

Journal of legal and social studies

Issn: 2507-7333

Eissn: 2676-1742

The Legal Nature of Civil Liability Arising from Artificial Intelligence Applications

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Date of send: 04/03/2026	date of acceptance: 01/05/2026	Date of Publication: 01/06/2026
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Abstract : This study focuses on the **legal nature of civil liability arising from the use of artificial intelligence applications**. It examines the legal foundations that determine the responsibility of individuals and organizations when harm results from these applications. The study also discusses whether traditional liability frameworks (contractual or tortious) are sufficient to address damages caused by intelligent systems capable of making autonomous decisions, or if a specialized legal framework is needed to suit the particularities of artificial intelligence. Furthermore, it addresses the **elements of civil liability**: fault or negligence, damage, and the causal link between the act and the result, highlighting the challenges posed by the technological nature of these applications to traditional legal concepts.

Keywords: legal framework; Civil responsibility ;artificial intelligence ; civil liability

Introduction:

Technological transformation and progress witnessed by the world have both led to the appearance of Artificial Intelligence (AI), which resulted in replacing humans by robots on the level of activities that humans used to practice. As a result, Artificial Intelligence applications appeared.

Furthermore, AI applications penetrated every aspect of our lives. Those applications are marketed as useful tools in all fields of life, without exposure to their possible risks that may threaten humans, despite the several functional advantages of AI applications, such as increasing production and decreasing costs, in addition to their ability to deal with activities posing danger to human labor.

Moreover, AI applications are known as being one of computer programs, which are characterized by subjectivity and independence in decision making, in addition to the existence of electronic programming within them, which fits with that application's purpose. Besides, the spread of AI applications' usage has led to the appearance of some problems related to these applications, including searching for the basis of the AI applications' civil liability when causing damage to others, which means determining the responsible for that damage.

Therefore, we decided to pose the following problematic:

What is the basis of AI applications' civil liability?

To answer this problematic, we will adopt the following partition:

First topic: AI Applications' Concept

Second topic: AI Applications' Tort Liability

THE FIRST TOPIC : AI Applications' Concept

The study of AI concept requires the study of its definition (**first claim**), then the study of AI types (**second claim**).

First requirement: AI Definition

AI science is considered as one of modern sciences emanating from temporary technological revolution. This science aims to understand the human intelligence nature, as well as to simulate its mental and human abilities and their working types; through the computer programs' work¹.

AI aims to provide machines with the quality of intelligence in order to enable them to simulate the unique logical thinking abilities of humans. Before exposing different definitions, the "Artificial Intelligence" term should be deconstructed. This latter is described by intelligence due to its similarity with human intelligence. However, the second part of the term, which is "artificial", is due to its treatment of information through computers. Suggested definitions of AI are multiple, but the most famous is the one approved by the godfather of new artificial thinking John McCarthy, who described it as: "The science and the engineering of making intelligent machines". Furthermore, the history of this science origin dates back to the middle of the last century, specifically in the year 1956, where the first AI conference was held at Dartmouth College in the United States. Leaders of AI researches participated in this conference, such as John McCarthy, Marvin Minsky, Allen Noel and Herbert Simon².

Moreover, Patrick Winson, the specialized in AI, has defined it as: “Algorithms working to connect between thinking and work”. This means that AI, being a set of algorithms, enjoys the characteristic of thinking and also the one of work, which forms “the robot” through its material form.

While the European AI Office has defined it as: “A set of systems acting smartly through the analysis of what surrounds them and by taking action independently to achieve determined objectives. These systems, which depend on AI, can be considered as based only on programs”³. Afterwards, it redefined AI as: “Software systems, or may be devices, designed by humans for a complex objective in order to act within a digital environment through organized data, then working to explain them and to study information resulting from such data. Thereafter, actions that must be taken are determined, which are appropriate to the intended target”⁴.

Through the previously mentioned points, we can say that AI is essentially formed through a set of algorithms and data carried by the robot. This latter incarnates orders it is asked to execute on the ground after analyzing the algorithms it contains.

second requirement: AI Characteristics

AI enjoys several characteristics, which are: independence in job performance (**first section**) and IA immaterial nature (**second section**).

First section: Independence in Job Performance

Pâties Maes has defined the intelligent agent as: “A computer system that inhabits a complex dynamic environment, and that senses and works independently. Through this work, it achieves a set of objectives for which it was designed”⁵.

Through this definition, we conclude its focus on the independence element. While using the “intelligent agent” term, we mean by that more than a mere program navigating from a web page to another. Independence allows us to look at the intelligent agent as an independent program with specific objectives that he aims to achieve within an environment including multiple beings and intelligent agents. In addition to that, this definition restricted the environment and provided it with two qualities: complexity and dynamics.

Once the agent receives an order to execute a particular work, it separates from its users in order to acquire the ability to work without a direct intervention from its side, as it is capable of working again without the need for intervention from a normal person to restart it⁶.

In order to allow the intelligent agent to perform his work independently, it must have a minimum of information, which form a support from its designer, in addition to information that it acquires from its environment and while performing its work.

AI independence makes it hard to predict its actions, due to its automatic thinking of creating several decisions and choosing between them according to particular criteria and to surrounding data. Therefore, its actions are unexpected, which means that its users must not blame its acts considering that they are nor controlled neither issued by it. Subsequently, personal errors cannot be attributed

to it⁷. Besides, and despite the great independence rate reached by AI, it cannot distinguish between the seriousness and the lack thereof of its acts, or even its compliance or non-compliance with law. Even if AI was programmed to experience these types of sensations, it remains artificial and cannot rise to the level of human reactions.

second section: AI Immaterial Nature.

AI is also characterized by immaterial nature, which is represented in its formation from a set of algorithms or data that are the basis of these techniques' existence, and not the material template that is a mere simulation of human appearance and does not rise to the level of human reactions. Therefore, the most important AI function is its abilities, which are not incarnated in that form that is represented in the robot. This latter without its brane is a mere ordinary machine that has no relation to AI, as any AI tangible form does not affect the nature of its mission, which requires high level mental operations. Besides, human robots' material shape is the intermediate working according to AI orders.

Furthermore, AI immaterial character constitutes one aspect of the differences compared to other damage causes, which generally take a material form that facilitates attributing the act to a particular person, then compensation can be required from him. This can lead to a legal issue, either while determining the error or the act leading to damage, or while determining the responsible or the competent court.

Third requirement: AI Types

AI varies according to its function. It is either weak AI (**first section**), or strong AI (**second section**), or super AI (**third section**).

First section: Weak AI

In this AI type, computer is characterized by an intrusive intelligence, as humans intervene in it through inserting a set of data and inputs in the computer's memory in a certain way, so that it performs its determined tasks according to that. It looks intelligent, but that is only due to the intelligence that was provided to it by the human. Therefore, equations and data charged within this computer reflect necessarily on the tasks required of him.

The most suitable example for this AI type is chess, where it is difficult to win over the computer, as each movement in this game is studied by experts in this field. This makes some think that computer is smarter than humans, but it only performs the infinite equations' intelligence it was provided with, which guarantees its victory each time⁸.

Second section: Strong AI

In strong AI, computer enjoys a strong artificial intelligence, which can match human intelligence or even exceed it sometimes. Despite its weak opposite, here the machine is capable of analyzing, thinking, experimenting and even developing itself without a human intervention. The most popular sample of this type may be Watson system, which was designed by IBM⁹.

Primarily, that was a mere research operation to determine how it was possible for computers to learn reading texts, newspapers and different resources in order to conclude results for reliable answers supported by evidence about

issues related to them. Then, Watson system shall defeat two of Joeperdy heroes in their games program. Therefore, this coronation will be the starting point of interest in IBM company and its projects by many organizations, such as experimental projects related to cancer (Baylor College of Medicine 2013), as well as the ones related to attempts to find a cure for malaria.

Third section: Super AI

Super AI is considered as the most dangerous type of AI ever, because it exceeds the specialized human's mental faculties. This type is characterized by some features, such as the ability to connect automatically with the external environment and its ability to learn, as well as its rapidity while making decisions¹⁰. This type is under development until now.

THE SECOND TOPIC : Basis of Civil Liability for AI Applications' Damages

It is still unobvious to determine who is responsible for any damages resulted from AI errors, as civil liability laws are still very unclear in AI field, concerning responsibility for chosen products or guarded things.

Therefore, we will attempt to search in the traditional rules of civil liability, as we will try to establish the AI applications' responsibility on the things' guardian responsibility (**first claim**), to establish the AI responsibility on the subordinator's idea for the acts of his subordinate (**second claim**), and to establish responsibility on the humanitarian deputy idea (**third claim**).

First requirement: : AI Responsibility Establishment on the things' Guardian Responsibility

The article 138 of the Algerian civil law states that: "Everyone in charge of guarding a thing and that is capable of usage, management and censorship is considered responsible for the damage caused by that thing"¹¹. Therefore, the Algerian legislator requires many conditions to fulfill the guardian's responsibility. These conditions are represented in the thing being under the guard of someone during the accident, and that it causes damage to others. Through the previously mentioned points, we can study how the things' guardian responsibility is suitable for AI applications; by searching on the extent to which AI can be considered a thing (**first section**), then studying AI and the guard idea (**second section**).

First section: The Extent to which AI can be considered a Thing

The Algerian legislator did not explicitly define things; however, it is obvious from the article text 138 of the Algerian Civil Law that the thing in the frame of civil liability is every physical thing that is non-living, regardless of its quality or type, except things governed by special texts. Consequently, the thing intended in the article text 138 of the Algerian Civil Law remains physical and limited if we did not pose a problematic about considering the AI holder, such as smart machines, an anthropomorphic thing with physical actions, which products AI in the accurate sense.

Furthermore, the articles 138 and 139 of the Algerian Civil Law state things under the things' guardian responsibility, describing living and non-living things.

Things are capable of independent movement, and if we go back to AI characteristics, we will find that it enjoys a non-living nature, as it also enjoys independence and movement. An example of that is self-driving cars, which move and which are not rigid. Moreover, AI, in its accurate artistic meaning, is in permanent movement within its virtual world, where it has the self-ability to analyze and to learn from its environment¹².

As for the living thing, such as animals, it does not approach the AI special nature. Despite its independent movement, that does not provide it with the quality of life. Besides, both AI and the animal enjoy independence, but the animal can be controlled through imprisonment and restraint, as a physical incarnated being with specific milestones, unlike AI that has a moral feature that is unspecified neither in time nor in space, which means that it cannot be controlled.

As a result, the thing's qualities under the things' guardian responsibility are not met in AI, either the living or the non-living ones.

Second section: Guard and AI

By guard, the Algerian legislator means the management authority, either through physical or moral management, which means the authority to issue order, instructions and guidelines given by the one who has the authority to use the thing¹³. That is not consistent with the idea of AI functional independence in decision making, as it reached a high degree of independence, which made it difficult to predict its acts and to control them. However, this authority may be realized, even incompletely, in case of giving the operating decision or taking specific data by the owner or the user¹⁴.

As for the censorship authority, it means following the thing while using and scanning it, as well as while ensuring its maintenance and reforming its defects¹⁵. Through the application of this concept on AI, we conclude that even if that was applied on the AI manufacturer, it is hard to apply it on its owner or user because he does not have the sufficient qualifications.

We conclude from the previously mentioned points the shortcomings in the application of the guarding concept on AI. Therefore, the things' guardian responsibility is unable to understand and to cover damages resulting from AI applications.

Third section: That the Thing under Guard Causes Damage to Others

In addition to the conditions above, and in order for the guardian of things to assume responsibility, another condition must be met, that the thing under guard causes damage to others; through the positive intervention of the thing in causing damage to others, without requiring a direct physical connection between the thing and the injured. In case of projecting this onto AI, the result then is that it cannot be a source of damage because of its non-physical nature. Moreover, some jurists believe that the human's error is always due to damages caused by moral things, because such things cannot cause damages alone¹⁶.

However, by referring to reality, we find that AI may cause damage to others, which may be considered as private life crimes.

We conclude from all the previously mentioned points that the system of the guardian responsibility for things is not consistent with the AI complex combination.

second requirement: Establishment of the AI Responsibility on the Subordinator's Idea for the Acts of his Subordinate

The subordinator's responsibility for the acts of his subordinate is considered as one of the types of responsibility adopted by the Algerian legislator in Civil Law, as the article 136 states that the subordinator's responsibility for the acts of his subordinate is considered as the only one where the person is asked about the acts of others, considering that the responsibility of teachers and parents is an established responsibility due to their poor supervision. Therefore, it is a result of their error in failing to perform their supervisory duties properly.

The subordinator (either natural or moral) is the person who has an authority on another person, so that this latter performs a particular work for his own benefit and in his own interest, who is the subordinate. The Algerian legislator requires the presence of subordination between two persons, with the necessity of causing error by the subordinate during job performance or because of it. The establishment of this responsibility entails responsibility on the subordinator as a result of the damage caused to others because of the subordinate's job performance.

As for the possibility of projecting the provisions of the subordinator's responsibility for his subordinate's acts concerning damages resulting from AI applications, according to this responsibility, the AI application is subject to orders and instructions of the owner or the user. Therefore, the subordination relationship between both of them is proved, and the owner's responsibility will arise if that application caused damage to others, and if the cause of that damage was due to performing works that serve the owner by the application.

However, the truth is that the provisions of the subordinator's responsibility for his subordinate's acts cannot be applied on the damages resulted from AI applications; as the legislator in Civil Law requires that the subordinate enjoys legal personality, either he was a natural or a moral person. It should also be noted that AI applications are not provided with the legal personality yet so that they can be referred to and that compensation shall be required from them, as they do not possess their own independent financial liability that enables them to cover the compensation¹⁷.

Third requirement: Establishment of Responsibility on the Humanitarian Deputy Idea

In the year 2017, the Committee on Legal Affairs in the European Union has created a theory called "the humanitarian deputy".

This idea is based on distributing responsibility on a set of persons according to the one against whom the error was evidenced, either the manufacturer or the programmer or the user or the beneficiary, without assuming error and without treating the robot as being a thing, as if the European Union wanted to leave the area of disagreement between jurists concerning adapting AI

applications, as the robot was not considered a thing that needs a special attention. The proof is that they used the term “deputy” instead of “guardian”¹⁸.

Therefore, the humanitarian deputy theory aims to transfer responsibility from the robot to the deputy. Moreover, the basis of responsibility is the error that must be evidenced in composition and management, which ends with the rising of an error in their performance.

It should also be noted that the provisions applied to AI applications, including the humanitarian deputy responsibility provisions, are in case of being a smart machine, which means during running. However, when this machine stops moving, the thing’s provisions are applied to it, which means that it takes the position of the thing subject to guard¹⁹.

Therefore, images of the humanitarian deputy, who takes civil liability for damages caused by the robot, may vary depending on the error and on the deputy’s degree of control over the robot. Besides, the European legislator specially mentioned the images of humanitarian deputy responsible for running errors as follows: the factory owner (**first section**), the operator (**second section**), the owner (**third section**) and the user (**fourth section**).

First section: The Manufacturer

The robot’s manufacturer may ask about the machine defects resulting from poor manufacturing, which led to the robot’s breakout and to its performance of acts out of its natural usage frame. An example of that is a defect in natural care robot that may lead to moving the patient incorrectly and to the aggravation of his health condition... etc. In any case, the factory owner cannot blame the worker who knows nothing about robots and who was forced to manufacture them²⁰.

Second section: The Operator

He is the one who elaborates an electronic programming specific to robots, according to their purpose. In addition to that, if he finds an error causing damage to others, and if that error was caused by a defect in electronic programming, in this case the programmer is the one responsible for the damage. An example of that is when a robot that was elaborated to manage banking operations in banks transfers money amounts to incorrect accounts. In this case, the error is caused by a defect in running and the operator bears responsibility for that error²¹.

Third section: The Owner

He is the one who personally operates the robot to serve him or to serve his clients, such as the doctor, owner of the hospital, who owns and operates a medical robot in order to perform surgeries if the robot poses danger to the safety of patients. In addition to that, and if we wanted to judge the responsible here, we find that the robots’ European civil law has postponed the owner’s accountability as a human agent until after the accountability of the manufacturer and the operator. That is unlike the thing’s guardian theory, which assumes the establishment of tort civil liability on the owner, where the thing’s guard presumption is established on him even if the accident occurred with the operator. Therefore, a part of the Belgian jurisprudence went on to impose limited

responsibility on the robot's owner who has an independent decision, where the owner is held accountable within the boundaries of the robot's value, without blaming him in his whole financial liability; in order to confine the risks of robot's running to this investment's value²².

Fourth section: The User

He is the subordinate who uses the robot other than the owner or the operator. He is also responsible for the robot's behavior that caused damage to others. Therefore, Civil Law went on to an approach that is different from the one of the things' guardian theory, which imposes responsibility on the owner even when the subordinate causes the accident while using the thing, unlike the theory of the subordinator responsibility (the owner) for the subordinate acts (the user), and also unlike considering the owner a supposed guardian in his wrong part according to general rules. Consequently, European law suggested imposing obligatory insurance on the owner or the manufacturer in order to transfer responsibility from their shoulders whatever its nature, either contractual or tort, as a solution to transfer the burden of responsibility from them²³.

Conclusion:

At the conclusion of this research, we would like to emphasize that civil liability of AI applications is still subject to jurisprudence debate, under the lack of a legal regulation that clarifies the basis of civil liability of those applications, either at the international level or at the level of internal legislation.

We will touch on the most important results obtained in this research, and then we will conclude to recommendations that should be adopted by the Algerian legislator.

First: Results

- There is not an agreed definition of AI applications; however, they consist one of computer programs that perform works and tasks similar to works performed by humans.

- The Algerian legislator does not organize AI applications.

- Traditional civil liability theories cannot be basis for civil liability in AI applications.

- The humanitarian deputy theory is a modern idea created by European Union to make it the basis of civil liability for damages caused by the robot. It is based on the idea of establishing responsibility on the manufacturer or the operator or the user, if it had been evidenced that the error was committed because of one of them.

Second: Recommendations

- The Algerian legislator must pay attention to AI field.

- Researches should be made and rules of AI applications responsibility should be determined in order to reform damages resulting from the use of AI applications.

- Postponement of providing work licenses for some AI applications, so that the injured can get the suitable compensation.

- Encouraging the idea of black box inside self-driving vehicles in order to facilitate revealing the cause of damage, and therefore determining the one responsible for it.

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