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Research Paper

Locating Liability in Ai: Framework for Future

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I. INTRODUCTION

Technologies are innovated to make routine life easy and smooth. The world of technology is changing rapidly with computers, machines and robots, replacing simple human activities. Artificial Intelligence is one of such innovation. Fundamentally, AI is a machine that can actually think on its own. AI can be understood as the capability of a machine to reproduce intelligent behavior. In broader sense AI refers to a biologically inspired information system and includes manifold technologies like machine learning, deep learning, computer vision, natural learning processing, and machine reasoning. In general understanding, "Artificial Intelligence" is a branch of computer science, which employs recreation of human intelligence processes by machines and aims to create intelligent machines which can often act and react like humans and makes possible for computers to perform tasks involving human-like decision making, intelligence, learned skills or expertise. The discussion paper released by NITI Ayog (2018)[1] defined AI as a "constellation of technologies that enable machines to act with higher levels of intelligence and emulate the human capabilities of sense, comprehend and act."

Can a machine think sense or feel like a human being? Today digital revolution is transforming views of human being about values, behavior and priorities. Artificial Intelligence is that technology which gradually permeates every aspect of our society in regular life. AI is a science and a set of computational technologies that are inspired by the ways people use their nervous systems to sense, learn, reason and take action. Various sectors are benefitted from these new technologies but on the other side apprehension is, these new technologies may be misused or performed in unforeseen and potentially harmful ways. AI has been a fascinating topic for everyone around the world. The main goal of AI is to facilitate innovation, minimize human labor and to expand the human potential to the maximum extent possible. Now AI has become more skilled and can perform the task with more accuracy. The success of robotics and AI has proved that the computers can do the work independently by learning to do tasks once the codes have been entered. AI has now started creating music, reports, paintings and much more. As a result of AI the world is moving towards complete automation of services. Several factors have stimulated AI, including digital economy, fintech, etc. AI applications are prevalent in our lives today like medical diagnosis, customer service, voice enabled smart assistance, driverless metros, cabs.

Many projects are taken to explore and implement AI for use in the public sector, including e-government, anticorruption efforts, etc. It is predictable that the markets for AI services are growing and broader economy shall be benefitted enormously with potential AI services. AI is set to provide help to solve complex global challenges like climate change and resource utilization to the pact of population growth by improved decision making with data driven strategies. It has been realized that AI has the potential to transform people's lives for better by introducing new information and digital personal assistants which can anticipate our needs. We can see use of AI in education especially while conduct of examinations, preparation of moocs, study material, online classes, etc.

Various research projects working on AI application in automobile sector for driverless vehicles advocate that AI cars will reduce road accidents, reduce traffic congestions, reduce fuel consumption and emissions, improve road safety, improve the mobility of the elderly and the disables, and free up commuting time for other tasks. Drones are one such example. The legal professional also, has not remained untouched by AI, as it is implemented by lawyer to find relevant case laws and applicable statutes. AI helps lawyers find answers to complex legal questions within a matter of less time.

[1]NITI Ayog "National Strategy for Artificial Intelligence AI for all", (2018) accessible at https://niti.gov.in/writereaddata/files/document_publication/NationalStrategy-for-AI-Discussion-Paper.pdf.

However, the implementation of AI does not come without its own inherent pitfalls. On 4th July 1981, the first robot homicide was reported. An engineer, Kemji Udara was performing some maintenance work on a robot at Kawasaki Heavy Industries plant. As he entered a restricted area of the line, the robot detected him as an obstacle in the line and threw him on an adjacent machine using its powerful hydraulic arm and Kenji died instantaneously.[2]In 2016, Tesla Motors reported a fatal accident involving an automated vehicle whose sensors failed to detect a truck, collided with it, causing the death of the operator. A situation, such as performance of telerobotic surgery remotely controlled by a human surgeon, where an AI system functions under the supervision or control of a human being, draws our attention to difficulties of determining liability where the system malfunctions either due to faulty programming and/ or error on part of the operator[3]. In 2018 autonomous car crash in Arizona, the cause of the collision, inter alia, was argued to be due to a faulty system design, which needed to be backed up by a safety operator to make the car fully safe. The system in the car struggled to identify an unknown object in the road and failed to apply emergency brake, as it required a human operator in the vehicle to apply such brakes when needed. This highlighted the fact that the cab service had reduced the number of safety operators and radar sensors, in absence of the State's oversight in such matters. This incident highlighted the complexity of assigning liability as the cab system involved several stake holders responsible for designing the car, supply of hardware, programming, installing sensors and designing company policies for overseeing the driving process. If AI is not regulated properly, it is bound to have unmanageable implications. Imagine for instance that electricity is lost or a program gets corrupted while a robot is performing a surgery, and access to a doctor is lost. And what if a drone or a AI driven car hits a human being. These questions have already confronted courts in the US and Germany. All countries, including India, need to be legally prepared to face such kind of disruptive technology.

Predicting and analyzing legal issues and their solutions, however, is not that's simple. For example, criminal law is going to face drastic challenges. What if an AI based driverless car gets into an accident that causes harm to persons or property? Who should the courts hold liable for the same? Can AI be thought to have knowingly or carelessly caused bodily injury to another?The question lies that whether in the like situations as in the above-mentioned examples, the AI entity may be considered to have a 'directing mind' so as to address the determination of liability, which, depending on the situation, may attract vicarious liability or a breach of contract or criminal liability. Mere evolution of a revolutionary technology does not mandate a change in the principles of law, but when there will be an increase in the interaction of this technology with humans or when this technology becomes a salient part of the human world, it will raise new legal questions, such as who will be held accountable for any criminal liability arising from the actions of AI. Therefore, a legal system needs to be prepared for these upcoming challenges. [4]Attribution of legal personality to artificial intelligence can be effective measure to check all potential challenges by introduction and implementation of AI in our society.

AI is gradually gaining prominence in our lives across various platforms. Harm or loss may result in activities associated with AI. Therefore, ascertaining liability in such instances, whether civil or criminal, is essential. Predicting legal issues is not an easy task. There are no policy guidelines for dealing with AI in India. Our legal system needs to be prepared for upcoming challenges. The researcher believes that this can be tackled by understanding the possible answers to the following research questions:

1. Whether legal personality can be attributed to AI?
2. What are the various possible models by which we can attempt to identify a probable perpetrator and attempt to attribute liability in instances of mishaps associated with AI?

Given the importance of 'intention' in India's criminal law jurisprudence, it is essential to establish the legal personality of AI. Legal personality is only a technical personification for the purpose of asserting rights, duties and liabilities. Attributing legal personality to AI will make them accountable under law, just like corporations. Upon taking certain assumptions, like the AI has a directing mind, or AI totally depends upon the programmer, hardware assembler or the user or the functioning of the AI also depends upon external factors, the actual perpetrator being an offence can be identified and liability can be attributed.

In this paper the researcher will try to present in-depth analyses of the legal challenges posed for AI systems, identify the various stakeholders of a typical AI, examine whether AI may be said to have a 'directing mind' and whether the civil and criminal liability of an AI may be accordingly determined by the application of the principles of 'lifting the corporate veil' and the alter ego doctrine which were developed to determine corporate liability. This paper also seeks to put forward an understanding that logically points towards the extension of legal personality to AI, so that existing legal system is strengthened against such challenges arising

[2]Iria Giuffrida, "Liability for AI Decision-Making: Some Legal and Ethical Considerations", 88 *Fordham L. Rev*.439 (2019).

[3]Megan Ji, Note, Are Robots Good Fiduciaries?: Regulating Robo-Advisors Under the Investment Advisers Act of 1940, 117 *COLUM. L. REV*. 1543, 1559 (2017).

[4]*Ibid*.

from the development of AI.This paper further identifies major approaches in legislation and practice on state regulation of AI and explores a number of current options, where AI as a subject of law equal to a person, and regulated or not regulated by separate rules of law, etc, and concludes with certain possible recommendations for law governing AI.

II. IDENTIFYING STAKEHOLDERS IN AI

At present the outputs of an artificially intelligent being are based on a pre-determined algorithm and generate limited predictable outputs and may remain predictable till humans can control the inputs. Once can argue that in such a scenario, artificial intelligence doesn't attract law more than a calculator. But, it is beyond doubt that AI is gradually gaining unmistakable prominence in our lives across various platforms, while exercising self-control in varying degrees, and the question of ascertaining liability, both civil and criminal, with regard to harm or loss resulting from any of its activities, becomes essential. The involvement of various human stakeholders in an AI also highlights the complexity of assigning liability as the system involves several stakeholders responsible for designing the AI, supply of hardware, programming, installing sensors and designing company policies for overseeing the driving process. Also, it is to be probed, whether the AI entity may be considered to have a 'directing mind' so as to address the determination of liability, which, depending upon the situation, may attract vicarious liability or breach of a contract or criminal liability.

The importance of identifying stakeholders in AI, i.e., the human beings behind operation of an AI can be better understood by comparatively understanding various laws in other nations. European Union countries pay specific attention to legal regulation of unmanned vehicles[5]. The German Traffic Act imposes the responsibility for managing an automated or semi-automated vehicle on the owner and envisages partial involvement of the Federal Ministry of Transport and the Digital Infrastructure[6]. A more comprehensive and understandable approach to the definition of current and prospective legislation regarding AI was presented in the EU resolution on robotics (European Parliament Resolution, 2017)[7]. It defines types of AI use, covers issues of liability, ethics, and provides basic rules of conduct for developers, operates, and manufacturers in the field of AI. Involvement of human element as stakeholders and degree of autonomy of the AI are two conflicting aspects, while discussing the issues of attribution of liability arising out of AI usage. To name a few, stakeholders in AI can be 1)Programmer, 2) Hardware assembler, 3) Promoter, 4) Retailer, 5)End user.

III. UNDERSTANDING FACETS OF ATTRIBUTION OF LEGAL PERSONALITY TO AI

Many thinkers argue that the primary purpose of the law is to further the welfare and interest of the humans. We are the sole beneficiaries of law, but it would be wrong to say that we are the only ones who must be its only subjects. The question of ascertaining liability, both civil and criminal, of an AI entity, parallelly impinges upon whether legal personhood may or may not be granted upon it. Also, we must understand that there are financial and practical reasons for granting legal personhood. The attribution of legal personhood has been addressed by Kelson in his theory of personality, according to which, granting of legal personhood is only a technical personification for the purpose of asserting rights, duties and liabilities. The theory implies that legal personhood is only a technical personification for the purpose of asserting rights, duties and liabilities. The theory implies that legal personhood of an entity is in general, a legal device to organize its rights and liabilities. Based on Hohfeldian analysis of rights, every right has a corresponding duty as its *jural correlative*. In the light of a jurisprudential analysis of these theories, the question of whether rights and liabilities of AI may be asserted by granting them legal personhood, must be examined. The question whether legal personhood can be conferred on an AI depends on whether it can be made the subject of legal rights and duties. The legal concept created for corporates serves as a precedent for granting legal personhood to AI. Legal personality states, which entity would count under the law, and consists of entities such as corporates, religious idols, international organizations, etc. If we derive the analogy from the logic behind according legal personality to corporations, which was to limit the corporate liability on an individual's shoulder which would in turn motivate people to engage in commercial activities by means of corporations, in the same manner, the concept of legal personhood should be extended to AI entities as is accorded to corporates. This will enable the existing legal system to have enough potential to tackle upcoming challenges by AI. There may also not be required to make substantial changes in our legal system to effectively solve AI related problems. However, there is a distinction between

[5]Darryl Campbell, Redline: The Many Human Errors that Brought Down the Boeing 737 Max, *VERGE* (May 2,2019), available at: https://www.theverge.com/2019/5/2/185181 76/boeing-737-max-crash-problems-human-error-meas-faa, (last visited on 25th December, 2020 at 14:10hrs)

[6]Dr. Markus Burianski, Christian M. Theissen, Germany Permits Automated Vehicles, *White and Case Technology News Flash*(June 23, 2017), available at https://www.whitecase.com/publications/article/germany-permits-automated-vehicles(last visited on 25th December, 2020 at 15:10hrs)

[7]Gerhard Wagner, "Robot, Inc.: Personhood for Autonomous Systems?", 88 *FORDHAM L. REV*. 591(2019).

corporates and AI. Corporates are fictitiously independent, yet accountable via their stakeholders, while an AI may actually be independent.

The need to have a policy framework for business and the government to meet the ethical and legal standards, can be addressed by primarily deciding upon the nature of entity, an AI is and accordingly the liability may or may not be shifted from its creators to the AI system which exercises some degree of control. This may be probed by drawing an analogy between AI and corporations, so as to understand the similarity, if any, between how AI on one hand, and a corporation, as an artificial person on the other hand, sanctions. The fear against modern advanced technology is partly because AI are not subject to any law under most jurisdictions. Similar fears were harbored when corporations came into existence concerning the wide spectrum of offences it could possibly commit. Eventually, different principles such as alter ego doctrine, directing mind theory, lifting of corporate veil, etc came to be applied to determine corporate liability[8]. Therefore, designing principles, which fixate the liability of AI entities, in situations which are probable and foreseeable consequences of the application of such technology in various fields, as of today or in near future, are highly imperative. If AI is considered a legal entity it can be held liable for its own actions. The algorithms of AI can be corrected by reprogramming[9]. This may save the innocent developers of the AI, as well as its owners from liability arising from an act which they never intended and will promote the development in the field of AI as it will prevent discouragement of AI developers and its users and simultaneously promote innovation in this field. Granting legal personhood to AI will not only ensure that our current legal system gets prepared for the technological change but it will also ensure that our interactions with these A beings are harmonious and beneficial to human beings.

The various theories of legal personhood clearly lay down that any entity which is autonomous can be attributed legal personality and there is no legal barrier in doing so. There is sufficient legal consideration arguing in favor of attribution of legal personality to AI, which in no case would be conceptually different from legal personhood of a corporation. At the cost of repetition, it is once again reiterated that that this will prepare our legal system for technology change without making substantial change to the existing legal system. Another aspect, that the researcher wants to draw the attention of readers is that if AI as a separate entity not held accountable for its own actions, the liability will shift to the stakeholders and they may refrain from developing such technology. This may be better understood from the context of concept of corporations. Initially, people were afraid of corporations and refrained from participating in the corporate world due to the huge risk of liabilities. But as the safeguards were provided by corporate laws, more people started engaging themselves in commercial activities.

Granting legal personhood may in turn result in limited liability for the human stakeholders concerned with manufacturing or programing or using the AI. This could provide offenders a shield from the legal system in form of AI and can take the legal personality of AI as a statutory privilege to commit an offence. In such a scenario we can again derive analogy from the legal personhood of corporations. Like in corporations if a person is found to take unfair advantage of the legal personality of the corporation, then the courts pierce through the corporate shield and hold such person accountable. This process of lifting of the corporate veil can be adopted in case if any person uses artificial intelligence as a means to satisfy his own selfish motives or to save himself from any criminal liability. In *Klien v US*[10], the pilot put the plane on auto pilot at the time of landing while the regulations strictly prohibit the use of auto pilot for landing. The auto pilot erroneously did a bad landing causing severe damage to the plane. In this case, though there was an error on the part of the auto-pilot but the pilot was behind such an error and therefore he was held liable for the damages caused to the plane. In United States legislations have been passed by four states to treat self-driving cars as traditional drivers.[11] The US state of Nevada was the first state to pass such legislation. [12]The law would consider these self-driving cars as traditional human drivers and hold them accountable for any accident caused or any other liability arising from their acts. It may be argued that at this point in time when the technology of AI is still being developed,

[8]Horst Eidenmüller, *The Rise of Robots and the Law of Humans* (Mar. 26, 2017) (unpublished manuscript), https:// papers.ssrn.com/sol3/papers.cfm?abstract_id=2941001

[9]*Ibid.*

[10]*Klein v US*,(1975) 13 Av Cas 18137.

[11]Thomas Halleck, "Google Inc, Says Self-Driving Car Will be Ready by 2020",*International Business Times*, Jan, 2015, available at:http://www.ibtimes.com/google-inc-says-self-driving-car-will-be-ready-2020-1784150(Last visited on 29th December, 2020 at 15:00hrs).

[12]Matilda Claussén-Karlsson, Artificial Intelligence and the External Element of the Crime: An Analysis of the Liability Problem, available at:https://www.diva-portal.org/smash/get/diva2:1115160/FULLTEXT01.pdf (last visited on 30th December 2020).

granting of legal personhood to an AI entity for ascertaining liability may not be necessary in order to make it liable.

IV. UNDERSTANDING THE VARIOUS POSSIBLE MODELS BY WHICH WE CAN ATTEMPT TO IDENTIFY A PROBABLE PERPETRATOR AND ATTEMPT TO ATTRIBUTE LIABILITY IN INSTANCES OF MISHAPS ASSOCIATED WITH AI

An understanding of AI poses questions as to whether AI entities may be able to satisfy the necessary requirements of both actus reus (act or omission) and mens rea in order to be held criminally liable. A three-model approach for imposing criminal liability of AI entities:

1) The Perpetration-via-another liability model:
   This model considers AI entity to be an innocent agent fir whose wrongful act or omission, its software programmer or the user may be held liable as they are the perpetrators-via-another. The underlying reasoning is that, in such cases, criminal intent or mens rea is assumed on the part of the programmer or user to commit such offence with the instrumental usage of the AI as an agent[13]. This model is suitable only in cases not involving the advanced capabilities of an AI entity. It is not suitable where the AI entity has committed an offence out of its own 'learnt; experience or knowledge because in such cases it becomes semi-innocent and not an innocent agent.
2) The Natural-Probable-Consequence Liability Mode:
   This model attributes liability to the AI users or programmers for an offence committed by an AI entity which a 'reasonable' user or programmer ought to have foreseen as a natural and probable consequence of their actions and should have prevented the same. The application of this model ay have two possible outcomes: firstly, where the AI entity commits the offence due to negligent use or programming, it cannot be held criminally liable (liability may bedetermined under the 'perpetrator-via-another' model); secondly, where the AI entity acts on its own, in deviation of its programming or use, it shall be held criminally liable. The first outcome is based o criminal liability for negligence where liability occurs even in the absence of knowledge or intention of such user or programmer. The second outcome is based on the liability of an accomplice, in the absence of a conspiracy, for acts which are probable and natural consequences of a criminal scheme which the accomplice had abetted or aided.

3) The Direct Liability Model:
   This model makes the AI entity liable directly for offences committed by itself, which are not dependent on the programmer or user. It can be argued that AI entities should be held criminally liable, similar to humans, if their acts or omissions are capable of fulfilling the requirements of mens rea and actus reus of that particular offence, where such AI entity acted independently of the programmer or user[14].

The above three models present how the criminal liability of an AI, in different situations, could be located and determined. However, in practice, there may be other stakeholders than the two (programmer and user), such as designers of hardware, maintenance engineers, third parties who may possibly come in contact with the AI, and so on. In such a scenario, a wrongful act or omission by the AI may be a direct or indirect consequence of one or more of these stakeholder's negligent or willful acts/ omissions, rendering the determination of liability in such cases an uphill task.

V. CONCLUSION

For the purpose of ascertaining liability, it is argued that, perhaps, at this point of time when the technology is at a nascent stage, and gradually being applied across newer domains, granting of legal personhood to an AI entity may not be required at this juncture, in order to make it liable. The researcher proposes the readers to explore the principles of master/servant, principle/agent so that the liability of AI and its stakeholder could be determined as per applicable legal provisions to these relationships. The researcher further proposes the reader to consider the questions, whether a party can be held liable under the principle of 'strict liability with certain exceptions' as propounded in *Rylands v Fletcher*[15] or under the 'principle of absolute liability without any exceptions' as propounded in the *M.C. Mehta And Anr vs Union Of India & Ors*[16]However, it might be essential in the interests of public safety and security, to impose a stricter duty of care in such cases. The probable risks and damages associated with a non-human machine agent may be remarkably high and unpredictable, thereby justifying the necessity of more stringent regulations. As there are no policy guidelines

[13]Francis Bowes Sayre, "Criminal Responsibility for the Acts of Another"43 Harv. L. Rev. 689 (1930).
[14]Gerstner M.E, Comment, Liability Issues with Artificial Intelligence Software 33 Santa Clara L. Rev. 239.
[15]*Rylands v. Fletcher*(1868) UKHL 1, LR 3 HL 330.
[16]*M.C. Mehta & Anr v. Union Of India*& Ors(1987) AIR 1086.

for dealing with AI in India, it may attract legal and ethical issues concerned with its applications. Therefore, the need to have a policy framework for business (while modelling and coding AI) and the government to meet the legal and ethical standards, can be addressed by primarily deciding upon the nature of entity the AI is and accordingly the liability may or may not be shifted from the AI creators to AI, which itself exercises some degree of control.

A future legislation/ policy may contain following provisions:

- AI may be classified as Self Operating/ Learning or Dependent upon human, so at the very coding, assembly stage, the nature of AI can be determined and liability may be fixed on the AI or stake holder, at the very beginning.
- Legal personality may be accorded to AI based on classification of AI. In case AI is Self-Operating / Learning, liability will be attributed to AI, thereby protecting stake holders and promoting research and development in this field. If required, principle similar to lifting of corporate veil may be used to determine the liability of stake holders.
- Principles of absolute liability may be imposed at the contemporary age, or till the period when AI is considered in developing stage.

Though it may be too early to attribute legal personality to AI, however, it is an appropriate time to prepare legal system for the upcoming challenges.

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