and supervision, as he is the one who will bear the guarantee of damages caused to others if he fails to guard them according to what is prescribed by the Muslim jurists in the "guarantee" section "*Daman*"(Wehba al-Zahili, 2018). This

DOI: 10.53333/IJICC2013/17161

trend is explicitly provided in Article 316 of the UAE Civil Transactions Law No. (5/1985), which regulates the liability for damages caused by machines and things to others.

Art. 316: "Any person who has things under his control which require special care in order to prevent their causing damage or mechanical equipment, shall be liable for any harm done by such things or equipment, save to the extent that damage could not have been averted. The above is without prejudice to any special provisions laid down in this regard".

The possibility of applying the rules of "things liability" to autonomous robots requires examining the concept of "the thing" and its applicability to autonomous robots. The term "thing" refers to every inanimate and tangible material object, that is, inanimate objects(Ahmed Ali Hassan Othman, 2021). The Federal Supreme Court confirmed this trend in its appeal No. (605/2000), which stated: "liability for damage caused by things means liability for damage caused by inanimate objects - except construction– which cannot move without the intervention of their owner." The UAE legislator also limits the provisions of this liability to things that require special care to prevent damage, such as mechanical machines (Federal Supreme Court - Civil and Commercial Judgments, 2000).

Autonomous robots are kinetic machines that contain a set of software simulating human intelligence and are capable of learning and acquiring cognitive skills and experience. Still, they behave independently, far from any dependence. Therefore, it departs from the concept of the thing contained in the definition of the Federal Supreme Court. The European Union has defined it by Article (2.2.1) of the rules of the European Civil Code of Robotics (2017). They are autonomous robots that can make decisions and implement them in the outside world. This independence makes a person reconsider its subordination to the liability provisions regarding determining the person liable for damages caused to others. Also, the Economic and Social Council of the European Union used the term " submissive person "to express autonomous robots, which considered them to be superior in status to the status of a machine "thing" but not to the status of a fully qualified natural person (Gordon, 2021). According to this orientation, this status is equated with an incompletely qualified person (such as a minor) with incomplete rights to acquire rights and bear obligations. In other words, a person cannot exercise his legal capacity independently because he is submissive to another person (Andrade et al., 2007).

Therefore, the general rules of attribution of liability based on negligence in "guarding the thing" do not fully correspond to autonomous robots, whose behaviors are unpredictable because no one can have absolute control over them. Also, the issue of the unpredictability of their behaviors has become a challenge to the legal norms governing liability provisions. For example, suppose developers are obliged to guarantee damages caused by these autonomous robots; these companies

DOI: 10.53333/IJICC2013/17161

will be reluctant to design them for fear of accountability in a way that will hinder technological development(Mohammed Irfan al-Khateb, 2020).

Also, the independence of autonomous robots does not qualify them as an electronic medium because these robots express their will and not their users' will because of their ability to act freely and make independent decisions. Thus, they do not fall within the scope of an automated electronic medium defined in Article 1 of the electronic Commercial Transactions Law No. 1/2006. This article illustrates an automatic electronic medium as: "an electronic program or system of an information technology medium that operates automatically independently, in whole or in part, without the supervision of any natural person." This Law seems to regulate the provisions of automated artificial intelligence systems that operate according to their users' pre-prepared programming and specific instructions. In turn, the Law ignored regulating the activities of autonomous artificial intelligence systems acting of their own free will(Samir Chopra, 2009).

Based on the above, some jurists have called for applying the provisions of the agency to autonomous robots on the basis that they act as natural "human" agents in concluding contracts and completing transactions and act with complete independence in favor of their agent(Dahiyat, 2021). The problem with this approach is that the agency contract in Islamic jurisprudence and the UAE Civil Transactions Law is only to be concluded between two natural persons with the legal capacity and personality to qualify them to conclude agreements and enforce legal actions. Also, Islamic jurisprudence stipulates that the agent must be a reasonable person aware of his actions and understands the effects of contracting. There is no agency for the insane by the agreement of Islamic jurists(Taqi Al-Din Al-Husni, 1994). Autonomous robots are not human beings; they have artificial intelligence that makes them distinctive, aware, and intentional in their actions. Their capacity to conduct e-commerce contracts may exceed the natural person's capacity, which caused some western jurisprudence to demand the need to amend the governing laws and legalize the work of an intelligent agent in a way that gives him personality and legal capacity(Samir Chopra, 2009).

Robots' autonomy in conducting makes them comparable to an animal that can move and act independently of their guardian. It is noteworthy that most of the comparative legislation made the supposed mistake of the guard based on responsibility for the animal's action and liability for doing things indiscriminately. In contrast, the UAE Civil Transactions Law adopted a different approach when distinguishing between them when establishing the basis of liability. Article 314 of the Law recognizes the will of the animal and the impossibility of controlling its actions in some cases, so the animal guardian can deny liability for himself if he proves that he did not fail or neglect to guard the animal while doing a harmful act.

DOI: 10.53333/IJICC2013/17161

Article 314: "The felony caused by an animal is punishable, but the liability for the prejudice caused is on the one having control over it, whether being its owner or not if due to his negligence or transgression"

On the other hand, article 316 of the same Law did not give the controller of the thing the same right. In all cases, he is liable for all damages caused to others because of the lack of will for things. Also, he can deny liability for himself only if it is proved that there is no causal relationship between the act and the harm.

Due to their capability to act independently, the legal comparison between autonomous robots and animals should not lead to adopting the same legal basis of responsibility for each of them so as not to weaken the legal protection of those affected(*Explanatory note to the UAE Civil Transactions Law, ,* n.d.). Also, this analogy is rejected by many jurists because the idea of legal personality requires discussing a person's ability to enjoy rights and fulfill obligations, and not just an object so that he is legally a recognized person(Marwan Ibrahim Talab, 2021).

In this context, Article 12 of the general principles section of the European Civil Code for robotics provided a solution to increase the guarantee when dealing with autonomous robots. This article obliged developers and manufacturing companies to include robots in a "black box" in which the data and decisions made by the robot and the software on which it was programmed are recorded. This measure aims to enable competent owners to direct responsibility for the damage caused by these autonomous robots.

2.2 Legislative solutions to exclude autonomous robots from the concept of things

As mentioned earlier, autonomous robots cannot be considered things because they are intelligent, multi-skilled machines with physical and mental entities that cannot be ignored. Also, they can interact with their surroundings and make appropriate decisions along with their ability to self-learn, which makes them unique beings that cannot be described as a "thing"(Bengio, 2016). By excluding autonomous robots from the concept of "thing," the idea of introducing them into the concept of "people" and granting them legal personality can be put forward, distinguishing between the concepts of "human" and "personality." The term "personality" is a legal concept that regulates human activity within the social environment with which he interacts. Legal personality is not granted to a person as soon as he is born but requires the availability of his ability to acquire rights and assume legal obligations. For example, although an enslaved person has a status, he did not fully acquire legal personality before his emancipation because he could not acquire rights and assume obligations (Pagallo, 2018).

DOI: 10.53333/IJICC2013/17161

With the progress of civilization, the character trait emerged from the narrow space assigned to the human being and expanded to include non-man. These applications began to grant legal personality to trade unions, companies, associations, and other associations that appeared and needed legal regulation, so the legal personality of a legal person arose independently of the personality of its owner in all comparative legislation. Also, the French Civil Code in 2015 granted legal personality to the animal, giving it Rights that must be respected under penalty of criminal and civil liability. Thus, the division was limited to only people, and some Western legislation bypassed things. They created a third legal status that mediates people and things: the "animal"(Solaiman, 2017).

This part of the research discusses legislative solutions to grant legal personality to autonomous robots and how to exclude them from the concept of things. It also examines the compatibility of these solutions with the trends of Islamic jurisprudence as a primary source of Law, according to the text of the second article of the UAE Civil Transactions Law.

2.2.1 Granting robots legal personality

Some developed countries have begun to change their legislative policy in regulating the legal personality of robots by granting them legal personality independent of the personality of their owner. South Korea was the first of these countries, followed by the United States of America(P Devarapalli, 2018). At the EU level, the European legislator enacted the European Civil Law Rules on Robotics in 2017 and granted it a higher status than God, but without explicitly recognizing its independent legal personality based on the human deputy theory. The European legislator also recommended the creation of a special legal status for autonomous robots in the long term so that the "electronic legal personality" is granted to the most advanced autonomous robots.

Also, a part of comparative jurisprudence considered that there is an urgent need to grant legal personality to autonomous robots to address the problem of liability for damages caused to humans. Thus they need to be treated as legal figures to be held legally accountable like companies. This approach would strengthen the current legal system to deal with the challenges that autonomous robots can raise, enabling them to interact with humans and serve them(Solum, 2020). This approach argues that there is no legal barrier to granting legal personality to autonomous robots, especially with the emergence of a societal need to grant them legal personality. In this regard, the New York court ruled in judgment (162358/15) that: "*the ability to acquire rights and bear obligations is the decisive criterion for recognizing the legal personality of any being, and not the physical similarity with a human being*." Also, the legal personality is a template developed to give a person legal rights and duties unrelated to human quality. Since the beginning of creation, man has not enjoyed a legal personality despite being human. With the establishment of the state, the need for a legal personality for each individual has emerged to acquire rights and bear

DOI: 10.53333/IJICC2013/17161

obligations; therefore, a legal personality is an approval by the state for organizational purposes(Reiss, 2021).

Also, this doctrinal approach argues that granting legal personality to autonomous robots necessarily means creating a register to register them, similar to the Register of companies. This record shows the robot's owner and the robot's functional ability, which is considered an effective way to restrict the behavior of autonomous robots, especially since the latter has the property of self-control and deep learning, which often makes their actions unpredictable by their owner(Reiss, 2021). The mandatory "registration of autonomous robots" requires the enactment of a mandatory insurance system for damages caused by autonomous robots, which is a sufficient guarantee for individuals dealing with robots(Floridi et al., 2018).

Under the system of compulsory insurance for the damage caused by autonomous robots, the initial capital of the robot must be provided by its owner. As soon as the robots start working and making profits, insurance premiums from the robot's financial capacity begin to be paid(Chomanski, 2021). There becomes a clear distinction between the robot's financial and its owner's financial capacity, which leads to the limited legal liability of the owner in cases not covered by insurance(Lau, 2019). In other words, the owner is responsible for as much as the capital he invested in the robot. If the insurance policy expires, is not renewed, or the autonomous robot is not registered, the European Parliament proposed to create a compensation fund to cover the damage caused by the robot(van den Hoven van Genderen, 2019).

Also, granting legal personality to autonomous robots means an independent financial capacity for them, which means that the autonomous robot is a party to contracts capable of fulfilling contractual obligations(van den Hoven van Genderen, 2018). Registering robots will enable the other contracting party to realize the limits of the robot's liability; if the robot is subsequently contracted and the owner cannot fulfill it, the liability will be limited to the robot's funds(Floridi et al., 2018). Although agreements concluded by the robot are ultimately for the beneficiary (the owner of the robot), the robot is responsible for fulfilling them. Thus, if the robot contracts and cannot fulfill its obligations, the liability will also be limited to the funds owned by the robot(van den Hoven van Genderen, 2018).

2.2.1.1 The position of Islamic jurisprudence on granting legal personality to autonomous robots

According to article 1 of the UAE Civil Transactions Law, Islamic Sharia is a primary source of law in the United Arab Emirates.

DOI: 10.53333/IJICC2013/17161

Article 1: "*Legislative provisions shall apply to all matters dealt therein, in letter and context. There is no room for personal interpretation in the presence of an unambiguous text. In the absence of a text in this Law, the judge shall adjudicate according to the Islamic Shari'a."*

Also, the second article of this Code has made the provisions of Islamic jurisprudence an interpretive source for the texts of the UAE Civil Transactions Law.

Article 2: "*The rules and principles of Islamic jurisprudence (fiqh) shall be relied upon in the understanding, constructing, and interpreting of these provisions*."

Muslim scholars were unanimous that legal capacity is proved only to a natural person because he is the person who is addressed by the provisions of Sharia texts and is qualified to understand their conditions(Alqurtibii, 595). The texts of the Holy Qur'an provides that: " *Indeed, we offered the Trust to the heavens, the earth, and the mountains, and they declined to bear it and feared it; but man [undertook to] bear it. Indeed, he was unjust and ignorant* (Chapter 33, verse 73). Therefore, Islamic jurists define eligibility as the legal personality granted by the state to a person, according to which he becomes the owner of rights and obliged by duties(Jamela modawar, 2018).

Recently, there has been a need for society to recognize other legal entities and give them independent legal personalities, such as companies and associations. Therefore, Islamic jurists have recognized the autonomous capacity of these entities so that they can be treated as legal persons with financial liabilities distinct from those of shareholders(Najma, 2017a).

Muslim jurists initially strongly opposed the idea of" legal capacity" on the ground that legal capacity can only be proven to a human being(Ahmed Ali Abd al-Rahman, 1994). For example, the jurist *Al-Ghazali* stated in his book *Al-Mustafa*: "sharia rulings only address the natural man." Also, there was a disagreement between the jurists of personal theory and objective theory in the definition of "right," where the first category considered that only a natural person could acquire rights because he can think. In contrast, the second group considered that interest is the basis of right and that the need and interests of society are the basis for granting personality to any being other than a human being if necessary(Ziyad Sobhy Dayab, n.d.-a). This group adds that there is no link between the status of a person and legal personality because personality is called any object that can, by law, acquire rights and assume obligations, regardless of its composition and form. Over time, the jurists of the objective theory prevailed and became the most significant category among the jurists of Islamic law(Ziyad Sobhy Dayab, n.d.-a).

Due to the need of society to find a legislative solution that recognizes the legal personality of these new entities, Sharia jurists have benefited from the legal provisions governing the legal capacity of the state and Islamic Waqfs as legal entities independent of their owners, so they have the independent financial capacity(Alkhafifi, 2010).

DOI: 10.53333/IJICC2013/17161

Also, no texts in the Qur'an and the Sunnah prevent companies and other institutions from being granted legal personality. The Muslim jurist *Ali al-Khafif* adds: "*the provisions of the theory of legal capacity is a legislative and juristic organization that is intended only to adjust the provisions and their consistency, so they can change and develop according to the requirements of transactions and their development and diversity. Nothing in the Holy Qur'an or the Sunnah prevents companies, institutions, and public funds from being granted independent financial eligibility within the limits of their established goals*," he said(Ziyad Sobhy Dayab, n.d.-b).

2.2.1.2 The challenges of granting legal personality to robots

Many contemporary jurists have considered that granting autonomous legal personality to robots is not the best solution to exempt manufacturers, engineers, and innovators from liability for damage caused by autonomous robots to third parties. Autonomous robots do not meet the traditional conditions for acquiring legal personality due to the overestimation of the actual capabilities of robots. Also, the legal personality of a robot cannot be granted in the same way as other legal persons (such as companies. The latter is entirely subject to the guidance of its representative, unlike robot conducts that have a degree of independence in managing their activities(Clark et al., 2019). Also, recognizing the legal personality of autonomous robots will relieve producers and other responsible authorities of their legal responsibility, and the emergence of an autonomous robot's control over a person, instead of becoming a tool to facilitate human life, will become a danger to him. Therefore, the general doctrinal orientation is not to exaggerate granting this legal personality; instead, make it limited to the extent that the tasks are commensurate with the goals that you want this robot to do. In this context, the Egyptian jurist *Abdul Razzaq Al-Sanhouri* reported in one of his writings: "*the technological revolution has brought about a significant scientific development, large industries and fast means of transportation have been established, and man has harnessed nature to serve him, and he did not care that the means of control are blind or absolute and he can control them. If it gets out of his control, he will be the first victim of it, which forces us to reconsider our organization of responsibility for things*"(Al-Sanhoury, 2011). Article 3 of the 2017 European Civil Code of Robotics is in harmony with this trend. It provides that the development of robot technology should focus on complementing human capabilities rather than replacing them, and it is necessary in the development of robotics and artificial intelligence to ensure the control of humans over smart devices at all times(Bertolini, 2013).

Also, a legal person in Islamic jurisprudence is granted eligibility with certain limits while remaining dependent on its owner. For example, the endowment in Islamic jurisprudence is given legal capacity with certain limits so that the Waqf supervisor has the right to sell the harvest of the endowment lands and to buy her what she needs of machinery and animals. In all cases, the goods

DOI: 10.53333/IJICC2013/17161

purchased are owned by the endowment and not by the beneficiaries. Also, if the principal has paid the Waqf and the tenant is late in paying the due wage, the tenant is indebted to the Waqf entity neither to the principal nor to the beneficiaries(al -Hafi, 2020).

As for the idea of "legal personality," the natural legal personality is given to the physical entity of a person regardless of his perception and understanding, which is problematic for autonomous robots. Linking legal responsibility with legal personality requires revision because not everyone who has a legal personality is legally responsible for his actions. An unreasonable person has a legal personality and independent financial responsibility, although he lacks civil liability. This conclusion does not mean that such persons are absolved of harm; rather, the burden of this responsibility is transferred to the person he is responsible for and demands compensation(Mohammed Irfan al-Khateb, 2020).

Regarding the impact of granting legal personality to autonomous robots on the provisions for concluding contracts, at first glance, the use of the legal personality of robots in contract law may seem like a reminder of the legal personality of companies. Still, there is a clear difference between them. When a contract is signed between a person and a company, the company is a party to the agreement. Still, it is represented by its legal representative since the company can't agree without the consent of this legal representative. As for autonomous robots, they, alone and without human intervention, decide to enter into a contract with the other party. However, the agreements that the robots will conclude - Assuming that the robots work to help their human owner achieve a particular purpose - will be for the owner's benefit and not the robot itself. The robot appears to function like an agent who contracts on his behalf for the benefit of his benefactor. This provision will make this natural person a party to the contractual relationship and bear full legal responsibility for any breach of his contractual obligations(Coeckelbergh, 2010). In this form, the legal contract to which the robot will be a party is fundamentally different from the contract between a person and a company. Also, a legal person is granted total autonomous capacity within the limits of the purpose of its creation according to the principle of allotment but ultimately remains under human control. Unlike autonomous robots, granting them total legal capacity takes them out of the scope of human control, as they will simulate a robot, which may make it not serve the goals of their creation(Samir Chopra, 2009).

Also, one should not overlook that the issue of granting legal personality to autonomous robots is not a purely legal matter. Instead, it has political and economic dimensions aimed at reducing the burden of responsibility that falls on the shoulders of engineers and innovators in the event of damage, which does not hinder innovation. For example, paragraph (57) of the European Civil Code of Robotics of 2017 requires the legislature to find legal solutions to address all the problems resulting from the work of autonomous robots without hindering innovation. The European

DOI: 10.53333/IJICC2013/17161

Parliament also recommended to the committee on civil law rules related to robotics to find a special legal status for autonomous robots capable of enjoying rights and performing obligations like other legal centers. Although this recommendation is not mandatory, it is mentioned in an important political statement that implies that the issue of their independent legal personality is not just a legal issue(Muhammad Ali Al-Qari, 1998).

3.2.1.3 The nature of the legal personality of the robot according to the EU perception

paragraph (57) of the European Civil Code of Robotics of 2017 called for regulating the legal status of robots to bear legal responsibility for the damage they cause to others. It should be noted that the European Parliament did not use the concept of "legal person" but used the term "electronic person"(García-Micó, 2021). The electronic personality applies to a person who has electronic activity on the internet and therefore has an invisible virtual personality that differs from his real personality. There are two types of virtual personality: visible virtual personality (like robots) and invisible virtual personality (like a human using the internet). The latter is an invisible person, such as a robot used to answer automated messages or have conversations on internet networks to respond to browser queries(Eidenmueller, 2017). Therefore, this trend called for granting a special kind of legal personality to robots, giving them a virtual or electronic personality and not a legal personality such as companies, unlike the orientation of many Western jurists. The EU's approach aims to reach an intermediate area in regulating the provisions of this responsibility and reducing the legal capacity that may fall on the manufacturers, innovators, and programmers. On the one hand, they can unleash innovation and development away from the fears of bearing legal responsibility for the dangers of using these innovations. On the other hand, these robots are not entirely independent of their manufacturers in their work. Therefore they are partly responsible for this in the light of resolutions No. 2012, 2014, and 2015 of 202 (Novelli, 2022).

In October 2020, the European Parliament issued three resolutions on the legal aspects of AI systems that did not give AI systems legal personality(García-Micó, 2021). For example, paragraph 7 of the civil liability resolution of 2020 reported that giving legal personality to artificial intelligence systems is unnecessary. Tracing the precise damaging activities of artificial intelligence systems can be highly challenging, if not impossible, due to the ambiguity of these systems and their autonomy. Also, paragraph (6) of the same resolution stated that: "any changes required in the current legal framework should begin with clarifying that artificial intelligence systems have neither legal personality nor human conscience and that their only task is to serve humanity." It should be noted that these paragraphs indicate the EU's intention to grant legal personality to artificial intelligence in a human way, as it links legal capacity to human conscience. This approach does not make sense because legal persons such as companies lack "human conscience" but have acquired legal personality. Thus, it seems that there is an implicit intention that the European Parliament is considering granting legal capicity to robots on a par with humans

DOI: 10.53333/IJICC2013/17161

in the long term. On the other hand, he has not stated this for the time being so as not to bear the legal consequences of granting legal personality to autonomous robots(Mocanu, 2022).

Also, civil liability requires the existence of financial assets for a person to be sued and to obligate him to compensate for damages caused to others. Granting a legal personality to artificial intelligence with a lack of complete autonomy cannot establish the features of a legal personality but rather is an indirect invitation to treat autonomous robots in a human way. This target requires raising these robots to the human level while remaining in control to correct their actions. This status can be reached by giving them incomplete legal capacity, equated to minors when conducting legal transactions(Jaynes, 2020).

4 Granting autonomous robots dimensioned capacity

German jurisprudence introduced this capacity in the early thirties of the twentieth century. It is defined as: "a legal status that applies to a human being or a human association that has a legal capacity identified and organized by specific legal provisions. Otherwise, these entities acquire rights but do not bear obligations". This theory has existed as an objection to the bilateral legal division of people and things; it calls for a particular legal treatment of the inter-categories for which they were named "a half-way status." This term refers to the partial legal capacity based on specific legal abilities.

German law used this theory to regulate the work of companies in the formation process (Vorgesellschaft). They were exempted from registration requirements due to their subordination to the parent company, granting them partial legal capacity(Kahn et al., 2011).

Recently, the German jurist "Ryan Calo" called for applying this theory to autonomous robots, granting them some non-biological rights and obliging them to some obligations commensurate with their functional capabilities(Ryan Calo, 2015). He also described them as sophisticated servants (sophisticated servants) who provide specific services to natural and legal persons while remaining partially dependent on humans(Kahn et al., 2011). According to this theory, a robot acquires partial legal capacity because its function and ability are limited by performing specific tasks. Therefore, they do not need total legal capacity like legal persons and are not required to provide justifications for granting them this legal capacity as in the case of registration of companies and associations. In other words, the legal capacity is given to these entities as soon as they exist, and they acquire a legal capacity intermediate between man and thing. Thus, robots are treated as legal persons with partial capacity and financial edema and not abstract objects that do not have any rights or duties. Therefore, the rules governing responsibility for doing things do not apply. The robot owner bears the most significant responsibility for all the robot's actions because

DOI: 10.53333/IJICC2013/17161

the robot is his subordinate and a sophisticated server that executes his instructions. This liability is based on the owner's negligence in observing and controlling the robot's conduct. The robot and the owner jointly bear the legal liability toward the injured party, so the injured party can execute the financial assets of the robot and its owner to compensate for his damage(Hew, 2014).

4.1 The compatibility of the theory of dimensioned capacity with the trends of Islamic jurisprudence

The theory of partial eligibility in German law is similar to the provisions of slavery in Islamic jurisprudence. Although the system of slavery was prevalent before the advent of Islam in the Arabian Peninsula, Islamic law codified it to control and eliminate it over time. When the phenomenon of slavery ended in the world through international treaties and agreements, the foundations of this theory remained in Islamic jurisprudence to help Sharia jurists find legislative solutions to emerging social phenomena (such as the legal capacity of autonomous robots). The difference between the salve and the independent robot may seem evident at first glance. The biological human being was created by God and entrusted to him with legitimate provisions, unlike the second, an artificial machine(Haque, 2007). Also, the difference between the two is significant in nature and composition. Still, the common feature that unites them is that the enslaved person has developed a legal system that suits the tasks assigned, while autonomous robots are still looking for Sharia solutions to regulate the functions assigned to them(Fadel, 2011).

In Islamic jurisprudence, the slave can acquire the capacity of possession and financial assets suitable for carrying duties and acquiring rights. Still, he has an incomplete capacity to dispose of due to the state of slavery, and therefore special provisions were imposed on him. Muslim jurists argue that the slave has the meaning of" humanity "and the meaning of "things" in evidence that he is entrusted with the legal provisions and, at the same time, fit to be an object of ownership. Thus, he is treated as an intermediary between "people" and " things." He is originally a fully human being, but this capacity has been restricted due to the control of others over his conduct almost logically(MOHAMMAD MUSLEHUDDIN, 1973).

Islamic jurisprudence also grants the legal capacity to the slave because he belongs to the human race and is addressed with sharia rulings without distinction from a free person. The reason for granting him the capacity to dispose of - even if incompletely - is his humanity. Without this ability, he is considered something, and in this case, waste and denial of his humanity(KILIÇASLAN, 2020). Also, Islamic jurisprudence cannot think of an enslaved person as something pure(Najma, 2017b). Therefore it is not permissible for this jurisprudence to consider robots as something pure as well because this trend denies the ability of these robots to simulate the human mind, learning, and autonomy from their owner. They are not something but machines

DOI: 10.53333/IJICC2013/17161

that carry awareness, perception, and intelligence that mimic the perception of humans and deal independently and autonomously away from the control of their owners and operators(MOHAMMAD MUSLEHUDDIN, 1973). Suppose the enslaved person is granted legal capacity because of his humanity. In that case, these robots deserve the same degree of eligibility because of their ability to deal with the external environment intelligently and independently(Najma, 2017b).

4.2 The legal responsibility of autonomous robots by the provisions of slavery in Islamic jurisprudence

According to the trends of Islamic jurisprudence, if the slave is a victim of a crime, he is treated as something to say to the audience of Muslim jurists that: "there is no retribution against a free man if he deliberately kills a slave, but he is obliged to pay his value to his master." Also, the enslaved person descends from the status of a human being to the level of a thing. In the case of a felony against an enslaved person by mistake, the jurists obliged the offender to pay the value of the enslaved person to his master even if it exceeded the amount of blood money of a free person. According to Muslim jurists, this is because the value payment is a kind of compensation for damage to things. Therefore, these provisions can be applied to damages caused by third parties to autonomous robots by obliging the offender to pay the value of the robot to its owner when it is damaged or the value of what he damaged if he damaged some of it. These trends correspond to proposals made by a part of German jurisprudence, which proposed the inclusion of the following text in the German Code of obligations: "autonomous robots do not acquire absolute legal personality, they have the partial capacity as far as the service they provide regulated by some special laws, and they are things that can be sold. They are also things outside the scope of their business that they perform so that they can be subject to sale(Mocanu, 2022). This recommendation shows that autonomous robots are not things and not fully qualified people. Still, they are persons under care at the time they provide their services. Before that, they are "things" that could be sold and were subject to the rule of the thing in the law. Therefore, the provisions regulating the rights and obligations of autonomous robots need special laws that differ depending on the robot's function; self-driving cars have requirements that differ from autonomous medical robots that help in conducting medical operations.

Suppose autonomous robots have caused harm to humans and, at the same time, have been granted legal personality. In that case, the provisions on the liability of the enslaved person can be applied to them. The enslaved person has the capacity of financial liability by his property, but the ownership of others restricts it. Therefore, Sharia jurists defined slavery as a ruling disability that affects a person because he is subject to the property of others, thus disqualifying him from many of the rights that a free person has, such as the right to sue, the right to testimony, guardianship,

DOI: 10.53333/IJICC2013/17161

and others. Also, his transition from the level of "personality" to the rank of "objectivity" makes his eligibility weak, so if he causes harm to others, the claim is directed to his responsibility or gain. Also, the Sharia jurists did not expand the scope of criminalization of acts committed by an enslaved person. They limited the guarantee to the enslaved people themselves so that it did not include the responsibility of its owner only if the owner participated in the act or neglected to monitor it (Alshaafieii, 1997). Given this, these provisions can be applied to autonomous robots. Also, it is necessary to think about creating an independent body specialized in registering robots and recording their functional capabilities and information about their owner and developer. Also, it is essential to consider opening bank accounts for robots working in fields that generate income for their owners, similar to bank accounts opened for companies, to be compensated for the damages caused by them without extending the scope of liability to the owners and developers. Initially, the compensation is met from the robot's money; if it is not enough, the claim is met from its value after selling it.

After a brief review of the provisions of the theory of partial capacity, which German jurisprudence introduced, and the theory of slavery synonymous with it in Islamic jurisprudence, it is clear that both theories protect the categories replaced by the idea such as "slaves, primary companies and some categories." Applying the two theories to robots will also grant robots some rights with incomplete performance capacity to the extent that they cannot conclude legal actions and take responsibility for them. These solutions are insufficient to solve the issue of the legal personality of robots. The objective is not to protect the robot, empower it and grant it rights but to take advantage of its capabilities as much as possible and, at the same time, control it so that it does not become a source of concern to humans. There is also a need to give him more eligibility to enter into contracts, especially since the technological revolution leads us to develop future robots that cannot be distinguished from humans. Adopting the theory of partial eligibility in German jurisprudence may be a short-term solution in granting legal personality to artificial intelligence. Still, that theory will remain unable to keep up with the development taking place in the future.

5- Giving autonomous robots legal capacity like discerned minors

The UAE debtor transactions law stipulates that a person's capacity is completed by reaching the age of Twenty-One. Therefore, this person can acquire rights and assume obligations without controlling others. However, if a person has completed the age of seven and has not reached the age of twenty-one, he is a discerned minor, and his actions are subject to the supervision of a guardian. The same rules that apply to decisions made by people with defective capacity also apply to decisions made by idiots or people with mental disabilities that occur after either a restriction application has been submitted or after the two. Recently, there have been calls from artificial intelligence scientists to integrate autonomous robots with humans in the future and thus interact with humans freely and independently and give them the same rights as humans as new beings

DOI: 10.53333/IJICC2013/17161

who will come to our world soon. Supporters of "post-humanism" believe that, at the moment, there is a need to enhance human capabilities by implanting electronic chips in the body and brain so that they can keep up with robots and remain in control of them. In addition, robots should be given a legal personality with a total capacity like that enjoyed by men(Abn Najimi, 1980). On the other hand, most contemporary doctrinal trends still reject this idea and do not wish human beings to reach this stage. Therefore, the idea of granting autonomous robots a legal capacity similar to that of a boy in Islamic jurisprudence should be discussed, which does not prevent him from acting and concluding contracts, but at the same time subjects his actions to the control of others. Is it possible to give autonomous robots a distinctive virtual personality similar to the nature of a discerned human, And do autonomous robots have the necessary will to conclude legal actions? What is the position of Islamic jurisprudence on granting legal personality to autonomous robots?

5.1 How autonomous robots have the will

The capacity to dispose of means "the ability of a person to act in a way that is considered legitimate." The texts of the Islamic Sharia stipulated that the exercise of this capacity requires the availability of two abilities in a person: namely, the ability to understand the legal ruling and realize its meaning, and this is through the "mind" and the ability to implement the legal ruling, and this is through the organs of the body. From birth, the child is deprived of both abilities until he reaches the stage of understanding, and before he reaches full adulthood, he can perform some mental and physical things. Therefore, the Islamic Shari'a gave him an incomplete qualification, according to which his purely beneficial actions are legally valid, while the rest require the guardian's approval(Najma, 2017a). Some jurists considered that autonomous robots do not have an informed free will that distinguishes between right and wrong but rather follow specific protocols on engineering algorithms based on which they act within the scope of a particular topic(Abdi, 2019). This trend may be criticized, especially with the technological development in robotics. Evidence shows the emergence of new types of these robots, which the European Union called in the Civil Code of robotics 2017 "autonomous robots" (intelligent autonomous robots), which are leaders in deep learning and autonomy from their owners and have superhuman abilities in their field of work. Thus, such robots go beyond the free will stage, can distinguish between right and wrong, and have an internal self-awareness that qualifies them to make the right decisions. For this reason, contradictory doctrinal orientations have emerged in recognizing the independent legal personality of these robots. Despite this, some developed countries (Like South Korea) grant legal personality to such robots and give them human rights such as the right to life, the right not to harm, and other rights(Chappell et al., 2007).

Psychologists report that the will goes through four stages: the stage of perception: in which a person imagines the legal action he wants to take. The second stage is management, in which a

DOI: 10.53333/IJICC2013/17161

person balances various possibilities. The third stage is the design stage, in which the person decides on the matter. This stage is the essence of the will or the will itself. Finally, the fourth stage is the implementation stage. It is when a person transfers his will from himself to the outside world to bring about a specific legal effect of mental forces. This is available only when the person reaches a certain age and is healthy from other pests that affect the characteristic forces(Kawamura, 2005). A robot is a machine with a processing unit that enables it to move parts of its body in response to external stimuli. This data is processed based on the control system that directs it to perform a specific behavior. Recently, scientists have added software and sensors to autonomous robots to make them more accurate and innovative in decision-making. They have also added three-dimensional cameras that help the robot scan its area and analyze the data in its "processing unit." Thus, the robot can process the data every second to make the appropriate decision. Thus, the robot goes through the perception, planning, and design stages before deciding and impacting the ground. It has the elements of will necessary to make a particular decision.

Also, autonomous robots can learn. Therefore, the European legislator described in the Civil Code of robotics 2017 that it has the ability for (deep learning). It derives its ability from experience and simulation of reality to learn from the outside world without any human intervention through a technical course known as (sensing-planning-implementation). That's why some jurists call it (a conscious robot) because it is aware of what is around him, decides for itself, and behaves straightforwardly like a human. Also, it has a computer that works the work of the human mind, in which all data and operating programs are stored, and signals received from sensors are fed to process and analyze data like the human nervous system. It receives signals from the robotic mind and sends them to the command units to turn on external parties to do something(IZA, 2017). The Korean jurist (Kazuhiko) noted this: "soon we will see social robots that have enough intelligence to understand human needs and adapt their behavior according to those needs." (Tan et al., 2021). He called them adaptive robots (Adaptive Robot Development), which are closest to the human mentality. Some artificial intelligence scientists even promise to launch autonomous and emotionally conscious robots (Emotionally-Aware Robots) comparable to the emotional consciousness in living organisms so that these robots become conscious and have a sense(Arianto et al., 2020).

An autonomous robot can also have intellectual faculties that bring it to the stage of cognition. But from a legal point of view, one is not interested in the stages of the will as much as the manifestations of that will and the substantial legal effects it produces (the expression of will). Before the expression of the will, perceptions and analyses are only psychological or "subjective" reservoirs with no legal value. Can autonomous robots conclude contracts, and what are the legal implications of these transactions?

DOI: 10.53333/IJICC2013/17161

5.2 The capacity of autonomous robots to conduct legal acts

If the legislator grants the legal capacity to autonomous robots, they will be eligible to conclude legal actions. This hypothesis is realistic; the current generations of autonomous robots are not limited to performing dangerous, precise tasks as in the past; even the work robots will do in the future may almost entirely compete with humans(Pusztahelyi, 2020). Currently, robots programmed to deal with clients of financial companies, negotiate, make offers and conclude contracts with them are widespread. Therefore, autonomous robots should be given the characteristic virtual personality. This means the robot can be licensed to conduct many businesses independently of its owner so that it is fully managed electronically. The profits and losses of the robot are poured into its financial liability. The gains are owned by the robot's owner, which creates a challenge for the legislator regarding lawsuits and legal responsibilities. A similar situation will occur as provided for in Article 159/1 of the UAE Civil Transactions Law, which states that:" *Financial dealings of a minor of the age of discretion shall be valid if they are purely for his own benefit, and void if they are purely to his detriment*".

Thus, the financial liability of an autonomous robot will not stagnate as if we gave it partial legal capacity according to German jurisprudence or the eligibility of slavery in Islamic jurisprudence. On the contrary, its financial liability will be operable, productive, and then profit or loss, and only within these limits will the robot have the right to manage its funds, which may lead to civil liability against it as a result of its breach of contractual obligations.

The jurist (Sartor Giovanni) proposed to increase the guarantee for people dealing with autonomous robots, in this case, by depositing a bank deposit to serve as financial assets in the financial liability of the robot, the minimum amount of capital determined by the dealers with the robot. A human observer of the robot's actions can monitor the extent to which the robot is committed to acting within the limits of the bank deposit. As for his illegal actions that cause harm to others, the robot will be personally responsible for the unlawful actions he knowingly committed. Suppose the robot has risen to the levels of awareness significantly, and his deputy did not intentionally contribute to the occurrence of the unlawful act of the robot. In that case, the scope of responsibility can be limited to the financial liability of the robot. Global technological automation aims to give awareness to autonomous robots to hold them personally responsible for their harmful actions.

Conclusion

The Dubai Digital Government, represented by the Ministry of artificial intelligence, has issued artificial intelligence ethics guidelines, according to which artificial intelligence systems must be fair, transparent, and accountable. Under the principle of" liability," AI systems can be held

DOI: 10.53333/IJICC2013/17161

responsible for any damage they cause to others. This study examined the possibility of having artificial intelligence systems legally liable in the absence of an explicit provision in the UAE Civil Transactions Law. Also, this study discussed the legislative solutions proposed to give legal capacity to artificial intelligence systems, the form and pattern of this legal personality under the general legal rules, and the compatibility of these solutions with the provisions of Islamic jurisprudence.

The first section of this study concluded that autonomous robots could not be considered "objects" and, therefore, cannot be classified within the concept of an object contained in the text of Article 316 of the UAE Civil Transactions Law. Autonomous robots are intelligent multi-skilled machines with tangible physical and directed mental existence that cannot be ignored. Also, she can interact with her surroundings and make appropriate decisions in addition to her ability to self-learn. Thus, it cannot be described as an object and approaches - to a large extent - the concept of a person, which makes it eligible to be granted legal personality.

The second part of the research presented a set of legislative solutions to give legal personality to autonomous robots. It examined the compatibility of these solutions with the orientations of Islamic jurisprudence. The first solution is to grant autonomous robots legal personality, especially the texts of the Holy Quran and the Sunnah of the Prophet; there is nothing to prevent this. Islamic jurists oppose the idea of granting some entities (such as companies) legal personality so that this provision could include autonomous robots. In turn, a legal person is endowed with legal capacity within the limits of the purpose of his creation to remain under human control. Thus, granting total legal capacity to autonomous robots will take them out of the scope of human control, which may make them work contrary to the interests of the human race. Therefore, this study suggested another solution: to grant autonomous robots "partial legal capacity" according to German jurisprudence's theory of partial eligibility, which is similar to the theory of Slaves in Islamic jurisprudence. Applying these two theories to autonomous robots will give them some rights with incomplete eligibility, so they cannot conclude legal actions and take full responsibility for the damage they cause to others. Therefore, this study proposed to give autonomous robots legal personality similar to minors, which enables them to act and conclude contracts under the control and supervision of a guardian.

DOI: 10.53333/IJICC2013/17161

References

Abdi, A. O. (2019). General Theory of Implicit Will: Comparative Study. *Journal of Legal Sciences*, *34*(3), 22.

Abn Najimi. (1980). *'Ahkam Aleabid fi Al'ashbah Walnazayir,*. Beirut,: Dar Alkutub Aleilmiati,.

Ahmed Ali Abd al-Rahman. (1994). *Legal Personality in Islamic Jurisprudence (alshakhsiat alqanuniat fi alfiqh al'iislamii) (darat aldhakra)*. Damascus: Darat al-Thakr:

Ahmed Ali Hassan Othman. (2021). Reflections of Al on Civil Law "A Comparative Study" (aineikasat alrajraj ealaa alqanun almadanii "dirasat muqaranati). *Journal of Legal Research, Mansoura University*, *76*, 1598.

al -Hafi, B. M. A. (2020). the eligibility of the person between Islamic jurisprudence and its principles and positive law: Algerian law as a model: a comparative study,. *King Khalid University Journal for Sharia Sciences and Islamic Studies*, *16*(2), 120.

Alkhafifi, A. (2010). *Waldhimat Wa'athar Almawt Fihima*. Cairo: Dar Alfikr Alearabii.

Alqurtibii, A. R. (595). *Bidayat Almujtahid Wanihayat Almuqtasidi,: Vol. the first part,*. Cairo: Dar 'abn hazma.

Al-Sanhoury. (2011). *The mediator in explaining the civil law, sources of commitment,(alwasit fi sharh alqanun almadanii , masadir al'iiltizam*. Egypt: Dar Al-Nahda.

Alshaafieii, 'Ahmadu. (1997). *Mukhtasar Khilafiaat Albayhaqi,*. Riyadh: Maktabat Alrushdi,.

Andrade, F., Novais, P., MacHado, J., & Neves, J. (2007). Contracting agents: Legal personality and representation. *Artificial Intelligence and Law*, *15*(4), 357–373. doi: 10.1007/s10506-007-9046-0

Annual Investment Meeting (AIM). (2019). *Annual Investment Forum*.

Arianto, A. R., Indrawan, J., Anggraini, G., & Setiawan, M. C. A. (2020). THE ROLE OF INFORMATION AND ELECTRONIC TRANSACTIONS (ITE) LAW (LAW NO. 11 OF 2008) AND CYBER ETHICS: NURTURING POSITIVE BEHAVIOR IN THE CYBERSPACE ACCORDING TO PANCASILA FOR THE PEOPLE OF TANGERANG CITY. *Jurnal Pertahanan & Bela Negara*, *10*(2). doi: 10.33172/jpbh.v10i2.896

Artificial Intelligence Office. (n.d.). National Strategy for Artificial Intelligence 2031. *UAE Strategy for Artificial Intelligence 2071*.

Bengio, A. C. et I. G. (2016). Deep Learning, éd. . *The MIT Press,*.

DOI: 10.53333/IJICC2013/17161

Bertolini, A. (2013). Robots as products: The case for a realistic analysis of robotic applications and liability rules. *Law, Innovation and Technology*, *5*(2). doi: 10.5235/17579961.5.2.214

Chappell, J., & Sloman, A. (2007). Natural and artificial meta-configured altricial information-processing systems. *International Journal of Unconventional Computing*, *3*.

Chomanski, B. (2021). If robots are people, can they be made for profit? Commercial implications of robot personhood. *AI and Ethics*, *1*(2). doi: 10.1007/s43681-020-00023-2

Federal Supreme Court - Civil and Commercial Judgments, (October 18, 2000).

Clark, C., Emmanouil, N., Page, J., & Pelizzon, A. (2019). Can you hear the rivers sing? Legal personhood, ontology, and the nitty-gritty of governance. In Ecology Law Quarterly (Vol. 45, Issue 4). doi: 10.15779/Z388S4JP7M

Coeckelbergh, M. (2010). Robot rights? Towards a social-relational justification of moral consideration. *Ethics and Information Technology*, *12*(3). doi: 10.1007/s10676-010-9235-5

Dahiyat, E. A. R. (2021). Law and software agents: Are they "Agents" by the way? *Artificial Intelligence and Law*, *29*(1). doi: 10.1007/s10506-020-09265-1

Dubai 10X – An Initiative of Dubai Future Foundation. (n.d.).

Eidenmueller, H. (2017). The Rise of Robots and the Law of Humans. *SSRN Electronic Journal*. doi: 10.2139/ssrn.2941001

Fadel, M. (2011). Marriage and Slavery in Early Islam. *American Journal of Islam and Society*, *28*(4). doi: 10.35632/ajis.v28i4.1237

Floridi, L., & Taddeo, M. (2018). Don't grant robots legal personhood. In Nature (Vol. 557, Issue 7705). doi: 10.1038/d41586-018-05150-9

García-Micó, T. G. (2021). *Electronic Personhood: A Tertium Genus for Smart Autonomous Surgical Robots?* doi: 10.1007/978-3-030-50559-2_5

Global Smart Services Index. (n.d.).

Gordon, J. S. (2021). Artificial moral and legal personhood. *AI and Society*, *36*(2). doi: 10.1007/s00146-020-01063-2

Haque, M. M. (2007). Islam and the Abolition of Slavery. *American Journal of Islam and Society*, *24*(2). doi: 10.35632/ajis.v24i2.1553

Hew, P. C. (2014). Artificial moral agents are infeasible with foreseeable technologies. *Ethics and Information Technology*, *16*(3). doi: 10.1007/s10676-014-9345-6

DOI: 10.53333/IJICC2013/17161

IZA, M. (2017). Computing emotions on discourse. *Society with AI", Proceedings of AISB Annual Convention* , 268.

Jamela modawar. (2018). Proof of the judgmental Personality and Financial Liability of the company in the light of Islamic Jurisprudence laws ("iithbat alshakhsiat alqadayiyat walmaswuwliat almaliat lilsharikat fi daw" qawanin alfiqh al'iislamii . *Patneh University Faculty of Islamic Sciences*, 290.

Jaynes, T. L. (2020). Legal personhood for artificial intelligence: citizenship as the exception to the rule. *AI and Society*, *35*(2), 343–354. doi: 10.1007/s00146-019-00897-9

Kahn, P. H., Reichert, A. L., Gary, H. E., Kanda, T., Ishiguro, H., Shen, S., Ruckert, J. H., & Gill, B. (2011). The new ontological category hypothesis in human-robot interaction. *HRI 2011 - Proceedings of the 6th ACM/IEEE International Conference on Human-Robot Interaction*. doi: 10.1145/1957656.1957710

Kawamura, K. (2005). Cognitive approach to a human adaptive robot development. *Proceedings - IEEE International Workshop on Robot and Human Interactive Communication, 2005*. doi: 10.1109/ROMAN.2005.1513850

KILIÇASLAN, İ. (2020). Slavery & Islam. *İslâm Araştırmaları Dergisi*. doi: 10.26570/isad.754338

Klaus Schwab. (2019). The Global Competitiveness Report. *World Economic Forum*.

Lau, P. L. (2019). The extension of legal personhood in artificial intelligence. In Revista de Bioetica y Derecho (Issue 46). doi: 10.1344/rbd2019.0.27064

Marwan Ibrahim Talab. (2021). Beasts Felony Rule: Contemporary Applications, (qaeidat jinayat aleujama'i) . *Journal of Islamic Sciences, National Research Centre Gaza*, *4*(5).

Mocanu, D. M. (2022). Gradient Legal Personhood for AI Systems—Painting Continental Legal Shapes Made to Fit Analytical Molds. In Frontiers in Robotics and AI (Vol. 8). doi: 10.3389/frobt.2021.788179

MOHAMMAD MUSLEHUDDIN. (1973). ISLAMIC JURISPRUDENCE AND THE RULE OF NECESSITY AND NEED. *Islamic Research Institute, International Islamic University*, *12*(2), 103–120.

Mohammed Irfan al-Khateb. (2020). ARTIFICIAL INTELLIGENCE: TOWARDS A LEGAL DEFINITION AN IN-DEPTH STUDY OF THE PHILOSOPHICAL FRAMEWORK OF ARTIFICIAL INTELLIGENCE FROM A COMPARATIVE LEGAL PERSPECTIVEBAU (aldhaka' aliastinaeiu: nahw taerif qanunayin dirasat mutaeamiqat lil'iitar alfalsafii lildhaka' aliaistinaeii min manzur qanunayin muqaran majalat). *Journal of Legal Studies*.

DOI: 10.53333/IJICC2013/17161

Muhammad Ali Al-Qari. (1998). Legal Personality with Limited Liability Economic Jurisprudence. *Journal of Islamic Economic Studies - Islamic Institute for Research and Training, , 2*.

Najma, M. (2017a). *Almustasfaa fi Eilm al'usul lil'iimam Alghazalii,*. Beirut: Dar Sadr,.

Novelli, C. (2022). Legal personhood for the integration of AI systems in the social context: a study hypothesis. *AI and Society*. doi: 10.1007/s00146-021-01384-w

P Devarapalli. (2018). 'Machine Learning to Machine Owning: Redefining the Copyright Ownership from the perspective of Australian, US, UK and EU Law.' *European Intellectual Property Review*, *40*(11), 28–722.

Pagallo, U. (2018). Vital, Sophia, and Co.-The quest for the legal personhood of robots. *Information (Switzerland)*, *9*(9). doi: 10.3390/info9090230

Pusztahelyi, R. (2020). Liability for Intelligent Robots from the Viewpoint of the Strict Liability Rule of the Hungarian Civil Code. *Acta Universitatis Sapientiae Legal Studies*, *8*(2). doi: 10.47745/ausleg.2019.8.2.05

Reiss, M. J. (2021). Robots as persons? Implications for moral education. *Journal of Moral Education*, *50*(1). doi: 10.1080/03057240.2020.1763933

Ryan Calo. (2015). Robotics and the Lessons of Cyber law. *103 Calif. L. Rev. 513*.

Samir Chopra. (2009). Agency, Contract and Intelligent Software Agents. *Stuart R Cross*, *2*, 178.

Solaiman, S. M. (2017). Legal personality of robots, corporations, idols and chimpanzees: a quest for legitimacy. *Artificial Intelligence and Law*, *25*(2), 155–179. doi: 10.1007/s10506-016-9192-3

Solum, L. B. (2020). Legal personhood for artificial intelligences. In Machine Ethics and Robot Ethics. doi: 10.4324/9781003074991-37

Tan, M., Song, Z., & Zhang, X. (2021). Robust leader-following consensus of cyber–physical systems with cyber attack via sampled-data control. *ISA Transactions*, *109*. doi: 10.1016/j.isatra.2020.09.020

Taqi Al-Din Al-Husni. (1994). *The Kifaya of the Good Ones in Resolving the Very Short, (kifayat al'akhyar fi hali ghayat aliakhtisar)*. dimashqa.

Explanatory note to the UAE Civil Transactions Law, .

DOI: 10.53333/IJICC2013/17161

van den Hoven van Genderen, R. (2018). Do we need new legal personhood in the age of robots and AI? In Perspectives in Law, Business and Innovation. doi: 10.1007/978-981-13-2874-9_2

van den Hoven van Genderen, R. (2019). Does future society need legal personhood for Robots and AI? In Artificial Intelligence in Medical Imaging: Opportunities, Applications and Risks. doi: 10.1007/978-3-319-94878-2_18

Wehba al-Zahili. (2018). guarantee Theory or Provisions of Civil and Criminal Liability in Islamic Jurisprudence ('ahkam almaswuwliat almadaniat waljinayiyat fi alfiqh alaslamii). *(Dar Alfikr Almueasir): Beirut*, 70.

Ziyad Sobhy Dayab. (n.d.-a). Bankruptcy of Companies in Islamic Jurisprudence and Law,(’iiflas alsharikat fi alfiqh al’iislamii. *Majalat Albayan*, 143.

Ziyad Sobhy Dayab. (n.d.-b). Bankruptcy of Companies in Islamic Jurisprudence and Law,(’iiflas alsharikat fi alfiqh al’iislamii , majalat albayan). *Al Bayan Magazine*, 143.

DOI: 10.53333/IJICC2013/17161