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HOW TO PROVE ARTIFICIAL INTELLIGENCE OUTPUT ERROR CASES

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ABSTRACT

Governments and corporations will employ AI (Artificial Intelligence) in critical scenarios such as managing autonomous military systems, overseeing the electrical grid, executing stock trades, and operating vehicles autonomously. AI methodologies for such applications must exhibit resilience to both known unknowns ambiguous aspects of the environment that the computer can reason about and unknown unknowns those aspects that the system's models fail to consider. This article delineates eight robustness-related issues under investigation by the AI research community, after a discussion on contemporary achievements in AI. While these notions provide a solid foundation, we must concentrate more on the challenges of tackling both known and unknown unknowns. These issues are compelling as they tackle the fundamental question of how constrained systems may survive and thrive in a perilous and complex environment. The researcher reviewed the latest laws in the Arab world, which a special legislation is issued by Dubai Passersby (Law Regulating the Operation of Self-Driving Vehicles in the Emirate of Dubai No. (9) of 2023 AD, published in the Official Gazette, and effective after (90) ninety days from the date of its publication), as this law essentially specified that the responsibility lies with the operator and thus raising the evidence against the injured party regarding self-driving vehicles, and the operator is any person authorized to practice the activity, and includes the owner of the self-driving vehicle, but this legislation was limited as it placed the responsibility on the operator without addressing the details, which made us recommend the legislator in this research paper to look at each case alone and its circumstances, as well as to make insurance mandatory for all artificial intelligence robots as one of the solutions, as well as to develop the legislation specific to the Emirate of Dubai to separate the responsibility, so that it is not necessarily limited to the operator.

KEYWORDS: Proof, Harm, Artificial Intelligence, Robot, Civil Liability, Contractual Liability, Liability for Harmful Act.

1. INTRODUCTION

Artificial intelligence has been achieving remarkable advancements. Significant advancements in perception (e.g., computer vision, speech recognition), reasoning (e.g., SAT solving, Monte Carlo Tree Search), and integrated systems (e.g., IBM's Watson, Google's AlphaGo, and personal digital assistants) have occurred over the past two decades. These advancements are prompting us to implement AI in challenging, high-stakes domains such as autonomous vehicles, robotic surgery, finance, real-time power grid management, and autonomous weaponry. These applications necessitate very robust AI systems, although our existing systems are significantly inadequate. The law is not established by philosophers and their ideas, nor by attorneys and their legal formulas, but by engineers and their inventions that create and advance the law (A-C - 1. Ed. Riper). Reports predict that the artificial intelligence robotics sector surpassed one hundred billion euros in 2020, necessitating the establishment of new legislation that aligns with these advancements. Undoubtedly, artificial intelligence has catalysed significant advancements across multiple domains; however, legal researchers frequently focus on the challenges posed by this emerging technology, particularly regarding evidence necessary for the aggrieved party to secure compensation, as the absence of proof jeopardises their rights (Ibrahim, E., Sharif, H., & Aboelazm, K. S., 2025).

Writing on the subject of artificial intelligence is crucial, as the advancement of software and modern technologies diminishes the right to compensation and significantly narrows its scope due to the challenges of substantiation. This necessitates the formulation of laws that safeguard the most impacted individuals in an age where technology has revealed its predatory nature, rendering rights devoid of substance. David Kellog Two thousand six. The issue of substantiating cases involving artificial intelligence is very contentious, as the focus of this inquiry pertains to ensuring maximal legal protection for people impacted by elucidating the methodologies for demonstrating instances of error attributable to artificial intelligence robots. In this legal study, the researcher employed an analytical method to examine the issue at hand, aiming to derive precise conclusions regarding the presented situation.

The researcher undertook the following actions:

1. **Determine the problem or research question.**
 - A. What are the supposed cases of artificial intelligence error?
 - B. How to prove the error of the person responsible for artificial intelligence

damages?

2. **Review of previous literature.** The researcher reviewed a number of research studies and found them to be very rare due to the novelty of the topic as well as legal legislation, as the researcher found only one law in the Middle East, which is a law specific to the Emirate of Dubai that talks about the damages of self-driving vehicles.
3. **Collecting data such as jurisprudential opinions and legal texts.** The researcher conducted an analytical study and limited the possible cases of the person who caused the damages of artificial intelligence in the first part of the research, then in the second part he addressed the method of proof in the absence of a contract and in the presence of a contract, then in the third part the researcher conducted an analytical study of the law of the Emirate of Dubai.
4. **Deconstruction and interpretation of legal opinions and texts.** The researcher interpreted the information presented to him to reach the real person who caused the damages and who should bear the legal responsibility for the damages of artificial intelligence.
5. **Recommendations and applications.** Based on the previous analysis of jurisprudential statements and the legal text of the Emirate of Dubai, the researcher provided recommendations on how to deal with the problem or improve the situation.

1.1. Research Objectives

The research purpose is to examine how legal systems, particularly within civil law traditions, can address the evidential and liability issues posed by the increasing dependence on autonomous technologies, including artificial intelligence. It focusses on the procedural and doctrinal difficulties encountered in determining guilt and providing proof of culpability in AI-related injuries, according to Dubai's specified regulatory framework for autonomous vehicles.

1.2. Research Questions

The study sets out to answer the following research questions

1. What are the challenges in proving liability and indicting when damage is done by artificial intelligence systems?
2. How should liability be allocated among those involved in the creation, deployment, and use of AI technologies (developers, manufacturers, consumers, and operators)?

3. How do current UAE laws respond to issues of proving liability and indicting and where can current provisions be improved?
4. How can policy mechanisms such as mandatory insurance aid current UAE laws in issues of proving liability and indicting?

1.3. Hypothesis

This study posits that current civil liability frameworks, especially those implemented in codified legal systems like the UAE, inadequately address the fragmented and technical characteristics of AI-related harms. The absence of clear attribution mechanisms restricts victims' chances for obtaining redress. This study contends that a nuanced perspective, particularly a holistic comprehension of AI stakeholders, is essential for ensuring legal accountability and justice in emerging technology contexts.

2. METHODOLOGY

The project utilised a doctrinal legal research technique, combining legislative interpretation with jurisprudential analysis of liability problems related to artificial intelligence. The study also examines specific statutes, primarily Dubai's 2023 regulations regarding driverless vehicles. It utilises case law, scholarly research, and direct civil law analogies to augment the analysis. This study seeks to provide a cohesive liability framework that reflects the technical realities of AI systems through a critical analysis of the structures of liability and duty in contract and tort, together with the interpretation of legal texts. The technique is mostly qualitative, presenting hypothetical scenarios designed to clarify evidence conflicts and issues related to the attribution of blame in the absence of conventional human agency.

2.2. Cases of Contractual Error in the Field Of Artificial Intelligence

This section will examine the different instances of contractual error stemming from both product design flaws and abuse (Aboelazm, K. S., 2024). Contractual errors and losses arising from the utilisation of artificial intelligence robots can be categorised as material risks associated with the robot itself, such manufacture defects or damage to a component owing to negligence or battery fires, among others. The issue may arise from an external factor unrelated to the individual responsible, such as a fire or power outage, as well as technical risks associated with the operational programs of the robot, including program inefficiency, sluggishness,

erroneous programming, or unauthorised hacking (Sharif Ghanem 2010). Criminal culpability may come from hacking self-driving vehicles, perhaps resulting in unforeseen accidents (Abdullah Al-Naimi 2021).

The failure to inform and anticipate prior to contracting, specifically in the pre-contractual stages, constitutes a significant violation in the realm of artificial intelligence, grounded in fundamental legal principles, including the principle of good faith in contract execution (Nazih Al-Mahdi 2009). A critical responsibility of the robot designer is to provide warnings; if the robot presents specific risks, the user must be informed and made aware of any potential negative consequences. This duty is encompassed within pre-contractual obligations (Mohamed Hassan 2010). Conversely, the primary framework for liability concerning harmful actions is exemplified by the damage inflicted by self-driving cars on others (P8_TA (2017)0051 Civil Law Rules).

The most common AI robots are:

- Self-driving vehicles of all kinds.
- Service robots for personal needs for household tasks and entertainment.
- Medical robots that perform surgeries. (Tarek Ibrahim 2022)
- Military robots such as drones.
- Educational robots.
- Legal robots such as the presence of a judge, lawyer or legal advisor. (Dr. Amr Taha 2022).

Robots in the banking sector capable of ensuring the security of banking operations, especially in times of war Alona Klochko, Mykola Kurylo, Oleh Rohovenko, Nataliia Volchenko, Assol Shulzhenko (2024).

Artificial intelligence remains in a developmental phase that is challenging to comprehensively assess (Atsuko Okuda and Sioppe Vakataki Ofa, 2018). However, the pressing concern is the matter of evidence, which is widely regarded as one of the most critical and precise issues confronting judges in the resolution of various disputes (Mohamed Allam, 2024). In the realm of artificial intelligence, it is imperative to demonstrate the fault of a robot, a task that is undoubtedly more complex.

The principal instances of errors made by artificial intelligence robots can be succinctly summarised as follows:

2.2.1. The First Hypothesis

A contractual error in the design of artificial intelligence software robots poses significant risks when applied to self-driving vehicles or automated construction machinery, resulting in substantial

detriment to the purchaser. This has prompted discussions in the Western world regarding the ethics of artificial intelligence due to its potential harms and severe repercussions (Peter M. Asaro, Member 2018).

The liability of the maker or designer of the robot arises from the failure to maintain or from manufacturing errors that cause injury to others. An intangible, yet legally pertinent, instance of this is Amazon's discontinued AI recruitment system, which was revealed in 2018 to have unjustly disadvantaged women's resumes (Iriondo, R., 2018). The incident did not lead to any official legal proceedings, although it raised ethical and legal concerns around discrimination and the lack of transparency in algorithms. In nations with robust enforcement of anti-discrimination legislation, the use of such a system may result in civil claims arising from employment law or algorithmic accountability statutes. This example highlights existing legal gaps regarding intangible types of AI harm.

Additional physical instances of this error encompass a traffic collision involving a self-driving vehicle attributable to a software malfunction or a failure in one of the vehicle's systems (Aboelazm, K. S., 2021). The accountability of the programmer and designer is elevated. The driver had no agency, serving merely as a passenger who provided navigational input upon entry, after which his job concluded (Aboelazm, K. S., & Afandy, A., 2019). Examples of such vehicles include those manufactured by Tesla, in contrast to partially autonomous cars that merely assist the driver with functions like self-parking or speed regulation. These systems necessitate driver intervention when required and do not significantly diverge from conventional vehicles, where the driver retains ownership and accountability for any resultant damages in accordance with established regulations.

Between 2016 and 2022, Tesla's Autopilot system was associated with fatal accidents in the United States, including the 2018 death of a driver in California after the system veered into a concrete barrier. Litigations initiated against Tesla have prompted enquiries on insufficient alerts to drivers concerning user misuse and the software's failure to disengage in perilous situations (Ballingall, S., Sarvi, M., & Sweatman, P., 2025). Certain cases were settled extrajudicially, while others are still unresolved, highlighting the challenges of applying conventional product responsibility principles to semiautonomous systems. Court cases frequently examine whether autopilot functions as a co-pilot aid or assumes full control, complicating the determination of liability

for accidents under product liability law.

If a self-driving car is hired, the lessor is responsible, not the lessee who seemingly possesses it, provided that the accident is attributable to a technical malfunction in the vehicle's systems.

We implement the general regulations for this section in accordance with the facts pertaining to this kind of vehicle, as established by the Federal Civil Transactions Law as a foundational framework that:

1. The lessor must deliver the leased item and its accessories in a condition that is suitable for the full intended benefit.
2. Delivery is made by enabling the lessee to use the leased item without any obstacle that hinders its use, while it remains in his possession continuously until the lease term expires" (UAE Civil Transactions Law, Article No. 763). It is understood from this text that the vehicle is delivered with sound systems that enable the lessee to use the leased property.

2.2.2. *The Second Hypothesis*

The mistake of the operator of artificial intelligence robots. An illustrative example is the 2018 incident involving an Uber autonomous vehicle in Tempe, Arizona, which fatally struck a pedestrian despite the presence of a safety driver. An inquiry established that the vehicle's AI software failed to promptly categorise the pedestrian as a threat (Uzair, M., 2021). Despite the driver subsequently being charged with negligent manslaughter, Uber as a corporation faced no criminal accountability, and product liability lawsuits did not progress. This scenario exemplifies the difficulties in ascertaining AI "fault" within multilateral systems that integrate human oversight with intricate automated decision-making layers. The contractual fault in the programming of robots that execute artificial intelligence programs also represents a pattern of consumer harm. The question emerges: Did the designer, namely the programmer, fulfil their responsibilities, or is the error attributable to the operator if they are distinct individuals? If proven, the designer and operator evade accountability, transferring responsibility to the user, provided the programmer and operator fulfilled their obligations of programming, alerting, and informing (Khudhair, H. Y., Jusoh, A., Mardani, A., Nor, K. M., & Streimikiene, D., 2019). A notion may emerge: What if the autonomous car operated independently without any neglect from the operator? Can one absolve culpability and classify the harm as a waste by drawing a comparison to the crime of the

incompetent (Hamed Al-Darai 2019), and does this fall under force majeure? A guarantee is required as long as the harm persists, in accordance with the basic regulations. Insurance is inherently required to address such issues, unless when the vehicle's movement is due to a manufacturing defect, in which case the manufacturer is liable for the consequences. If it is established that there is no manufacturing problem and the operator sent the incorrect command, he assumes responsibility and retains control of the vehicle. Among these inaccuracies is the inaccurate prediction of crime (Ali Faqiri 2023).

Civil Law against Common Law Guidelines for AI Liability: Legal responses to AI vary considerably between jurisdictions, even within civil law and common law frameworks. Civil law legal systems, such as those in the UAE and most Arab nations, codify laws and may assign culpability based on established legal categories (e.g., personal fault/tort or contractual breach) (Deakin, S., & Markous, C., 2020). Common law legal systems, exemplified by the United States and the United Kingdom, exhibit a diminished dependence on court precedent and demonstrate greater adaptability in evolving liability doctrine via case law. For instance, courts within the common-law jurisdiction have commenced evaluating the applicability of vicarious liability to algorithms, especially in instances of minimal human supervision. Civil law systems may encounter challenges in transitioning without codification, as judicial innovation in redefining legal categories is limited (Chamberlain, J., 2022). This structural distinction affects AI-related harm: common law

courts can innovate based on precedent, whereas civil law jurisdictions can more directly modify liability frameworks to better address non-human actions.

2.2.3. The Third Hypothesis

The liability of the owner of artificial intelligence robots: The operator, who may also be the owner, utilises the robot for personal gain, such as a physician employing the robot in a private clinic, which may result in patient harm during a surgical procedure. The owner's responsibility is that of a human representative for the robot. A similar situation arises when an autonomous vehicle inflicts damage on others (Khudhair, H. Y., Jusoh, A., Mardani, A., & Nor, K. M., 2019). The one possessing it, often its owner following standard regulations, holds accountability. However, if his responsibility is established an assumption that cannot be disproven it is no longer admissible in this instance, as it is imperative to examine the errors of the designer and programmer. The fault in the self-driving car collision may originate from the service provided by the car manufacturer in conjunction with Google Maps (Yas, H., Mardani, A., Albayati, Y. K., Lootah, S. E., & Streimikiene, D., 2020). Consequently, the guard's culpability is absolved in this instance. Despite the owner's possession, the accountability resides with another party. It is evident that the conventional principles governing the liability of custodians of property are now obsolete.

Table 1: Errors Made by Artificial Intelligence.

AI-Related Error Type	Where the error could have originated	Potentially Responsible Party	Incurred legal liability	Instance
Programming Issue	Errors in how the AI was implemented and trained, or bias in the source data.	AI designer	Coding delinquency	Amazon's sexist resume-filtering AI tool (2018).
Hardware issues	Bad sensors and chips or hardware problems directly associated with the AI system.	AI product manufacturers and distributors	Injuries from defective AI products/services	Tesla's Autopilot crashes as a consequence of a hardware-software mismatch.
Inadequate regulation	Operator misunderstands AI actions and does not correct the system	Human-in-the-loop (HITL) or Risk assessor	Civil (tort) liability, specifically due to negligence or recklessness	2018 Uber AV accident, where safety driver did not intervene
User incorrectly uses AI system	User uses the system in a way that it is not meant to be used	End-user	Possible contributory negligence or shared fault	Police officers wrongly convicting suspects
AI deviation	AI system takes an action that results in harm, with no indication of human error	AI manufacturer or developer	No-fault liability	Autonomous vehicle selects an accident trajectory, but cause is not attributed to technical system failure.

2.2.4. *The Fourth Hypothesis*

The robot user may err due to poor usage of the electronic interface by the passengers of the self-driving bus. The robot user may commit numerous errors, as privacy disclosure in the realm of artificial intelligence extends beyond merely exposing physical spaces or monitoring individuals; it now encompasses the revelation of emotional states and private sentiments, rendering such personal experiences susceptible to intrusion by adversaries utilising artificial intelligence applications (Yas, H., Jusoh, A., Streimikiene, D., Mardani, A., Nor, K. M., Alatawi, A., & Umarlebbe, J. H., 2021). Notable instances of artificial intelligence include the algorithms of internet and social media platforms such as YouTube and Google, which analyse user personalities through search behaviours and leverage this information to discern preferences, subsequently inundating users with a relentless stream of tedious advertisements that consumers often wish would cease but cannot escape. The issue will not conclude there; it may extend to the exploitation of personality analysis results, thereby harming the consumer, who is rendered vulnerable before a technology that possesses greater knowledge of him than he does of himself. Consequently, there is no restriction on the exploitation of consumer personality analyses, as they can be exchanged among companies to generate intrusive advertisements. Furthermore, these analyses may divulge personal traits that could be manipulated for unethical competitive advantage, among other issues (Dubai Government Financial Summit).

Facial recognition has led to erroneous arrests in both the US and UK due to misidentification by facial recognition systems. In 2020, Robert Williams, an African American man in Michigan, was wrongfully apprehended due to an inaccurate AI-facilitated facial recognition match. The American Civil Liberties Union filed a lawsuit, claiming that the technology disproportionately targets minorities and lacks enough due process safeguards (Morioka, S., 2004). Despite varied legal outcomes, the cases revealed the evidential difficulties in holding public or private entities accountable for mistakes generated by opaque processes in law enforcement.

The robot's ability to recognise eye and facial features will allow it to track an individual's movements, thereby exposing them to unauthorised observers, unless the observer is a legally authorised entity. This infringes upon personal privacy, as individuals' lives and confidentiality become susceptible to manipulation by artificial intelligence

programs. Conversely, such reading can be leveraged for societal benefit, enabling governments to discern the general sentiment of the populace and security agencies to detect the aberrant behaviour of wayward youth through their behavioural patterns as indicated by their search engine queries. Artificial intelligence will permeate the healthcare sector via smartphone applications that will assess individuals' health statuses based on genomic analyses and offer medical recommendations. These applications will propose modifications to foetal characteristics, such as eye colour, hair colour, or nose length, a practice known as genomic medicine. Companies will vie to produce the electronic doctor robot, subsequently raising the issue of legal liability for this robotic physician, particularly when the robot is diminutive and delivers medication to the body's cells.

2.3. *Methods of Proving Artificial Intelligence in Liability for Harmful Acts and Contractual Liability*

The damages caused by artificial intelligence robots are not confined to the contractor; they may also affect others, necessitating proof for the judge to render a decision.

2.3.1. *Proving Liability for Harmful Acts*

Artificial intelligence robots are automated mechanical devices, often compact in size, necessitating specialised maintenance, such as the software that controls their operation. Classifying them as mechanical machines enhances safety for affected individuals and provides greater protection until specific regulations are established. This situation bears resemblance to a bank's liability concerning computer errors (Sherif Ghanem, 2010). A person's legal liability for compensation arises under general principles when they err and their conduct diverges from that of an ordinary individual. It is unjust to hold them accountable for damages resulting from actions they did not personally undertake, which constitutes the foundation of tortious liability.

However, with the advent of the machine, it became evident to legal scholars that a reevaluation of the general principle of compensation was necessary. Error is no longer the legal foundation for culpability, as demonstrated in the above illustration. Alternatively, one may rely on different foundations, including the premise of the presumed error. This foundation was deemed non-existent, prompting legal experts to invoke the theory of responsibility, or what Islamic jurists refer to as the theory of loss and gain, along with other theories, to circumvent

personal culpability due to error and to adhere to the established theory centred on injury. This represents the legislative tendency of developed nations. The guardian depicted in the final image is unjust; however, it is often the case that the overseer of the machine is affiliated with factory proprietors and the affluent, in stark contrast to the victims of the machine. Who will provide restitution for these aggrieved individuals whose rights are disregarded?

The affected populace confronts three significant challenges following the advent of the machine, which are as follows:

1. The difficulty of proving the damage due to the ignorance of the person who caused the damage and the method of proving the mistake of the wrongdoer to prove personal responsibility and the moral element of the mistake, in the case of the responsibility of the guardian of things that require special care, as he will only be able to prove the material element, which is the damages only, and this will not be enough for him to claim compensation.
2. Because the obligation of the guardian of things in the Federal Civil Transactions Law is an obligation to result and not an obligation to exercise care, unlike the responsibility for others in other cases.
3. The greed of business and factory owners at the expense of the workers who are harmed. This reason is humanitarian, as it shows that the wealthy, who are the owners of these machines, enjoy themselves at the expense of the workers who are victims of the machines. This renders social justice nonexistent in support of the weak (Rida Metwally and Heddan 2009). Is such an argument realistic, or could business owners themselves be victims?
4. The many complexities of the machine in its design, assembly, operation and management, as much as it is a blessing, it often turns into a curse from the moment it is designed, as it may explode due to its poor design or even when it is operated and managed, causing harm to others without knowing the cause of the harm. Because of these complexities, jurisprudence and the judiciary have resorted to exempting the injured party from proving the harm, and even preventing the perpetrator of the harmful act from acquitting himself in the event of ignorance of the cause of the harmful act by relying on conclusive evidence of his act due to the difficulty of proving the cause of the harm.

From here, the proof process has changed through

the following:

The general principle is that the injured party is the one who must prove the error of the perpetrator of the harmful act, as the general rule is that a person is only responsible for his act, and the error is originally obligatory to prove.

Subsequently, within the constraints of practical reality, the error was attributed to the guard, allowing him to demonstrate the contrary (basic legal evidence) as an initial phase. - Subsequently encountering an irrefutable error (conclusive legal assumption), the objective is to promote social solidarity concerning the efforts of others, constituting an exception. Should we reevaluate the overemphasis on safeguarding the injured party to the detriment of the custodian of the property, who may also suffer from onerous compensation, particularly in the absence of mandatory insurance and the pursuit of codifying compulsory insurance as a viable alternative to this burdensome legal anomaly for the debtor guardian?

In summary, compulsory liability insurance has been established to mitigate the guardian's responsibility for items necessitating special care and mechanical devices, thereby compensating for damages arising from unknown causes and promoting social justice in risk distribution.

Connecting the aforementioned to artificial intelligence reveals that it has not rendered the machine irrational under the control of a single individual; instead, it has evolved into a system managed by multiple stakeholders, notably the designer, the vendor, the proprietor, and the end user. For instance, a self-driving Mercedes vehicle implicates the manufacturing company, the programming firm it engaged, the purchaser, and the lessor if the vehicle is rented. All parties are expected to be jointly accountable to the aggrieved party if the vehicle commits an error affecting the lessee. Primarily, the vehicle must be mandatorily insured as a definitive measure to mitigate such interference or in cases of unawareness regarding the origin of the detrimental conduct.

The Dubai Court of Cassation articulated that the foundation of the guardian's liability for objects is predicated on a presumed error that cannot be disproven. This implies that as long as the guardian derives benefits from the object, he is obligated to compensate for any consequences arising from it. The court referenced Article (316) of the Civil Transactions Law, which stipulates that any individual in possession of items necessitating special care to avert damage, including mechanical devices, shall be liable for any harm inflicted by these items or machines upon others,

barring unavoidable circumstances. The principle asserts that the owner of an object retains control over it unless evidence demonstrates its transfer to another individual. Liability in this context, as articulated in the explanatory memorandum of the law, is predicated not on alleged error, but on the purpose to profit. Consequently, to establish the owner's obligation who possesses control over the object, it is unnecessary to demonstrate any wrongdoing or negligence on their part; it suffices to show that the machine or object directly contributed to the damage. The individual subordinate to the owner does not relinquish control over the item utilised on behalf of the owner" (Dubai Court of Cassation ruling 2013).

The text omits unavoidable factors, specifically foreign causes and force majeure that absolve responsibility. The previously mentioned principle removes liability from the subordinate, conferring it solely upon the principal, who is deemed to possess authority and control. However, a question arises regarding the entity that holds authority and control in the realm of artificial intelligence.

It appears that the entity controlling the electronic program that delivers services is the owner, unless a defect is ascribed to the designer or programmer, in which case liability is joint and several.

In this context, the Federal Civil Transactions Law states: "Any harm inflicted upon others obligates the perpetrator, regardless of discernment, to compensate for the damage." The damage is attributable either directly or indirectly. If it is directly due, the guarantee is mandatory and unconditional. If it arises from infliction, then hostility or intent is necessary, or the act results in harm. If the direct and inflicted are amalgamated, the ruling is appended to the direct. UAE Civil Transactions Law, Articles 282-284

Our observation regarding this paragraph is that the guarantee is unconditional for the direct party, but the responsible party must exhibit either negligence or intent, so diminishing the liability of the responsible party and augmenting that of the direct party. This issue has been eclipsed by artificial intelligence, which may have contravened this principle. The owner of the self-driving automobile, who may be within it and lacks power or strength, is in a direct position or equivalent to one. How can he ensure direct accountability without the stipulation of negligence or intent, while the programmer, who is the actual direct agent, remains the sole party responsible, also devoid of negligence or intent, in accordance with established regulations?

Thus, we observe the necessity of changing Articles 283 and 284 of the Civil Transactions Law, which pertain to direct guarantees without fault or

intent, while the individual may not be liable, as the actual responsible party is the perpetrator. Although we assert that the direct and the causer converge, the text acknowledges an addition to the direct entity, whereas in the realm of artificial intelligence, justice necessitates that the guarantee be appended to the causer, provided that the error is substantiated by him.

2.3.2. Proof of Contractual Liability

The agreement between the programmer and the proprietor of artificial intelligence programs should be categorised as a contractual agreement, defined as: "A contract wherein an individual executes a specific task on behalf of another individual in exchange for a fee, without being subjected to their oversight or management" (Muhammad Labib Shanab 2008). The critical factor is that the programmer or designer contractor operates independently of the user or employer's supervision; consequently, the contractor is accountable for any detrimental actions caused by the programs towards others, provided there exists a causal link between their error and the resultant harm.

The court's judgement establishes, in accordance with Articles 872, 877, 878, and 885 of the Civil Transactions Law, that a contract is an agreement in which one party commits to provide a service or deliver a product in exchange for compensation from the other party. The contractor is obligated to fulfil the work as stipulated in the contract, and shall be liable for any damage or loss arising from his actions or performance, regardless of whether it results from his misconduct or negligence. The employer must remit payment upon delivery of the contracted item, unless stipulated otherwise by law or agreement; determining whether the contractor has fulfilled the assigned work according to the agreed specifications and within the designated timeframe is a factual matter" (Dubai Courts 2009). Certain observers assert that categorising contracts of a mental character as contracting contracts is inaccurate, as a contracting contract implies the completion of physical activity, even if the work is grounded in an intellectual methodology. Nonetheless, information technology contracts are established and do not necessitate a physical component. Similarly, it will rely on the assertion that mental contracts, encompassing artificial intelligence programming contracts, constitute a form of contractual agreement, and their deficiencies will be categorised according to our classification of the defects found in physical contracts, which is an exaggerated claim (Nasir Sabbar 2006).

The reality is that the contractor's responsibilities need not be exclusively physical; the labour may encompass both physical and cerebral tasks, as stipulated in the artificial intelligence programming contract. The French Court of Cassation has determined that when mental performance is the focus of the contract, it does not preclude the contract from being categorised as a contractual agreement (Mahmoud Abdel Mohsen, 2010). Consequently, we ascertain that the legal categorisation of the artificial intelligence programming contract as a contractual agreement, governed by its stipulations, is the most probable. Thus, this contract falls under this classification in areas not addressed by mutual agreement (Mohamed Hessen Mansour, 2006) or the inclusion of specific provisions, as electronic transactions conducted via the Internet may centre on executing work or services for the advantage of another party (Shahata Gharib, 2008).

This viewpoint is not negated by the nature of the contractor's employment being intellectual; numerous liberal professions involve cognitive tasks and are categorised as contractual agreements (Jamal Abdel Rahman, 1999).

The previous classification of the artificial intelligence programming contract as a contracting agreement mitigates the risk of a legal vacuum. The contradiction of legal solutions and the inconsistency of their application, coupled with our decision to categorise them as part of a designated contract, situates us within the realm of legal security. This is primarily due to the applicability of general rules governing this contract, while simultaneously mitigating the potential for overreach and excess in the exercise of will that could disadvantage the weaker party (Muhammad Hasan Mansour 2006).

2.4. Analytical Study on How to Prove the Robot's Error In The Light Of the Legislation of the Emirate of Dubai

The Emirate of Dubai has settled this type of liability and has focused on the operator and then set some exceptions, as the text states:

- A. The operator shall bear the responsibility for compensation for damages caused to individuals or property due to the self-driving vehicle, without prejudice to his right to refer to the actual causer of these damages, in accordance with the general rules of liability established in this regard.
- B. The Authority shall not be liable for any losses incurred by others due to the utilisation of the autonomous vehicle (Dubai Vehicle Regulation Law 2023).

This explicit text references the aforementioned law, resolving the controversy regarding the legal nature of liability. The law stipulates that responsibility lies with the operator, typically the vehicle owner, while allowing for the possibility of attributing liability to the actual perpetrator if the operator can substantiate their claim of external responsibility.

The operator is any individual authorised by the Authority to engage in the activity, including the owner of the autonomous vehicle. The permit is the document granted by the Authority that authorises the designated individual to engage in the activity in compliance with the stipulations of this law and the decisions made in accordance with it (Dubai Vehicle Regulation Law 2023).

Consequently, based on the aforementioned and in accordance with the principles of general civil responsibility, the operator shall be accountable if an error occurs that causes harm and establishes a causative relationship. Any wrongdoing that inflicts harm on others necessitates restitution from the offender (Abdul Razzaq Ahmed Al-Sanhouri, 2011). If an individual's accountability for a past event is intertwined with their personal actions, and if that individual, possessing an object from the past, intentionally or negligently inflicts harm on others, they shall be held responsible for their actions. Consequently, it is more fitting for the operator of a large modern machine, who causes harm to lives or damages property, to be held accountable (Nouri Khater, 2016).

This is corroborated by the Federal Civil Transactions Law, which states: "Anyone possessing items that necessitate special care to avert damage or mechanical devices shall be liable for any harm caused by these items or devices, except in cases of unavoidable circumstances, without prejudice to the specific provisions pertaining to this matter" (Federal Civil Transactions Law, Article 314).

The Dubai Court of Cassation established general specifications for items necessitating special care, defining them as: "those that inherently require such care due to their composition or installation, rendering them dangerous by nature or under specific circumstances and conditions, particularly if positioned or situated in a manner that typically permits damage to occur, and they have actively contributed to causing this damage. If the item at the time of the incident was in an unusual or abnormal position likely to result in damage according to the normal course of events, even if at rest, it is deemed the effective cause or producer of this damage, with the burden of proof resting on the injured party"

(Dubai Court of Cassation, 2008).

In our view, although we value the legislation of the Emirate of Dubai, assigning responsibility to the operator and owner did not resolve the issue. The allocation of responsibilities was addressed in a broad, rather than specific, manner. Consequently, in accordance with Dubai's legislation, we assert that each case must be evaluated separately based on the technical evidence provided by the professionals and experts consulted by the judge. The accountability may rest with the designer, user, tenant, programmer, and other parties engaged in the development of the artificial intelligence robot until justice is attained.

2.5. Proof of Damage and Causal Relationship Resulting From an Artificial Intelligence Robot

The Dubai Court of Cassation determined that, according to its judgement, Article (282) of the Civil Transactions Law stipulates that liability for a harmful act is contingent upon three elements. If these elements are present, one must assume responsibility for all damages arising from an unlawful act, which include the harmful act, the damage, and the causal relationship between them. The occurrence of the harmful act in itself is not sufficient for the obligation to guarantee, but rather it must result in harm to the person against whom the violation occurred in its right in the sense understood within the scope of this liability, as it is a necessary element of its elements, and its proof is a necessary condition for its establishment and the ruling on compensation according to the amount of the damage accordingly whenever the causal relationship is present between the error that was proven to have occurred and the damage, and the court of subject matter is obligated to extract the availability of the elements of this liability with its three elements, starting with verifying the proof of the error that necessitates liability on the part of the defendant and the resulting damage and the causal link between them, which is what the court of subject matter has full authority to assess whenever it bases its judgment on reasons "Permissible derived from elements that lead to the facts of the case" (Dubai Court of Cassation, 2008).

The harm caused by artificial intelligence robots and interconnected Internet of Things devices manifests in various forms, including material damage leading to financial loss due to errors that jeopardise an individual's health, information, machinery, and finances. Additionally, the damage may be moral, infringing upon a person's privacy and violating their moral rights.

A causal relationship must exist between the error

of the artificial intelligence program and the resultant damage, without any intervening force majeure, third-party actions, or the conduct of the injured party, for civil liability of the responsible individual to be established.

A compensation claim is initiated against the individual overseeing the artificial intelligence program. If it is determined that the programmer, rather than the physician utilising the AI robot, is at fault, the injured party is entitled to seek restitution from all parties responsible for the harm, including the programmer, the manufacturer, and the end user of the AI robots.

The paramount question persists: if artificial intelligence inflicts substantial harm and adequate restitution is not obtained from the responsible party, then it is imperative to raise alarms to ensure the highest level of legal protection for the aggrieved. We assert that insurance constitutes the resolution to this issue, as recommended by the European Parliament. Andrea Bertolini, Pericle Salvini, Teresa Pagliai 2016.

3. RECOMMENDATIONS

In light of this study's findings, we propose the following amendments to improve legal accountability for AI-related harm:

1. **Shift toward case-specific liability assessments**
Courts should avoid a one-size-fits-all system of generally-imposing liability against AI operators by default. Rather, experts should determine who is to blame on the AI chain, including the programmers, manufacturers, operators and end users.
2. **Require insurance for high-risk AI systems**
Compulsory insurance to cover AI systems in safety critical areas such as transport and health. This will lead to rapid redress for victims, and will reduce the burden of proving fault in a world where technology is increasingly complex. It also has the competitive advantage and key aspects of both risk- and benefit-sharing built in crucial in proving fault in complex environments, fairly, quickly and the certainty of prompt compensation to the victim.
3. **Develop targeted AI liability legislation**
Lawmakers should look beyond traditional tort or contract frameworks, and establish clearer legal rules that address risks that are unique to AI systems, such as multi-actor responsibility and evidentiary standards. Legislators should consider more forward-looking tort and contract concepts, accurate legal definitions of technical concepts, and

even a configurable evidentiary standard to cope with AI's vast diversity of use cases.

4. **Strengthen judicial and legal training on AI** Judges and lawyers need to have the technological literacy to litigate AI cases. Anyone who regulates intelligent systems should from now on have a mandatory training program and expert panels. The legal community and judiciary that regulates intelligent systems should also make a standard practice of ongoing education.

4. CONCLUSION

This essay has analysed the legal complexities associated with artificial intelligence, specifically on the assignment of liability and evidentiary standards in tort law. This paper demonstrates, through the example of Dubai's autonomous vehicle system, that

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current legal frameworks often reduce the issue of liability by concentrating exclusively on the operator, despite the shared accountability among a multifaceted network of stakeholders, including designers, programmers, and end users. Civil accountability must progress in accordance with advancements in AI. The proposals for compulsory insurance, legislatively mandated expert case reviews, and application-based AI laws facilitate the integration of technological advancements through legal principles. By harmonising legal theory with the operational realities of AI systems, the justice system can effectively safeguard the rights of the aggrieved while facilitating ethical innovation. In summary, the solution is not to resist AI, but to manage it judiciously, allowing laws to adapt to the intended applications of AI.

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