

Criminal Liability of Artificial Intelligence Crime in Indonesia: Challenges and Opportunities

Mahrus Ali¹, Muhammad Oscar Dharma Putra Mulya²
& Wahyu Priyanka Nata Permana³

Abstract

This study explores the challenges and opportunities for Artificial Intelligence to be criminally liable for offenses in the Indonesian Criminal Legal System. This study employed doctrinal legal research focusing on the legislation and various secondary legal sources of the relevant topics. It is argued that three (3) models of criminal responsibility for this matter, which depend on the role of the AI in the commission of a crime can be applied; (1) perpetration via another, (2) natural probable consequence, and (3) direct liability model. It is also not impossible for an A.I. to be pinned with criminal responsibility, as is the case with natural persons and corporations. The factual requirement, the *actus reus*, can be satisfied with no issue in the event that an A.I. operates its body parts to commit an act, including assault towards a person. The mental element or the *mens rea*, can be fulfilled by treating the systems of A.I. the same as the human brain; both A.I. and the human brain process and analyse information and data obtained through receptors. However, the challenge that may be raised is that no matter how logically a rule is set up, it holds no water if it is not approved or accepted by society. Unfortunately, it cannot be determined yet whether these models of punishment intended to be imposed upon A.I. will suit the needs of the society or not, as again, Indonesia is not in the realm of Society 5.0 yet, and thus the theory regarding the imposition of criminal responsibility, along with the types of sanction which may be pressed upon it, is still hypothetical.

Keywords: Artificial intelligence, Crime, Criminal responsibility, Society 5.0

¹The author is as associate professor of criminal law, Universitas Islam Indonesia, Yogyakarta, Indonesia. He published various articles on the criminal law, criminal and human rights, environmental crimes, criminology, and victimology in both Scopus and Web of Science journals. He also published several books on criminal law. He has been becoming reviewers of the prestigious journals. mahrus_ali@uii.ac.id

²The author is a Master of Law Student at Youngsan University, South Korea. He graduated from Faculty of Law Universitas Islam Indonesia. oscar@uii.ac.id

³The author is a lecturer of criminal law, Universitas Islam Indonesia, Yogyakarta, Indonesia. 154101308@uii.ac.id

1. Introduction

The central focus of this study is to explore the comprehensive discussions on whether Artificial Intelligence (AI) can be a subject to criminal offense in the Indonesian Criminal Legal System. The concept of Society 5.0 emphasizes the aspect of people's lives, with the purpose of enabling them to settle various social problems through the fusion of both cyberspace and physical space (Rojas et al., 2021). Data from the world or physical space are gathered in a location known as cyberspace (Crowther, 2017), where this accumulation of data are then analyzed, in order to present solutions for real-world problems. Subsequently, the result of the analysis will be evaluated and sent back to cyberspace for further adjustment, in order to continuously improve the society as a whole. However, it is important to note that in an Information Society, said system or mechanism only works in a limited area, while such a system within the concept of Society 5.0 is designed to be able to operate in the society level, universally, in regard with the initial aim of Society 5.0 itself (Deguchi et. al, 2018).

Internet of Things (IoT) (Langley et al., 2021), which then developed to the Internet of Everything (IoE), and Artificial Intelligence (A.I.) (Ghosh et al., 2018) become the operational scheme of the system in Society 5.0. IoE allows the data of physical materials in physical space, including humans, to be gathered and connected to cyberspace. Afterwards, A.I. will analyse the data, to then devise a follow-up measure in accordance with the data collected. A.I. fulfilled this task by imitating human logic (Kithulwatta et al., 2022). However, even though an A.I. may seem to be extremely valuable and beneficial for human civilization, it cannot be denied that it is also able to inflict harm on society, and to some extent, an extremely serious harm; death. This theory, unfortunately, is not fictional, as there have been various accidents where an A.I., in the form of robot, causes death of a person. Some of the aforementioned cases are: (1) case in Germany where a robot kills a contractor, (2) case in Michigan where a worker is killed by a defective robot, and (3) case in a company in North India where a robot kills an employee. These accidents then may evoke concerning questions: Who should be held accountable for the death of those people? Can the blame be shifted directly to the robots, or is it considered the fault of the operator of the robot? What kind of sanctions which shall be imposed to the robot and/or the person controlling it?

Previous studies on A.I. criminal liability have been widely undertaken and published. Some of the notable writings are those published by Gabriel Hallevy (Hallevy, 2010), Thomas C. King et al.(King et al., 2020), and Muhammad Tan Abdul Rahman Haris and Tantimin (Haris and Tantimin, 2022). Unfortunately, these studies does not delve further to the scenario where A.I. is recognized as a legal subject in criminal law. In this sense, the present study is aimed at exploring

the comprehensive discussions regarding the issues raised above, to then consider whether an A.I. can be considered as a legal subject in Indonesian Criminal Legal System. Consequently, this paper will also present possible adjustments toward the currently existing regulations in Indonesia, to cope with the development of A.I. within the concept of Society 5.0.

This study is constructed within three parts in the following order: (1) the concept of crime and criminal responsibility, (2) the author's argument on the possibility of the recognition of A.I. as a legal subject in Indonesian Criminal Legal System along with the corresponding change or adjustment which should be made to the existing regulations in Indonesia, and (3) solutions and recommendations directed to all relevant stakeholders to cope with the continuously-developing society to bring the concept of Society 5.0 into a realization.

2. Research Method

This study employed doctrinal legal research that mainly focus on criminal liability of Artificial Intelligence (A.I.) in the criminal justice system of Indonesia. Using both statutory and conceptual approaches, this study particularly reviewed regulations in Indonesia regarding the status of Artificial Intelligence (A.I.), to then determine whether it can be treated the same as the already existing legal subjects, which are person and corporation. This study also analysed from relevant journals and literatures, to get comprehensive and thorough understanding on the concept of crime, criminal liability, and A.I.-related crime.

3. Crime and Criminal Responsibility: A Conceptual Framework

Crime is simply defined as the commission or omission of an act which the law forbids or commands under pain of punishment to be imposed by the state by a proceeding in its own name. (Pollock, 2013). It constitutes two main elements; physical element (*actus reus*) and mental element (*mens rea*)(Beecher-Monas & Garcia-Rill, 2017). The first element relates to the conduct of an accused person, its results, and those relevant surrounding circumstances and consequences or states of affairs, i.e. the 'external elements', which are included in the definition of the offense and which must be proved. As for *mens reais* interpreted as "an intention to do an act which is an offence by statute or common law, or recklessness as to the consequences of that act." (Curzon, 1997)A crime cannot be established whenever one of the elements is missing; an act, even though prohibited by the law, will not be considered as a crime if it is not committed with wicked or evil mind, and the existence of criminal mind alone cannot be deemed as a crime without its manifestation in the form of criminal conduct (Ghuman,

2018). Criminal responsibility, in principle, shall be imposed upon any legal subjects fulfilling those elements stipulated above, in the sense that they commit a prohibited conduct, and such commission (or omission in some cases) is preceded by the possession of criminal intention (Melansari & Lewokeda, 2018).

There are two models of the imposition of criminal liability upon two different subjects in criminal law; person (*natuurlijke persoon*) and corporation or legal entity (*rechtspersoon*). At the early time of criminal law, criminal liability is intended to be inflicted solely to person (Chasani, 2017). The currently applied Indonesian Penal Code (IPC), however, still embracing this idea (Aji et al., 2022.). This is because IPC, in its nature, is an inheritance from Netherlands Penal Code (NPC), which at the beginning adopted the principle of “*universitas delinquere non potest*” (Kurniawan & Hapsari, 2022). In order to impose criminal responsibility on a person, the same theory or principle concerning the imposition of criminal liability as stipulated above pertains. The person shall satisfy both elements of *actus reus* and *mens rea*, can be held accountable for the crime committed or omitted, and there is no external circumstance which may eliminate the conviction for such crime.

To inflict criminal responsibility on corporation, a different approach is necessary. Criminal responsibility was aimed to be inflicted only to a single subject; natural person. Corporation initially was not acknowledged as a legal subject. This non-recognition of the status of corporation as a legal subject was influenced by Von Savigny’s fiction theory. Savigny argued that a legal entity is an artificial object created by human’s mind, and thus does not possess its own personality (Pratama & Januarsyah, 2020). In this sense, the identification of the corporate’s *mens rea* in a crime became problematic (Maryono and Yuhelson, 2017). Then, as corporation was not recognized as a subject in criminal law, it was also not possible to impose corporate criminal liability upon it. Later development shifted the idea. It was agreed that corporation may be regarded as a valid subject of criminal law, aside from person. The consideration for this alteration was due to the fact that even though corporation might positively influence the economic growth in a state by increasing revenues gained from tax, it could also affect the lives of the society as a whole, negatively (Rahmadia, 2020).

Criminal liability may be inflicted upon corporation on the basis of 3 types of corporate criminal liability doctrine or theory; (1) identification theory, (2) vicarious liability doctrine, and (3) doctrine of strict liability. Identification theory, or which also known as organ theory, stipulates that a corporation can be held accountable for a crime, if such crime is carried out by the person controlling the company, or the company’s directing mind. It is argued that this corporate liability is not only applicable for the crime committed by the directing mind (which in

general sense is the superior personnel of the corporation), but also to the agents with lower position (Rahmadia, 2020). The vicarious liability theory adopts employment principle, in the sense that the blame which is supposed to be attributed to an employee, can be shifted to the employer. In the context of corporate crime, the criminal responsibility which is supposed to be addressed to an agent of the corporation, may be transferred to the corporation, though, the responsibility of the agent will not be abolished. The strict liability emphasizes that a corporation can be held responsible for an offense, without the need of proving the element of error within such offense; only the offense itself which shall be proven (Chasani, 2017).

4. Imposition of Criminal Liability Upon Artificial Intelligence (A.I.)

Can A.I. be regarded the same as a person or corporation, and thus be inflicted with the same liabilities as those applicable for a human or company, or shall A.I. be treated as an entirely new subject of criminal law? An A.I. is not a stand-alone entity; at least currently, it needs a programmer or user behind it to allow the A.I. to operate. The same case applies when an A.I. commits an act, including a crime. As such, A.I. cannot be treated equally as a natural person, as it does not have its own individual personality. A.I. by itself cannot possess rights and obligations. Hence, it suffers the problem similar to corporation in the early phase of the development of criminal law. In the context of Indonesian Legal System, corporation can be defined in two ways; in narrow and extensive definition. Indonesian Private Law adopts the narrow definition of corporation, in which it classifies corporation as legal entity (Rodliyah, et.al, 2020.). Indonesian Criminal Law also incorporates a wider interpretation of corporation, in which it is not only limited legal entity, but also non-legal ones. The reflection of this idea can be found in laws or regulations outside of Indonesian Penal Code (IPC), as the current IPC does not acknowledge corporation as a legal subject. In Article 1 point 1 of Law on Eradication of Corruption Crime, a corporation is defined as “an organized group of people and/or wealth, either in the form of legal or non-legal body.”

Legal entity itself means “an entity which is able to possess its own rights and obligations to carry out a legal act.” In order to obtain the status of a legal entity, a body has to fulfil at least some of these following criteria: (1) possessing separate wealth from that of the founder’s, (2) having certain collective purpose, and (3) having well-established organization (Santosa, 2019). These requirements apply for most of legal entities in Indonesia, except for an Individual Limited Liability Company (Individual LLC), which can be established by only one person (Putri and Tan, 2022). This Individual LLC is also classified as a legal entity, and similar

to an ordinary LLC, it needs to possess capital. One of the main differences between a legal body and a non-legal body lies on the status of the assets of the corporation; the wealth or assets of a non-legal entity is not separated from the founder's assets. Nevertheless, both legal entity and non-legal entity have a common characteristic; they need to own specific amount of assets in order to be acknowledged as a corporation (Khairandy, 2013).

It is argued that that an A.I. cannot be treated equally as a corporation. A.I. cannot be classified both as legal entity and non-legal one, as it does not have its own wealth, and the developer or the deployer of the A.I. also does not necessarily have to possess specific percentage of assets. In this regard, if an A.I. becomes a legal subject, the next question which will follow naturally is the model of criminal liability which is possible to be applied when an A.I.-supported crime takes place. Hallevy proposed 3 kinds of criminal responsibility for this matter, which depends on the role of the A.I. in the commission of a crime; (1) perpetration via another, (2) natural probable consequence, and (3) direct liability model. In the first type of liability, the status of an A.I. is only as an innocent agent, used by a programmer or a user to commit a crime. An A.I. may be programmed to commit crime, or be utilized to commit one, even though the A.I. is not originally developed to do so. In this context, the A.I. cannot be inflicted with criminal liability, as the conduct or the act committed by such A.I. is deemed as the act of that user or programmer (Hallevy, 2010). A theoretical example can be seen in the case where an A.I. is used to injure a person, intentionally. In this case, even though the physical act is committed by the A.I, the criminal liability will be imposed upon the user or the programmer of that A.I. The *mens rea* within the crime is originated from the person behind that A.I., and the *actus reus* manifested by the A.I. is considered as that of such person. The role or position of A.I. in the context of this first model of liability is no different than that of any other tool, for instance, a knife, in a case of homicide.

The second model of liability applies when an A.I. commits a crime, however, this commission is beyond the will or intention of the person controlling it. Nevertheless, the *actus reus* or the act of such A.I. is attributed to that person, on the ground of the person's negligence to foresee or to predict the naturally possible, harmful consequence resulting from the A.I.'s behaviour, in the sense that they fail to prevent such consequence from transpiring. The programmer or the deployer of the A.I. does not intend or expect that the A.I. operated will conduct an offense. The case of the robot which unintentionally kills a worker in a factory, that has been addressed in early part of this research, can be shown as an adequate example. The guilt in this event is deemed as the guilt of the operator of the robot, on the basis that the operator fails to predict that the robot, in its course

of activity, may inflict harm to another person. In addition, this natural probable consequence liability may also be applied in the event where a programmer or user intends to carry out an offense via an A.I., but instead of realising the initial crime, the A.I. causes another crime, which is not initially planned by such programmer or user (Hallevy, 2010). Hence, it is not enough if the blame is only pressed upon the person behind the A.I.; the A.I. itself has to be imposed with criminal responsibility to some degree. This argument is based on the idea that it is not fair for the developer or the user of the A.I. if such liability is only imposed on them, and not to the A.I., as the offense committed by the A.I. is not fully their fault. Furthermore, the determination of the kind of event which consequence has to be able to be predicted will become an issue. How far shall the programmer of an A.I. predict the behaviour of their creation? Then, suppose that the programmer is able to foresee the negative impact which may be generated by the A.I. In this case, can they fully prevent such consequences from manifesting? Then, if a developer is burdened with the task of foreseeing every possible outcome that may be caused by the A.I. they create, it may affect them psychologically to the point that it can limit their willingness to invent more design, in fear of the criminal sanction that awaits when they fail to prevent the A.I.'s deviant behaviour.

Lemley and Casey have presented elaboration on various models of harm related with crimes or offences involving robot, which can be considered as A.I., which include: (1) unavoidable harm, (2) deliberate least-cost harm, (3) defect driven harm, (4) misuse harm, (5) unforeseen harm, and (6) systemic harm. However, even with this classification of different types of harm, there is no actual or clear criterion on how to determine which harm falls to which area, as a situation or event may fall within more than one type of harm. For instance, it is argued that a robot, in the form of a self-driving vehicle, may cause unavoidable harm due to the law of physics, in the sense that it may collide with another object, such as a person, when there is not enough distance or time for the vehicle to prevent such accident (Lemley & Casey, 2019).

The occurrence of this situation is also supported by the idea of Robert Peterson, in which he stated that "virtually, no product or service is perfectly safe, whether it is a jar of peanuts or a tea cosy – much less a complex robotic application." This theory applied for unavoidable harm, to some extent, may apply as well for unforeseen harm. In the research, Lemley and Casey argued that it is indeed possible for a robot to carry out an unpredictable action, particularly robot operated with machine learning system. Machine learning system allows the robot to behave with only limited influence from humans, and thus generates attitude contrary to its initial purpose designed by the programmer, even when a number of sufficient preventive measures have already been undertaken prior to the robot's

operation. Defect driven harm, on the contrary, is based on different rationale. This model of harm transpires when a robot experiences a bug in its system, or no adequate safety measure was presented by a programmer prior the deployment of such robot, causing it to realize an unintended harm. The reflection of this type of harm can be seen in a case of a malfunctioning robot which ends up killing a person (Lemley & Casey, 2019).

Based on the elaboration above, it becomes more challenging to determine which model of harm that the previous case of the robot that kills a worker falls into. Can it be deemed as a situation of unavoidable harm following the idea of Peterson that there is no “perfectly safe” product? Shall it be considered as an event of unforeseeable harm due to the unpredictability nature of a machine-learning automaton, assuming that the robot in such case is developed with machine learning system? Or rather, shall it still be considered as a case where the developer or the deployer of the robot should have been able to predict or foresee the danger possible by such robot, and thus impose criminal liability upon them based on the natural probable consequence model of liability?

Nevertheless, the more important issue which shall be addressed in this paper is then, how to inflict a criminal responsibility to the A.I. based on the second type of responsibility? How to prove the elements of crime, or the *actus reus* and *mens rea* possessed by the A.I.? These issues will be consulted in the discussion of the third model of criminal responsibility below, the direct liability model.

The most confusing model of criminal responsibility to be applied upon an A.I. is the direct liability one, due to the issue of determining whether the A.I. can fulfil both factual and mental elements in the commission (or omission) of a crime. There are indeed dissenting opinions regarding the answer to this problem. It is believed that in future context, an A.I., or robot in particular, may possess its own consciousness and certain level of intelligence, which surpass those owned by human (Osmani, 2020). This argument, though seems hypothetical, still holds water, as currently, Society 5.0, as it has been addressed previously, is still an imaginary concept, hence no one can really predict how it will manifest in the reality. This scenario seems to make more sense when the A.I. is programmed using machine learning or deep learning scheme, in the sense that the A.I. may behave in a more unpredictable course the more experience it gets from the environment. Based on this argument, it serves no harm to pin criminal liability on an A.I. going forward. The idea of imposing criminal liability upon an A.I. is rejected, as it may have also been elaborated before, an A.I. does not have its own consciousness, and thus, will not have any understanding on the effect of their conducts.

Hallevy argued that it is not impossible for an A.I. to be pinned with criminal responsibility, as is the case with natural person and corporation (Hallevy, 2010). The rationale can be described as follow. The factual requirement, the *actus reus*, can be satisfied with no issue in the event where an A.I. operates its body parts to commit an act, including assault towards a person. The mental element or the *mens rea*, can be fulfilled by treating the systems of A.I. the same as human brain; both A.I. and human brain process and analyse information and data obtained through receptors. This theory is indeed plausible considering the basic concept of the A.I. itself, in which it is devised to solve simple to complex problem by mimicking human problem-solving mechanism.

The authors agree that an A.I. shall be deemed guilty and imposed with criminal liability when it satisfies both factual and mental elements necessary to constitute a crime. Notwithstanding the distinct characteristic between a corporation and an A.I, they both possess adequate resemblance, in the sense that both of them does not have their own mind or consciousness. Hence, if a corporation can be inflicted with criminal liability, the same case shall also be applied for an A.I. In other words, even though an A.I. is not the same as a corporation, the doctrine embraced within the scope of corporate criminal liability, for instance, the strict liability doctrine, may as well be utilized as a ground to administer criminal liability upon an A.I.

5. Challenges and Opportunities

It is undeniably unnecessary to add A.I. as a new subject of law in the legal system, as Indonesia itself currently can hardly be considered of embracing the concept of Society 5.0. The role of A.I. in the existing society is not truly relevant, and there is no major accident involving A.I. occurred to the point that the imposition of criminal responsibility upon A.I. shall be considered. However, if the second model answer is to be consulted, the case may differ. When the idea of Society 5.0 has been fully realized and the influence of A.I. has been proven to be more dominant, it becomes an urgency and duty for stakeholders in Indonesia, particularly the legislators, to approve A.I. as a new subject in criminal law. The A.I. may develop its own consciousness which may surpasses that possessed by humans, and thus, enables the A.I. to commit crime independently, free from human's influence. (Wijaya, 2020).\

It also become a necessity to adjust or change a number of substances consisted in the laws or regulations in Indonesia to incorporate the existence of A.I. as a novel legal subject. Perhaps the most basic measure that can be taken to realize this idea is by including A.I. as the third legal subject aside from human and corporation in the New Indonesian Penal Code (the prevailing Indonesian

Criminal Law is not put into this discussion as it is extremely outdated, in the sense that it does not even recognize corporation as a legal subject). Another possible option is for the legislators to devise a new law concerning A.I. including all of its relevant aspects, such as the matter concerning the applicable model of criminal liability and the sanction suitable to be imposed upon the A.I. in the event where such A.I. conducts an offense. The sanction which is suitable to be pinned on A.I., however, may not be that easy to be determined.

To provide an example regarding the issue above, the classification of (penal) sanction consisted within the New Penal Code is provided below. Article 65 of the draft stipulates the types of core sanction, which include: (1) imprisonment, (2) undisclosed penitentiary, (3) supervision, (4) fines, and (5) community service. On the other hand, Article 66 describes the models of additional sanction, which are in the form of: (1) revocation of certain rights, (2) confiscation of certain property and/or bills, (3) declaration of judge's verdict, (4) payment of compensation, (5) revocation of certain permits, and (6) fulfilment of local customary obligation. Article 67 provides elaboration on special type of penal sanction, which is in the form of capital punishment. From the models of penal sanction presented above, it can be seen that some of those sanctions are only intended to be imposed upon natural person, as they are impossible to be inflicted on other legal subject such as corporation. What about A.I., in this context? Can it be bestowed with the types of punishment as stipulated above? Can an A.I. be imprisoned?

The authors argue that unlike corporation, an A.I. can be imprisoned as it is as its physical body, particularly the body of a robot, fits the size of the room of a prison. However, perhaps the more appropriate question to be asked here is not whether an A.I. *can* be jailed or not, but whether it is relevant or not to imprison an A.I. It has been agreed that an A.I. differs from humans, and as such, not all of attributes which may be experienced by humans by serving their time in prison, for instance, the feelings of pain and fear, can be experienced by A.I. as well (Osmani, 2020). The only effect which may be experienced by A.I. in this case is the limitation of its liberty or freedom of movement. Indeed, it can be argued that the purpose of imprisonment is to deprive human from their liberty or freedom, to deter them from committing further crime. (Vos & Gilbert, 2017) This principle, in theory, can also be applied to an A.I. to prevent them from generating another crime. Despite the applicability of this theory to A.I., it will arguably create another issue, in which a prison specially tailored for A.I. has to be built, as it would not be proper to put A.I. in the same place as a human offender; human and A.I. criminal need different treatment. Also, establishing such special prison will arguably take too much time, and will cost a vast sum of state's budget. Hence, to settle this confusion, another form of sanction which has the same effect as

imprisonment, which is to restrict the freedom of an entity, shall be imposed. This study argued that the temporary deletion of the A.I. program or data for a certain period of time may be sufficient to apply the limitation of liberty upon that A.I., as the A.I. cannot move normally as intended when there is missing data in its system. This data shall then be restored when the period of punishment is over. In addition, this concept applied in the context of imprisonment can also be applied for the case of capital punishment. The difference is that, in the context of capital punishment, the deletion of the A.I. software or data shall be carried out permanently, and not only temporarily (Hallevy, 2010).

Then, what about the obligation to pay fines? It has been conveyed before that A.I. differs with corporation in the aspect of the possession of capital, in the sense that an A.I., or even its developer or user, does not necessarily have to own a certain amount of capital in order for such A.I. to be operated. In this case, how can the A.I. pay the fines? In this event, Hallevy argued that this sanction in the form of duty to pay a certain number of fines for A.I. is closely related with the punishment in the form of community or social service. The idea of the social service is to put the A.I. to work in a public space for the benefits of the community as a whole. The A.I. which is supposed to give personal benefit to its owner, in this case, is forced to give benefit for the society. The result of this work or labour done by the A.I. is then delivered to the state as a replacement for its obligation to pay fines (Hallevy, 2010).

The authors argue that these two models of sanction reflecting the sanctions in the form of imprisonment and the obligation to pay fines absolutely makes sense, and they (the sanctions) can be incorporated in the New Penal Code. However, the challenge which may be raised is that no matter how logical a rule is set up, it holds no water if it is not approved or accepted by the society. Unfortunately, it cannot be determined yet whether these models of punishment intended to be imposed upon A.I. will suit the needs of the society or not, as again, Indonesia is not in the realm of Society 5.0 yet, and thus the theory regarding the imposition of criminal responsibility, along with the types of sanction which may be pressed upon it, are still hypothetical, but at least, they are not that impossible to be applied.

6. Conclusions and Recommendations

Artificial Intelligence (A.I.) may also cause harms for the community, including harm in the form of crime. The crime involving A.I., then raises concerning issues to be addressed, particularly regarding the possibility to impose criminal responsibility upon the A.I., as A.I. differs from natural person and corporation in nature. This study concludes that three possible models of criminal

liability which may be inflicted upon A.I.; perpetration via another; natural probable consequence; and the direct liability model. It is indeed satisfactory to pin direct criminal liability towards the A.I., and that the A.I. can also be convicted with the same criminal sanctions as those imposed to human or corporation. The models can be applied in Indonesian Criminal Legal System. The legislators can either add A.I. as the third subject of law in the New Indonesian Penal Code, or devise a new law specifically concerned on A.I. The A.I. can also be inflicted with the same sanctions as those intended to be applied for human or corporation in the New Indonesian Penal Code, with some adjustments.

This study proposes several recommendation. *First*, the sectoral laws outside Penal Code should regulate the existing Artificial Intelligence (A.I.) on the possibility to be criminally liable for certain offenses by corresponding the specific natures of A.I. *Second*, the punishment in the form of imprisonment in the New Indonesian Penal Code can be replaced by the temporary elimination of the A.I.'s data or program, while the sanction in the form of obligation to pay fines can be fulfilled by partaking community service. *Third*, public awareness on the harmful effects of the operation of A.I in certain areas including crimes must be continuously campaigned to prevent undesired impacts.

References

- A.A. Gede D.H. Santosa. (2019). Perbedaan Badan Hukum Publik dan Badan Hukum Privat. *Jurnal Komunikasi Hukum Universitas Pendidikan Ganesha*, 5(2), 155.
- Aji, P., Priambodo, W., Hadi Nugraha, D., & Susila, M. E. (n.d.). *Corporate Criminal Liability*. <https://doi.org/10.33258/birci.v4i4.3507>
- Asmadi, E. (n.d.). *Reasons Justifying Criminal Abolition in the Indonesian Legal System*. <https://pengacaranasional.co.id/>,
- Atsushi Deguchi et. al. (2018). *Society 5.0 A People-centric Super-smart Society*. The University of Tokyo.
- Beecher-Monas, E., & Garcia-Rill, E. (n.d.). Actus Reus, Mens Rea, and Brain Science: What Do Volition and Intent Really Mean? In *Kentucky Law Journal* (Vol. 106). <https://uknowledge.uky.edu/klj/vol106/iss2/5>
- Benoit Dupont et al. (2018). *Artificial Intelligence in the Context of Crime and Criminal Justice*. Korean Institute of Criminology.
- Bungin, B., Teguh, M., & Dafa, M. (2021). Cyber Community Towards Society 5.0 And The Future Of Social Reality. In *International Journal of Computer and Information System (IJCIS) Peer Reviewed-International Journal* (Vol. 02, Issue 03). <https://ijcis.net/index.php/ijcis/index>

- de Vos, H., & Gilbert, E. (2017). Freedom, so close but yet so far: The impact of the ongoing confrontation with freedom on the perceived severity of punishment. *European Journal of Probation*, 9(2), 132–148. <https://doi.org/10.1177/2066220317710393>
- Dewi, P. A. P. (2020). Proving The Insanity Defense in The Enforcement of Criminal Law in Indonesia. *JurnalDinamika Hukum*, 19(3), 670. <https://doi.org/10.20884/1.jdh.2019.19.3.2739>
- Dwi Kurniawan, K., & Indri Hapsari, D. R. (2022). PertanggungjawabanPidanaKorporasiMenurut Vicarious Liability Theory. *Jurnal Hukum Ius Quia Iustum*, 29(2), 324–346. <https://doi.org/10.20885/iustum.vol29.iss2.art5>
- Ghosh, A., Chakraborty, D., & Law, A. (2018). Artificial intelligence in Internet of things. In *CAAI Transactions on Intelligence Technology* (Vol. 3, Issue 4, pp. 208–218). Institution of Engineering and Technology. <https://doi.org/10.1049/trit.2018.1008>
- Ghuman, A. (n.d.). Elements of Crime. In *International Journal of Law Management & Humanities* (Vol. 1). www.ijlmh.com
- Glenn Alexander Crowther. (2017). The Cyber Domain. *The Cyber Defence Review*, 2(3), 63.
- Glenn Wijaya. (2020). Perlindungan Data Pribadi di Indonesia: IusConstitutum dan IusConstituendum. *Law Review*, 19(3), 331.
- Hallevey, G. (2010). The Criminal Liability of Artificial Intelligence Entities - from Science Fiction to Legal Social Control. In *Akron Intellectual Property Journal* (Vol. 4, Issue 2). <https://ideaexchange.uakron.edu/akronintellectualpropertyAvailableat:https://ideaexchange.uakron.edu/akronintellectualproperty/vol4/iss2/1>
- Joycelyn M. Pollock. (2013). *Criminal Law*. Anderson Publishing.
- King, T. C., Aggarwal, N., Taddeo, M., & Floridi, L. (2020). Artificial Intelligence Crime: An Interdisciplinary Analysis of Foreseeable Threats and Solutions. *Science and Engineering Ethics*, 26(1), 89–120. <https://doi.org/10.1007/s11948-018-00081-0>
- Kithulwatta, W. M. C. J. T., Gayantha, M. H., & Rathnayaka, R. M. K. T. (2022). The Interconnection of Internet of Things and Artificial Intelligence: A Review. In *Sri Lankan Journal of Applied Sciences* (Vol. 1, Issue 1). <https://www.researchgate.net/publication/363209825>
- L. B. Curzon. (1997). *Criminal Law*. Financial Times Pitman Publishing.
- Langley, D. J., van Doorn, J., Ng, I. C. L., Stieglitz, S., Lazovik, A., & Boonstra, A. (2021). The Internet of Everything: Smart things and their impact on

- business models. *Journal of Business Research*, 122, 853–863. <https://doi.org/10.1016/j.jbusres.2019.12.035>
- Lemley, M. A., & Casey, B. (2019). *Remedies for Robots* *.
- Maryono and Yuhelson. (2017). The Legal Policy of Corporation Legal Standing as Rechtspersoon at Indonesian Criminal Justice System. *The Southeast Asia Law Journal*, 2(1), 26.
- Mayumi Fukuyama. (2018). Society 5.0: Aiming for A New Human-centred Society. *Japan Spotlight*, 47.
- Melansari, K., & Lewokeda, D. (2018). PERTANGGUNGJAWABAN PIDANA TINDAK PIDANA TERKAIT PEMBERIAN DELEGASI KEWENANGAN. In *Kornelia Melansari D. Lewokeda* (Vol. 14). www.aktual.com,
- Mijwil, M. M., Salim Mutar, D., Filali, Y., Aggarwal, K., & Al-Shahwani, H. (2022). Comparison between Expert Systems, Machine Learning, and Big Data: An Overview. In *Asian Journal of Applied Sciences* (Vol. 10, Issue 1). www.ajouronline.com
- Muhammad Tan Abdul Rahman Haris and Tantimin. (2022). Analisis Pertanggungjawaban Hukum Pidana Terhadap Pemanfaatan Artificial Intelligence di Indonesia. *Jurnal Komunikasi Hukum*, 8(1), 315.
- Narvaez Rojas, C., Alomia Peñafiel, G. A., Loaiza Buitrago, D. F., & Tavera Romero, C. A. (2021). Society 5.0: A Japanese concept for a superintelligent society. In *Sustainability (Switzerland)* (Vol. 13, Issue 12). MDPI AG. <https://doi.org/10.3390/su13126567>
- Osmani, N. (2020). The complexity of criminal liability of AI systems. *Masaryk University Journal of Law and Technology*, 14(1), 53–82. <https://doi.org/10.5817/MUJLT2020-1-3>
- Pratama, M. R., & Januarsyah, M. P. Z. (2020). Penerapan Sistem Pertanggungjawaban Pidana Korporasi sebagai Subjek Tindak Pidana dalam Undang-Undang Pemberantasan Tindak Pidana Korupsi. *Jurnal Wawasan Yuridika*, 4(2), 240. <https://doi.org/10.25072/jwy.v4i2.350>
- Rahmadia, F. (2020). Theoretical and Conceptual Reflection Regarding Corporate Criminal Responsibilities Influencing the Formulation of Laws. *Lentera Hukum*, 7(1), 17. <https://doi.org/10.19184/ejlh.v7i1.14297>
- Ridwan Khairandy. (2013). Karakter Hukum Perusahaan Perseoran dan Status Hukum Kekayaan yang Dimilikinya. *Jurnal Hukum Ius Quia Iustum*, 20(1), 89.
- Sylvia Putri and David Tan. (2022). Analisis Yuridis Perseroan Perorangan Ditinjau Dari Undang-Undang Cipta Kerja dan Undang-Undang Perseroan Terbatas. *UNNES Law Review*, 4(3), 321.

- Talimonchik, V. P. (2021). The Prospects for the Recognition of the International Legal Personality of Artificial Intelligence. *Laws*, 10(4), 85. <https://doi.org/10.3390/laws10040085>
- Yanto, O., FitriRahmadi, I., & Widya Sari, N. (2022). Can Judges Ignore Justifying and Forgiveness Reasons for Justice and Human Rights? *Sriwijaya Law Review*, [https://doi.org/10.28946/slrev.16\(1\)](https://doi.org/10.28946/slrev.16(1))