Review and Importance, an Introduction to the Challenges of Artificial Intelligence in the Field of Civil Liability

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Keywords	Abstract
Strategic Principles of Artificial Intelligence Civil Liability Artificial Intelligence Machine Learning	With the expansion of the fifth generation Internet and the increased use of machine learning, one of the sub-branches of artificial intelligence, the legal system will face various legal questions. Considering the wide range of areas in which artificial intelligence is used and the impossibility of examining all of them in one article, this study addresses some of these questions by examining the challenges facing civil liability and artificial intelligence. This study focused on self-driving cars and the use of modern artificial intelligence by doctors, as two common examples today. The primary goal of this study was to provide lawyers with an introduction to artificial intelligence and machine learning and to draw the attention of lawyers and legislators to the challenges facing the legislative field in this area. In the final section, some suggestions are made on existing legal issues, including the legal personality of AI, strict liability, and compulsory insurance. At this stage, it is necessary for lawyers and policymakers to develop strategic ethical and legal principles for the use of AI.

INTRODUCTION

In 2018, a 49-year-old woman riding her bicycle on a street in the US state of Arizona was struck and killed by an Uber test vehicle (Woodall, 2018). The development of self-driving vehicles has been made possible by advances in artificial intelligence technology and the availability of data. Currently, fully autonomous vehicles are not yet ready to be introduced to the market. For example, in the United States, the technology is only allowed to be used in limited quantities in some states.

In Iran and the developing countries of the Persian Gulf, in 2017, specialists from the Persian Gulf Intelligent Industry and Technology Knowledge Company succeeded in producing an Iranian driverless vehicle; although it has not yet reached the stage of general use. (Barzegar and Elham, 2010: 203).

However, in the near future and with the increased use of autonomous vehicles, accidents involving these vehicles and the resulting legal questions will arise. One of the important points in this regard is how to determine liability in relation to a robot that has been designed in the form of a machine using artificial

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intelligence and machine learning. This liability can be examined from both a criminal and a civil perspective.

The impact of the use of intelligence Artificial intelligence and the entry of objects are not limited to the development of self-driving cars; they will soon change various aspects of human life. For example, liability for defective goods can also generate new discussions in the context of the use of artificial intelligence. In the near future, it will also be possible to use humanoid robots in everyday life. Today, in Japan, to help Some robots are used by the elderly (Lee, 2019). Who is liable if a robot causes physical harm to an elderly person due to a disability?

Another example is the use of data in diagnosing various diseases. With the expansion of data and the creation of machines that can predict a person's illness, the question arises: who will be liable for damages if an error occurs in diagnosing a disease? Is the doctor who trusted the device and used it responsible, or the manufacturer and engineer who designed the medical machine? Artificial intelligence has even found its way into the field of criminal law in America.

For example, in some jurisdictions, in order to issue a temporary release order or detention order, software is used to assess the risk of the offender reoffending and then release or detain the individual. The use of artificial intelligence and the responsibility of the judge in the judicial process itself require separate consideration.

A common feature of many products and services that use artificial intelligence and machine learning technology is the ability to make recommendations to the user and guide them in decision-making.(Selbest 2020:1319). AI technology is used in employee hiring (Heilweil, 2019) or lending by banks (Badini, H. & Takhshid,2019) and even medical advice. In this section, the human being consults the relevant program, which is designed using artificial intelligence, for guidance.

However, in many cases he is the final decision-maker. In these circumstances, civil liability What will be the nature of the mistake? Do we need to recognize special liability in this area, similar to the recognition of special responsibilities, such as the civil liability of a parent due to the fault of a child or specific civil responsibilities? In the first lecture of this study, lawyers will be introduced to artificial intelligence technology and its effects on the deconstruction of traditional legal analysis.

In the second lecture, with an emphasis on autonomous vehicles and The use of artificial intelligence by physicians, a number of the effects of using this technology in the field of civil liability are examined. Finally, in the third speech, by referring to existing proposed approaches and examining some principles that can be effective in the design and use of artificial intelligence, the researcher tries to provide a platform for further specialized research.

FIRST SPEECH: INTRODUCTION TO ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Artificial Intelligence

What is artificial intelligence? Not long ago, this question seemed irrelevant to a lawyer; however, in the past few years, things have changed. Artificial intelligence "is generally defined as any hardware or software program that exhibits behavior that appears to be intelligent." (Kelnar, 2017) . Some have also defined it as: "The ability of a digital computer or a robot controlled by a computer to perform tasks that are usually associated with intelligent beings." (Copeland ,2020).

Usually this term refers to "the development and design of systems that are equipped with

human thinking systems: Such as the ability to think, discover meaning, generalize, infer, and learn from past experience. (Copeland, 2020). Some of the things that psychologists use to describe human intelligence have been influential in attributing "intelligence" to computer performance. These points, which can also be useful for understanding artificial intelligence, include the ability to adapt to new situations, learn, reason, solve problems, perceive, and use language (Copeland, 2020).

Today, some intelligent computer programs learn by trial and error, reason by analogy, find answers to puzzles (such as the ability to play chess), are able to perceive their surroundings (whether through sight and taste or by touching and recognizing the surrounding space, such as an intelligent vacuum cleaner), and are able to understand a language and answer questions. (such as many of Google's smart home devices or Amazon's Alexa).

Although all these capabilities are currently only partially implemented, the technology is rapidly advancing, and applications are becoming more powerful and complex. Another useful definition for describing artificial intelligence is the one provided by the European Commission's Artificial Intelligence Task Force, In this definition:

"Artificial Intelligence (AI) systems are software systems (and sometimes even hardware) that are designed by humans so that, when given a complex task, they can reason based on their physical or digital environment by acquiring data and analyzing and interpreting the acquired structured or unstructured data. The findings, or act on the information they have obtained from this data and make decisions to perform the best action with the aim of completing the initial task.

Artificial intelligence systems can learn symbolic rules or numerical models. They can also adapt their behavior based on the analysis of the impact of their previous actions on the environment. It should be noted that the definitions given for artificial intelligence are not the same and have also changed over time. This change in definitions is due to the advancement of science and the increasing complexity of this field. One of the sub-branches of artificial intelligence, which has greatly contributed to its development, is "machine learning".

Machine Learning

Artificial intelligence in its simplest form has been around for more than a decade. Typically, machine learning was implemented in the form of simple algorithms, which are instructions designed by a programmer. Initially, AI was limited to performing limited tasks with limited data (such as playing chess by a computer) (Kelnar, 2017).

Today, people are generating massive amounts of data using the Internet and devices that are connected to the Internet. As a result, humans were initially unable to analyze the massive amounts of data in a timely manner. Therefore, researchers began designing programs that would allow the software to perform such analysis instead of a programmer analyzing the data and drawing conclusions. Arthur Samuel, one of the pioneers of machine learning, defined it as:

"A branch of study that gives computers the ability to learn without being explicitly programmed." (Kelnar, 2017).

Here, machine learning is defined as "the task of optimizing and predicting the future for a given set of data by examining various variables to an algorithm." (Kelnar 2017). Typically, "the most common goal of machine learning is to create a predictive tool for a specific use." (Kelnar, 2017). It should be noted that the selection of artificial intelligence is not a choice based on causality; Rather, it is a selection based on the available data. (Zittrain, 2019).

Today, there are more than fifteen approaches to using and designing machine learning, each of which uses a type of algorithm. One of these approaches is "deep learning," which uses modeling of the neurons of the human brain (artificial neural network), which has become known as computer neural networks. In simple terms, with practice and using a lot of data, the computer itself can learn the task that is asked of it through practice, trial and error. (Kelnar, 2017).

This article will not go into more detail about this technology than this introductory introduction. But the important point here, in addition to the variety of machine learning programming approaches, is the lack of awareness of the programmer of all the steps in the computer decision-making process, such as deep learning. This is one of the main challenges and differences between machine learning algorithms and traditional rule-based algorithms.

In rule-based algorithms, the programmer defines specific and clear instructions for the program that are also understandable to humans. For example, like the steps in a cake baking recipe, the programmer tells the machine to do this, if not, do this, then this, and so on (Fry, 2018: 10). However, machine learning algorithms are complex. In other words, just as a human brain goes through different stages of learning, machine learning works similarly.

For example, one of the most widely used types of machine learning today is software that can recognize human faces using deep learning. In this program, the designer does not know exactly what steps the machine will take to reach the specified result. The programmer gives the machine data, specifies the goal for it, and gives it positive feedback when it is on the right track.

But what steps the machine will then take to reach the result is unknown. Now that we have been introduced to the basic concepts in this field, we will discuss the impact of the use of artificial intelligence in everyday life and its implications for the analysis of civil liability.(Filabadi, et al.2018)

EXAMINING TWO EXAMPLES OF MACHINE LEARNING APPLICATIONS

In this study, we provide a legal analysis based on two areas that have received the most attention from lawyers: the civil liability of autonomous vehicles and the civil liability of doctors who use artificial intelligence to diagnose diseases. However, before the legal analysis, we provide an introduction to autonomous vehicles and medical artificial intelligence.

Autonomous Vehicles

Autonomous vehicles are one of the most tangible dimensions of the advanced use of machine learning. Today's autonomous vehicle technology can be divided into six levels: from level zero (no automation) to level five (fully autonomous). Between these levels, there is everything from holding the gas pedal to understanding the environment and obstacles.

The AI technology found in self-driving cars is at the high end of deep learning. Data from the car's sensors is fed into the car's artificial neural networks, where the data is processed, and actionable instructions are

provided by the program to operate the car's steering, brakes, and other vehicle systems. The results of these instructions are typically consistent with the behavior of a human driver (Knight, 2017).

But deep learning systems are so complex that if the car exhibits unusual behavior, such as running a red light instead of stopping, it is difficult for its designers to understand why the car made the decision. For this reason, these types of algorithms are sometimes called black-box algorithms.

At the time of writing (early 2021), the United States, home to leading companies in the field of self-driving cars (such as Tesla), has yet to pass a federal law to regulate self-driving cars; although a 2018 bill is currently under consideration in Congress.

However, states have begun to enact their own legislation. Some states, such as California or Colorado, allow the use of self-driving vehicles. Some, such as Illinois and New York, only allow self-driving vehicles when accompanied by a human (meaning there must be a person behind the wheel, even if the vehicle is self-driving). Some states, such as Maryland or Alaska, have also not passed laws or regulations in this area.

In Iran, and some other countries, although no law has been passed in this area at the time of writing, in 2017, after the successful testing of Iranian self-driving cars, the use of these types of vehicles at the city level was temporarily and conditionally banned by the police.

Medical Artificial Intelligence

Another result of data collection is the use of data and artificial intelligence in the medical profession. This is sometimes called black box medicine, which means the use of vague computer models to diagnose disease; Algorithms that, with large data stores, are able to analyze large volumes of data, which gives them the ability to predict the diagnosis of a disease and recommend its treatment. The difference between the new method of diagnosing a disease and the decisions that were previously made based on data is the ambiguity and unknown nature of black box medicine. (Price 2018: 295)

As mentioned, in such algorithms, the process of arriving at the result is unknown. Medical artificial intelligence and medical machine learning have had a very positive impact on the process of diagnosing diseases and helping patients (Minssen, et al. 2020: 2); Including X-ray image analysis (Hosny et al. 2018: 500), designing and building smartphone applications that can detect skin cancer (Zakhem et al. 2018: 1383), and designing elderly monitoring systems that detect when an elderly patient is likely to fall.(Ramanujam et al. 2019)

This technology has attracted the attention of US health and medical policymakers. However, at the time of writing, only proposals have been made as a strategic plan for the development and use of digital technology in health and medicine by the US Food and Drug Administration, and there is no mandatory law in this field.

On the other hand, the use of Artificial intelligence in medicine can cause harm and, as a result, civil liability. Although, at the time of writing, no medical case of harm resulting from the use of artificial intelligence has been found in Iranian law, Persian Gulf countries, and American law, some possibilities can be pointed out.

Given this introduction to autonomous vehicles and medicine based on artificial intelligence, in the second speech, we will examine the conflict between these two is dealt with in the field of civil liability.

SECOND SPEECH: ARTIFICIAL INTELLIGENCE AND THE CHALLENGE OF CIVIL LIABILITY BASED ON FAULT

In Iranian law, discussions of civil liability are not limited to the Civil Liability Law of 1339, and other laws also deal with discussions related to civil liability in a scattered manner. (Safai and Rahimi, 2015:4). Including the Islamic Penal Code, the Civil Code (under the heading "On Obligations Obtained Without a Contract"), the Law on Compulsory Insurance of Damages to Third Parties Due to Accidents Caused by Vehicles, approved in Ardibehesht, 2016, Article 78 of the Electronic Commerce Law, and Article 2 of the Consumer Rights Protection Law, approved in 2009. Despite these various laws, Iranian jurists have divided the general rules of civil liability into three elements:

1: Existence of damage; 2. Committing a harmful act; 3. Causal relationship between the person's act and the damage that has been caused. (Katouzian, 2013:239).

It should be noted that at present there is no definitive answer to the questions raised in the following discussions, and lawyers are simply investigating various situations of the accident and the challenge of civil liability. Even in many cases, until AI and deep learning technology are used in practice, it is impossible to give a definitive answer to the question. Considering the changing nature of technology and the possibility that existing analyses may change over time, we examine three elements of civil responsibility in dealing with AI.

One: The Existence of Harm

In the laws of Iran and some countries, a compensable harm is one that "is certain and not probable, is direct, is personal, results from an injury that has been inflicted on the person's right or legitimate interest, has not been previously compensated, and is foreseeable." (Safai and Rahimi, 2015:99).

And in examining the use of artificial intelligence, the issue of predictability of harm will face challenges. We know that "both in terms of establishing fault and distinguishing the degree of duty that a person has, and in terms of the causal relationship between the act committed and the occurrence of damage, the possibility of predicting the damage is one of the conditions for establishing liability." (Katouzian, 2013: 300). In addition, "unknown and unexpected damages should not be taken into account in calculating the assessment of damages." (Katouzian, 2013: 299). Is harm caused by an AI error a remote harm?

For example, if a doctor uses a device to diagnose a disease, he or she cannot know whether relying on the machine's prediction will be successful or will have a negative impact. Given the black box of the algorithm, mentioned earlier, it is not possible to examine the reasons why the machine chose a particular diagnosis and assess its validity or invalidity. Can the injured party prove foreseeable harm if an AI-based diagnosis results in harm?

Another scenario that could be considered is that the user uses a tool that is designed to provide personalized recommendations based on personal information. For example, based on data provided to the machine, it recommends that the person perform a certain physical activity to treat their back pain. Now, if the person's back pain worsens, was the harm foreseeable? Given that the program suggested the movement based on information unique to the person referred to, how can it be proven that the harm was foreseeable?

It should be noted that the use of artificial intelligence is due to the fact that this technology can go beyond the ability of human analysis and reach a result for a specific user with a more extensive and detailed processing. (Selbest 2020: 1338). In other words, the manufacturer of the device may be sued even if an

ordinary doctor will not be able to raise doubts about the machine's proposed process. Because the device has examined a volume of data that would not have been possible for a normal doctor to examine.

Also, without knowing the process the device went through, how can it be proven that the device made an incorrect prediction? Perhaps the physical movement suggestion was correct and the person was physically injured for other reasons and the damage that occurred was not foreseeable. It seems that relying on machine learning methods that have explainability algorithms can overcome some of the existing challenges. However, due to the limitations of the possibility of using the explainability principle in artificial intelligence, the challenge of examining the ability to predict damage will still exist in most cases.

In the case of autonomous vehicles, the question of predicting damage can also be raised. It seems that despite the existence of the Law on Compulsory Insurance of Damages to Third Parties in Accidents Caused by Vehicles, approved in Ardi Behesht, 2016, there has been no assurance of compensation for damages; Especially since the approval of the new law and the expansion of the scope of accidents that are capable of compensating for damages and the addition of the term "unforeseen accidents", many of the accidents and damages that occur can be considered included in the definition of the new law. (Bahrami et al., 2018: 83). However, although this exception could include self-driving cars (although the law does not mention self-driving cars), it does not include other tools and machines that use artificial intelligence, and the ability to predict and prove damage will be one of the main challenges ahead.

Two: Committing a harmful act or fault

In Iranian law and some other countries, it is said that liability is generally based on fault, and liability that is not based on fault has a material aspect. Liability based on fault is necessary for the harmful act to be considered fault (Safai and Rahimi, 2015:147). In the field of civil liability based on the use of artificial intelligence, various factors are involved, and it seems that in many cases it is difficult to attribute damage and blame to one of them (Giuffrida, 2019: 443). In the case of automobiles, it seems that in countries where car insurance is mandatory, including Iran, the insurer will not face the problem of paying for damages resulting from an accident.

However, the method of compensation for damages does not eliminate the answer to the question of liability. In other words, the existence of the obligation to compensate for damages by the insurer is an "implicit acceptance of the liability of the vehicle owner." In these circumstances, in the event of damage, who is theoretically liable?

Can the driver of the vehicle be held liable for damages on behalf of the autonomous vehicle? Should the autonomous vehicle, which is in fact a robot in the form of a car, be considered a legal entity and in this case the legal entity be held liable for damages? These questions are among the challenges facing the field of civil liability.

Another challenge is the criterion for determining faults. Can a doctor who, based on the medical community's tradition, has used an artificial intelligence-based tool to diagnose a disease be held liable? In Article 319 of the Islamic Penal Code of Iran, repealed in 1991, negligence was not a condition for the doctor's liability (Safai, & Rahimi, 2015:160), but the new law, in Article 495, considers negligence to be one of the conditions for the doctor's liability. (Safai & Rahimi, 2015:160; Daraei, 2013:53-80).

In this context, Article 495 and its commentary stipulate: "Whenever a doctor causes bodily harm or injury in the treatments he performs, he is liable; Unless his action is in accordance with medical regulations and

technical standards, or he has been acquitted before the treatment and has not committed any negligence, and if acquitting the patient is not valid due to his being a minor or insane, or obtaining acquittal from him is not possible due to anesthesia and the like, acquittal is obtained from the patient's guardian. Explanation. In the absence of any fault or negligence on the part of the doctor in his knowledge and practice, there is no guarantee for him; "Although he has not been acquitted."

Some lawyers also believe that under the new law, the doctor is presumed to be at fault and the doctor can be exempted from liability for damages if he proves his innocence. One of the factors in proving innocence is that the doctor acted in accordance with medical regulations.

The question is whether the use of medical tools based on artificial intelligence and machine learning in the diagnosis or treatment of disease is considered a departure from medical practice? It should be borne in mind that currently the use of such technologies is carried out under the supervision of a human doctor.

In this case, several situations are conceivable. First, we must distinguish between two situations: when the use of AI recommendations has become medical practice (for example, soon) and when the use of AI recommendations is not medical practice. In the first case (based on medical tradition), the view of some jurists, after examining various cases, is that if the doctor does not act on the recommendation of artificial intelligence, but the recommendation of artificial intelligence is correct and the patient is harmed as a result of this non-compliance, the doctor will be liable.

In this case, if it turns out that the AI's recommendation was wrong, but the doctor followed the recommendation based on medical tradition, the doctor did not fail to act and would not be liable for any harm to the patient (Price et al. 2019: 1766).

In the second case, when the use of artificial intelligence has not yet become a medical practice (for example, in the early stages of this technology), but a doctor acts based on an artificial intelligence recommendation and it is determined that the recommendation was wrong, if the patient is injured, the doctor will be liable for damages.

Some jurists believe that according to the new Islamic Penal Code, "the use of any new treatment method for the first time carries unforeseen risks, and these risks exceed those common in conventional treatments.

Therefore, placing a patient in a dangerous situation is considered a sin in itself. Therefore, if a doctor wants to use a new treatment method to treat a patient, he must inform the patient that he intends to use the new method and obtain consent or acquittal. (Darai, 2016:56)

It seems that AI-based medical prescription and diagnosis are also among the new treatment methods that require the patient's consent and consent. But over time, the use of this technology will become commonplace. In this context, the important point is that the customary standard of fault detection and professional custom change over time. This customary standard is also applicable to other situations where artificial intelligence technology is used in a professional matter.

Three: Causation

In this case, a distinction must be made between two cases: when a person uses a machine and the legal system holds the person liable for damages. In this case, proving causation is like any other accident. Therefore, there is no need for a special explanation. But it is possible that the legal system or an individual who has used a machine that has caused harm may be inclined to hold the AI-based machine liable.

In these circumstances, can a machine or robot be held liable instead of a human? As mentioned, choosing AI is not a choice based on causality, but rather a choice based on available data. In other words, there is no causal relationship. However, some have proposed solutions for ultimate liability, which will be briefly discussed below. (Vafae and Rahimi,2015)

THIRD STATEMENT: EXISTING PROPOSED SOLUTIONS

Several theories have been proposed to legalize civil liability arising from the use of artificial intelligence, each of which will be referred to. The purpose of this section is not to present a definitive solution, but rather to provide an introductory introduction to existing solutions. A detailed examination of the dimensions of each choice could be the subject of another research project.

Strict Liability

Some argue that, given the impossibility of proving some of the elements of general civil liability, it is better to use strict liability to compensate for the damages caused. In American law, this theory has been used in the field of civil liability arising from defective goods. In these circumstances, there is no need to prove fault, and the manufacturer will be liable for damages simply because of the accident.

Strict liability is based on the theory of creating danger (Katouzian, 2013:185). The Automobile Consumer Protection Law is based on strict liability and in Article 3, it states that "strict liability is imposed on the vehicle supplier without the need for fault." (Safai, & Rahimi 2015:310).

Here, reference to the philosophy of civil liability can play an effective role. According to those who consider the principle of civil liability to be the prevention of accidents, "it does not make much difference who is liable for damages" (Selbest, 2020: 1320).

With the economic analysis approach, it will also be important who can prevent the accident and eliminate the damage at the lowest cost. However, with the choice of the theory of restorative justice, which is the basis for civil liability, it will be important who is responsible for compensating for the damage.

In my opinion, there is no obligation for lawyers to choose a theory as the basis for civil liability. It is possible that at one time, one theory of compensation may be better than another. The right approach must also be chosen considering the circumstances of the time.

Mandatory Insurance

Another way to indemnify is to make indemnification insurance mandatory for all goods and software that operate on the basis of machine learning. In this way, the software or hardware manufacturer is protected from indemnification. One of the positive effects of such an approach on society is the parallelization of scientific and technological progress in this field.

It should be noted that strict liability can create a fear of liability among engineers and scientists of the country and prevent the progress of science in this field. However, with the existence of compulsory insurance, this fear is removed, and the injured party also has the opportunity to obtain compensation for damages.

Vicarious Liability

Some lawyers have suggested that vicarious liability could, for example, hold a robot design company liable for causing damage. In Iranian law, liability arising from objects, such as that provided for in Article 333 of the Civil Code or Article 519 of the Islamic Penal Code in relation to the demolition of walls and foundations, is different from the vicarious liability we are considering.

In the cases mentioned above, as well as in the example of "damage caused by objects placed on a wall or balcony" (Safai and Rahimi, 2015:268), a person is liable if he is the perpetrator. Also, in the liability of a guardian in relation to the act of a minor and an insane person, the guardian's negligence and negligence are also a condition. In Iran, even if the employer proves that he was not negligent, according to Article 12 of the Civil Liability Law, he is not liable for compensation for the worker's damages (although he is required to insure him). (Safai & Rahimi, 2015:323).

However, in the theory of vicarious liability discussed in this article, which is common in American law, the vicarious is due to the existence of a relationship of liability for damage caused by another, Even if he/she is not at fault.

In this type of liability, the employer is liable for damages that the worker has incurred while under his/her responsibility; even though the employer was not at fault. This type of vicarious liability for a company designing a machine or a program based on artificial intelligence poses the problem of potentially creating a pause in the development of science, which is not an appropriate policy to encourage scientists.

LEGAL PERSONALITY OF ARTIFICIAL INTELLIGENCE

Some believe that it is better to give artificial intelligence legal personality. Just as legal personality is used to identify the liability of companies, legal personality can also be used in this context. In this way, in the event of damage to the legal person, artificial intelligence becomes the one who is sued. In Iran and some other countries, some have also explored this theory in the field of criminal liability for autonomous vehicles. (Atazadeh and Ansari, 2019: 8655).

PROPOSED ETHICAL AND LEGAL PRINCIPLES FOR PROGRAMMERS

Given the ambiguity and theoretical nature of many of the discussions that have been raised, lawyers and policymakers have begun to develop a strategic principle for manufacturers of products based on artificial intelligence. Thus, while it is still not possible to envisage all the dimensions of the legal liability of artificial intelligence, such principles can help pave the way for lawyers soon.

This section will address some of the common ground among the principles that can currently be found in similar instruments around the world. Among these, we can mention the European Commission document entitled "Strategy," "Beijing AI Rules," "Ethical Guidelines for Trustworthy AI," as well as the principles that some companies have designed, such as the German "Intelligence, AI."

Artificial Intelligence at Google: Our Principles A research project by a group of researchers at the Berkman Klein Institute for Internet and Society at Harvard University, by studying documents from around the world, identified common areas that were addressed in many of these documents (Fjeld et al. 2020). These were categorized into eight areas: fairness, transparency and explainability, security, accountability, and privacy. The specifics of promoting human principles, professional responsibility, human control over technology, and non-discrimination are briefly touched upon in this opportunity to address accountability, although each of these principles requires specific research. Accountability in the field of artificial intelligence is not limited to civil liability.

Responsibility for the design of artificial intelligence can be referred to at various stages, including process review and repeatability, responsibility for assessing the impact of using artificial intelligence, design review and development of products based on artificial intelligence, and even the use of artificial intelligence and the relationship with nature.

According to a Harvard University study, the existing evidence on liability for damages resulting from artificial intelligence and machine learning is still ambiguous and there is no consensus in the evidence. For example, "India and Microsoft are seeking to use civil liability principles as a sufficient tool to achieve compensation for damages resulting from negligent errors." (Fjeld et al. 2020: 34)

While some other countries, such as China, believe that work should still be done in this area and that there is no guarantee that it will be sufficient to refer to civil liability principles in the event of an accident.

Some others, although they have not reached any conclusion in this regard, have declared that developers and programmers should not be blamed in any way. In this way, an attempt is made to prevent the stagnation in technological progress by not holding programmers responsible. On the other hand, transparency in the technological implementation mechanism and the stages of production and development of a product or software can be one of the useful preliminary tools in regulating the liability mechanism. With transparency in the functioning of a device, it is easier to identify the main culprit and properly compensate for damages, even in the field of civil liability.

CONCLUSION

The first speech introduced the basic concepts of artificial intelligence and machine learning for lawyers. Then, with an emphasis on the two areas of autonomous vehicles and the civil liability of doctors, some of the perspectives that lawyers have presented today to answer questions in the field of civil liability arising from artificial intelligence were examined.

Given the widespread use of artificial intelligence and machine learning in Iran in various fields, it is necessary to develop comprehensive legal and ethical principles applicable to Iranian and global society. Although there is no definitive answer to some of the challenges facing the use of AI and the resulting civil liability due to the ongoing development and production of AI-based products and software, the proposed strategic principles can pave the way for solving future challenges.

The debate that needs to be studied regarding the entry of artificial intelligence into the field of civil liability and law in general is far beyond the scope of a single article. It is hoped that lawyers will use this introductory guide to critically examine and examine each of the issues raised in a specialized manner.

REFERENCES

Barzegar, Mohammad Reza; Gholam Hossein Elham (2020). "Criminal Liability of the User of a Self-Driving Vehicle for Damage Caused by It", Publisher. Criminal Law Research, S, 8, No. 30, pp. 201-229.

Bahrami Filabadi, Sadegh; Alireza Pourasmaeili; Hassan Najafi Asl (2018). "Innovations and Developments of the Law of Compulsory Insurance of Damages Caused to Third Parties Due to Accidents Caused by Vehicles, Approved in 2016", Bhimah, S, 33, No. 4 (132), pp. 81-100

Daraei, Mohammad Hadi (2016). "Titles of the Fall of Physician's Liability in the Islamic Penal Code, Approved in 2013) A Jurisprudential Study and Legal), Private Law Researcher, D, No. 4, pp. 14, pp. 53-80.

Atazadeh, Saeed; Jalal Ansari (2019). "Re-examining the concept of criminal liability of artificial intelligence in Islamic, Iranian, American, and German law (case study: self-driving cars)", Comparative Law Researcher of Islamic and Western Law, S, No. 4 (22), pp. 55. 8

Vafaei, Seyed Hossein; Rahimi, Habibollah (2015). Civil Liability (Extra-Contractual Obligations), Ch. 8

Katouzian, Naser (2013). Extra-Contractual Obligations of Civil Liability, Ch. 12, Publisher. Tehran University Press, Vol. 1 General Rules.

Badini, H. & Takhshid, Z. (2019). "A Critical Study of the Methodology of Comparative U.S. Tort Law Research (with Dr. Hassan Badini)", 49 Private law Studies Quarterly, U. of Tehran L. Rev, No. 2, pp. 217-237.

Copeland, B.J., Britannica, Artificial Intelligence (2020) .https://www.britannica.com/technology/artificial-intelligence.

Darai, M. (2016). "Discharge of Civil Liability of Physicians in New Islamic Penal Code of Iran", Private Law Research.

Filabadi, B., Pouresmaili, A., & Najafi, H. (2018). "Innovations and Developments of the Mandatory Third-Party Liability Insurance as a Result of Car Accident", Iranian Journal of Insurance Research. No. 132, pp. 81-100 .

Fjeld, J., Achten N., Hilligoss, H., Nagy, A., & Srikumar, M. (2020). "Principled Artificial Intelligence: Mapping Consensus in Ethical and Rights-based Approaches to Principlesfor AI", Berkman Klein Center for Internet & Society.

Fry, H. (2018). Hello World: How to Be Human in the Age of the Machine, Penguin Random House.

Minssen, T., Gerke, S., Aboy, M., Price, N., & Cohen, G. (2020). "Regulatory responses to medical machine learning", Journal of Law and the Biosciences, Vol. 7, No. 1, pp. 1-18.

Giuffrida, I. (2019). "Liability for AI Decision-Making: Some Legal and Ethical Considerations", Fordham Law Review.

Heilweil, R. (2019). Artificial intelligence will help determine if you get your next job, https://www.vox.com/recode/2019/12/12/20993665/artificial-intelligence-ai-job-screen.

Hosny, A., Parmar, C., Quackenbush, J., Lawrence, H., Schwartz, L., Aerts, H., (2018).Artificial intelligence in Radiology, 18 Nat Rev Cancer 500.

Katouzian, N. (2013). Civil Liability General Principles, Vol. 1, Tehran,University of Tehran Publication.

 Civil Liability Specific Torts,(2014) Vol. 2, Tehran, University of Tehran Publication.

Kelnar, D. (2017). The fourth industrial revolution: a primer on Artificial Intelligence.https://medium.com/mmc-writes/the-fourth-industrial-revolution-a-primer-on-artificial-intelligence-ai-ff5e7fffcae1.

Knight, W. (2017). The Dark Secret at the Heart of AI, MIT Technology Reviewhttps://www.technologyreview.com/2017/04/11/5113/the-dark-secret-at-the-heart-of-ai/.

Lee, Don, Desperate for workers, aging Japan turns to robots for healthcare (July 25, 2019) https://www.latimes.com/world-nation/story/2019-07-25/desperate-for-workers-aging-japan-turns-to-robots-for-healthcare.

Price, N. W. (2018). "Medical Malpractice and Black-Box Medicine, in Cohen, I., Lynch, H., Vayena, E., & Gasser, U. (Eds.). Big Data, Health Law, and Bioethics. Cambridge: Cambridge University Press.

Price, N. W., Gerke, S., & Cohen, IG. (2019). "Potential Liability for Physicians Using Artificial Intelligence", JAMA.

Ramanujam, E., Padmavathi, S., (2019). "A Vision-Based Posture Monitoring System for the Elderly Using Intelligent Fall Detection Technique", Guide to Ambient Intelligence in the IoT Environment (Zaigham Mahmood ed.).

Safai, S. H. & Rahimi, H. (2015). Civil Responsibility, Samt Publication.

Selbest, A. D. (2020). "Negligence and AI's Human Users", Boston Law Review.Townson, Sian, AI Can Make Bank Loans More Fair, https://hbr.org/2020/11/ai-can-makebank-loans-more-fair (November 06, 2020).

Woodall, B. (2018). Uber avoids legal battle with family of autonomous vehicle victimhttps://www.reuters.com/article/us-autos-selfdriving-uber-settlement/uber-avoids-legal-battle-with-family-of-autonomous-vehicle-victim-idUSKBN1H5092

Zakhem, G. A., Motosko,C., Ho, R., (2018). "How Should Artificial Intelligence Screen for Skin Cancer and Deliver Diagnostic Predictions to Patients?", 154 JAMA Dermatol1383.

Zittrain, J. (2019). The Hidden Costs of Automated Thinking, The New Yorker. https://www.newyorker.com/tech/annals-of-technology/the-hidden-costs-of-automated-thinking.