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Practical Ethics and Law of Artificial Intelligence

Liang He[1,a,*]

[1]*School of Law, Shanghai Maritime University, 1550 Haigang Avenue, Pudong New Area, Shanghai, China*
[a]*heliang0002@stu.shmtu.edu.cn*
[*]*Corresponding author*

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Abstract: The fourth industrial revolution is thought to be artificial intelligence, and on the contrary, algorithms and artificial intelligence technology are developing at a pace that is out of step with ethical concerns and legal regulations. For instance, there have been issues with moral behavior and legal requirements since artificial intelligence was used aboard ships. The ethical dilemmas raised by intelligence ship when sailing in restricted coastal waters and the legal concerns surrounding artificial intelligence are examined in this article using dialectics. Determining the revolutionary effect of implementing intelligence ship on cooperative development in the shipping industry is made easier with the use of both quantitative and qualitative analysis techniques. To determine the temporary development of artificial intelligence in the application of intelligence ship, an interdisciplinary research approach can help identify the ethical and legal issues related to its introduction, suggest that smart ships should be developed in tandem with a smart waterway system, and establish an artificial intelligence evaluation organization.

1. Introduction

Traditional human models are being challenged by artificial intelligence, which is slowly permeating every aspect of human existence, including the transportation sector.[1] Artificial intelligence is being utilized more and more to make our lives easier in a variety of industries. Additionally, it significantly affects how people communicate generally, how they perceive information, and how they buy things and services. Artificial intelligence does human tasks more quickly, cheaply, and efficiently.

Every industry can benefit from artificial intelligence, and the shipping industry is no different. In terms of intelligent ship navigation, navigation decision support, and route optimization, artificial intelligence offers the maritime sector intelligent assistance.

To navigate at sea and prevent collisions with other ships, ship pilots can use cutting-edge artificial intelligence technology to make more accurate weather-related decisions. They can also use this information to optimize or improve route design. Additionally, smart ports, smart waterways, and the supply chain are all using artificial intelligence more and more. The whole shipping sector is moving away from manual models and toward unmanned models because of its speedy processing of data from weather stations, vessel traffic control centers, and anchoring and berthing in port regions.

Even if using AI to improve shipping services can objectively increase their quality, economy, and

efficiency, there are still challenges that need to be addressed because of the unique characteristics of AI. Therefore, it is crucial to recognize the moral dilemmas and legal threats that arise from integrating AI into the shipping industry and to make suggestions to mitigate these dangers. The format of this article is as follows: The ethical issues raised by the practical manipulation of MASS (Maritime Autonomous Surface Ships) are examined in Section 2. The ethical and legal obligations of artificial intelligence are covered in Section 3. The topic is concluded, and suggestions are made in Section 4.

2. Issues with ethics in the practice of MASS manoeuvring

2.1. MASS technology development and application in practice

In response to the rapid development of MASS, the International Maritime Organization (IMO) initiated work in 2017 to define MASS and degree it into four levels of autonomy: crewed ship with automated processes and decision support (Degree One); remotely controlled ship with seafarers on board (Degree Two); remotely controlled ship without seafarers on board (Degree Three); and fully autonomous ship (Degree Four).[2] Before massive marine security systems can function completely on their own, there are still a lot of obstacles to be solved. Creating a safe collision avoidance system that can cruise at sea while adhering to traffic regulations and securely interacting with other autonomous and conventional ships is one of the main problems.[3] This is especially true for completely autonomous ships (degree 4) and remote-controlled ships without a seaman (degree 3).

While examples such as Yara Birkeland[4] may be a strong signal for changing shipping operations, the design of such ships is better suited for coastal port waters.[5] However, coastal port waters account for almost half of all marine safety incidents. At the same time, while MASS is in coastal port waters, the navigational danger of collision mishaps is at its highest. The likelihood of unfavourable outcomes rises, particularly in the case of human-machine hybridity in MASS (degrees 3).[6] To guarantee the safety of ship navigation, MASS (degree 3 & 4) requires heightened attention to navigational safety in coastal port waters.

Traditional ships provide as a direct reference for MASS navigation safety. The navigation safety criteria for MASS should be raised[7] or at least made to match those of traditional ships if they are to replace them.[8] In terms of collision avoidance and preventive measures in ship maneuvering practices, MASS should be able to do everything that traditional ships can, including but not limited to meeting the navigational safety requirements of ship technology and design that are consistent with those of traditional ships. Many academics have examined MASS's collision avoidance algorithms,[9] its implementation of the COLREGs and UNCLOS's rules on flag state authority,[10] its security concerns,[11] and its network security[12] in response to debates over the navigational safety of MASS. Few academics, nonetheless, have examined MASS from the standpoint of ship maneuvering techniques.

Why is the practical MASS maneuvering perspective used to frame the discussion? This is because, in addition to technical computing concerns, artificial intelligence also raises legal and practical application challenges (MASS practical maneuverability). Laws governing artificial intelligence are necessary, and as it is a novel product, its ethics practical must also be considered. As a result, the interpretation of MASS incorporates the viewpoints of technical regulation of artificial intelligence, legal regulation, and the practical ethics of MASS maneuvering. The larger context of artificial intelligence must be considered when reading MASS from a legal standpoint. To explain specific collision avoidance principles and actions, a technical interpretation of an intelligent ship must adhere to the natural laws of collision avoidance (such as the geometry of collision avoidance) and the good seamanship of seafarers, which are based on years of practical experience.[13] Technical and legal requirements for ship maneuvering cannot be combined or separated.[14] As a result, MASS must

consider both the ethical concerns raised by the practice of MASS maneuvering as well as the legal regulations governing the vast field of artificial intelligence.

2.2. Practical ethics of MASS

The IMO defines MASS (degree 4) as a ship that is completely autonomous and intelligent.[2] To ensure successful operation, an AI application's operational environment should be considered.[15] The waterway width gets smaller, the water depth gets shallower, and the ship gets closer to the shore in coastal ports' restricted waters. Owing to these circumstances, the ship must also move more quickly because a slower speed reduces the efficiency of the rudder and may even lead it to disappear.[16] The ship's ability to maintain on course and maneuver in narrow waterways will be slightly restricted if the effectiveness of the rudders declines or disappears.[17] Narrow waterways frequently have ship collisions due to their narrow widths, variable water depths, and high ship density, all of which significantly limit the advancement of marine transportation.[18] The narrow coastal channel has a high ship density, which makes it quite crowded. There is virtually zero chance of ships changing lanes in these conditions.[19]

There are frequently many small ships, ships that cannot be identified as fishing vessels, and wooden fishing boats in the confined waterways of coastal ports. Due to their small size, these objects have poor radar responses. MASS are at significant risk from wooden fishing boats, small ships with inadequate communications, and fishing ships.[20] It is challenging to utilize collision avoidance prediction models or algorithms to prevent collisions because small ships have variable course and speed. Small fishing vessels are prone to abrupt stops, abrupt accelerations, abrupt decelerations, and abrupt direction changes, and their objectives are not always apparent. As a result, OOWs (On Watch Officer) must always be alert and take prompt action to prevent collisions.

Artificial intelligence systems will unavoidably encounter scenarios in their environment where they must decide between two possibly unfavorable results.[15] For instance: 1) MASS must decide which vessel to collide with when a collision with any of the other two is inevitable; 2) MASS must decide whether to keep moving in the same direction or to turn and avoid if its maneuverability is limited in the restricted waters of a narrow coastal channel, such as when it comes across small vessels that do not adhere to the COLREGs, fishing vessels that are unable to recognize the proper action, or wooden fishing vessels that are unable to communicate in a narrow channel.

Extreme ship maneuvers to prevent collisions might involve subjectivity, courage, humanity, virtues, and moral judgments. Additionally, different ship types require distinct ship operations. Applying virtues to applications of artificial intelligence is difficult. For instance, how might a rules-based method be used to quantify a brave algorithm? Utilitarianism, which maintains that moral choices maximize value, is an opposing viewpoint to virtue.[21 What would MASS (degree 4) do if faced with a circumstance that could endanger human lives or result in significant environmental damage and financial losses, assuming that it is capable of thinking and learning on its own like humans? The moral conundrum of MASS (degree 4) intellect results from this.

Moral decision-making is a process in which an autonomous agent's behavior depends on the circumstances; it cannot be fully explained by moral issues alone.[22] Compared to an autonomous car, MASS navigates a more complicated and unpredictable environment on restrained coastal waterways. The perceived moral implications of autonomous vehicles have been examined by some academics. This is because an algorithm for an autonomous vehicle will eventually have to make a decision that will negatively affect passengers or other road users, and moral opinions regarding this decision will influence how autonomous vehicle algorithms and policies are implemented.[23]

In general, one nautical mile should be tried in limited waters and two nautical miles on the high seas as the DCPA (Distance Closest Point of Approach).[24] A narrow waterway is typically defined

as a channel that is two nautical miles wide.[25] And in narrow waterways, MASS can hardly pass with other ships at one nautical mile DCPA. Does the MASS have to consider the possibility of colliding or running aground if it makes a large change course or slows down speed significantly in restricted waters to avoid a ship that is obstructing passage or that is in danger of colliding with it? Does the MASS have the bravery and confidence to pass near the ship that is obstructing passage if it considers the possibility of running aground or colliding? Does the MASS have a daring and reckless attitude about the potential casualties from a collision if it is brave and bold?

3. Artificial intelligence ethics and the law

3.1. The relationship between the ethics and law of artificial intelligence

Artificial intelligence ethics and rules have already been planned by the Chinese government. By 2025, the objective is to first create a legal and regulatory framework, ethical standards, and policy structure for AI, as well as to build the capacity to evaluate and manage AI safety. A more thorough set of ethical standards, laws, and regulations pertaining to artificial intelligence will be in place by 2030. Laws and regulations pertaining to artificial intelligence ethics are therefore directly relevant and significant.

Artificial intelligence must be value-laden, self-reliant, and self-reliant to maintain its ethical and moral standing. Simultaneously, the morals and ethics of AI must be included into the legal system. How does artificial intelligence carry legal responsibility, and does it have the status of a legal subject?

Clarifying the theoretical task and practical purpose of morality and ethics requires a thorough grasp of the dialectical relationship between ethics and morality. This understanding is also the logical basis of theoretical ethics. Morality is but one aspect of ethics, and the ethical concept of perfection includes the ideal of human completeness. The development and perfection of emotions, reason, values, ideals, beliefs, faith, wisdom, and other elements are all included in the concept of human perfection, which goes beyond the perfection of moral character. The excellent state of the human consciousness that is active in utilizing reason to carry out theoretical and practical tasks, as well as the good spiritual qualities acquired, are thus the good states of the soul that a person achieves by using reason in cognitive and practical actions.

The breadth of the ethical topic needs to be made clear, if artificial intelligence should be ethical or if it falls under the ethical framework. A free and conscious subject of action is referred to as the subject of ethics. Individuals and organizations, such as families, government agencies, corporations, educational institutions, nonprofits, trade associations, the state, and other social associations, are the two categories of subjects of action.[26] Artificial intelligence can therefore be seen within an ethical framework, because ethical subjects encompass both individuals and organizations from the standpoint of the breadth of ethical subjects.

Artificial intelligence morality, social relations, and other aspects of "independent will" are some of the primary topics of artificial intelligence ethics.[27] However, from a structural-ethical standpoint, autonomous artificial intelligence must meet three requirements in order to be considered a moral entity: it must be value-laden, autonomous, and accountable for its own actions, in contrast to humans, who are subject.[28] Despite differing from humans, future Artificial Life (ALife) might possess features that warrant giving it intrinsic moral consideration.[29]

The inherent value manifestations of the law are morality and ethics. There are several ways to control social interactions in human civilization. The two primary tools are morality and the law. Their contents permeate and intersect with one another, coexisting interdependently, and their purposes are consistent. The two have different forms from the standpoint of implementation: one is rigid, the other flexible; one is autonomous, primarily attained through introspection, while the other is heteronomous, mostly enforced by external rules. But they both lead to the same end, which is to

encourage good and discourage evil, enhance civic virtue, uphold social stability, and encourage all-encompassing social development. Legal awareness and norms include an ethical component when it comes to implementation; ethical awareness and norms need to represent the values and spirit of the law. The legal system and ethics can only have their greatest impact when they work in tandem.[30

Moral and ethical principles are a crucial logical beginning point and end point for the contemporary idea of the rule of law.[31] If societal ethical ideals and the law differ, moral forces would unavoidably oppose and endanger them, turning them into "a meaningless shell".[32] Thus, the "rule of law" can only be fully realized when morality and the law are combined. The law serves as a helpful basis for morality because it both reflects and upholds the fundamental and universal moral principles of society. In other words, the law becomes the "bottom line" of behavior norms that protect social order and modify social relations, acting as a buffer for social order following the collapse of morality, when moral norms are not persuasive to members of society and cannot achieve the corresponding moral value standards. Only self-aware and self-disciplined moral standards can lead to a greater pursuit of ethics and morals.

3.2. Legal responsibility for artificial intelligence

3.2.1. ARTIFICIAL intelligence legal capacity

According to the traditional view, artificial intelligence cannot acknowledge its own freedom or its status as the bearer of rights and obligations, even if it is capable of self-learning.[33] Consequently, “personality” is essentially absent from this artificial intelligence. For instance, from an ontological standpoint, German academics like Weigandt reject the “personality” of artificial intelligence because they believe that natural humans possess some traits that computers do not.[34] The core of personality theories since the Enlightenment has been an individual's autonomy and self-awareness. However, a growing number of viewers are beginning to see the untenability of this ontological line of argument.

A thorough analysis of related ideas will reveal that, under the associated theoretical framework, we are only able to demonstrate that an item is a member of the species of intelligent humans, giving it the status of a person or moral subject. Patients suffering from specific mental diseases or those in a vegetative condition with a total lack of self-awareness, however, cannot be disregarded as human beings. It is evident that the capacity to acknowledge one's own freedom is a hypothetical and artificially created benchmark rather than a criterion for evaluating a person. Furthermore, throughout human history, the extension of “personality” has not always been consistent. A particular natural person still belonged to the property and was a part of a commodity 400 years ago.

The history of women becoming “personality” individuals is only roughly a century old if we apply the contemporary understanding of "human dignity and personal freedom" as the benchmark. This indicates that the definition and meaning of "personality" have evolved over time. Even if the "personality" criterion—such as the capacity to recognize one's freedom—is accepted as acceptable, it is only useful as a guide and is not a deciding factor in and of itself. Therefore, artificial intelligence may have the status of a legal subject.

3.2.2. ARTIFICIAL intelligence legal liability

According to the standards of the principle of responsibility, if a robotic system causes damage, the maker may be held criminally accountable if the manufacturer's actions were deliberate or careless.[35] It has long been believed that ideas like behavior, rules, and responsibility are permanent and unbreakable, and that applying them to artificial intelligence is not feasible. Even if artificial intelligence is acting autonomously, it is not possible to determine or assign culpability to the machine because the behavior does not come under any criminal code acts. However, because the idea of a

legal person exists, there is room for expansion in both civil and criminal law regarding the concept of a legal person and, consequently, of a responsible subject. The ability of artificial intelligence to legally bear criminal culpability is not the core requirement for the criminal subject. Instead, it is the legislator's confirmation of intelligent robots' criminal potential—the legislative decision and reaction following the artificial intelligence's actions that pose a grave threat to society.

About the liability of artificial intelligence, Professor Willendorf believes that in order to admit criminal liability, not only does it require capacity to act, but it must also be premised on the ability to bear responsibility.[36] But regarding freedom of will in relation to legal culpability, the law has resorted to viewing freedom of will as a fiction in light of 21st-century brain research that has cast doubt on it.[37] If free will is a fiction, then it could potentially be extended to artificial intelligence.

4. Discussion

4.1. Establish an institution to assess artificial intelligence's morality

The ERC (Ethics Review Committee's), sometimes referred to as a Research Ethics Committee (REC) or Institutional Review Board (IRB), first appeared in the 1950s and 1960s.[38] Its initial goal was to safeguard the interests of human research subjects, especially by weighing the potential risks to them (such as physical discomfort or emotional strain) against the potential rewards of the planned study. The Department of Foreign Relations and Cooperation's responsibilities grew in the 1970s, moving beyond safeguarding participating researchers to include ensuring that worthwhile and moral human research was carried out (e.g., by mandating that researchers follow the informed consent procedure) and assisting researchers in considering the ethical implications of their inquiries. The process of morally assessing human subjects research is known as an ethics review.[30] Organizations that focus on analyzing the moral dilemmas raised by artificial intelligence are known as ethics review boards. The Department of External Relations and Cooperation has long promoted cross-disciplinary communication and evaluation.[39] External relations and cooperation committee members typically have diverse backgrounds and contribute unique viewpoints to the discussion. When multidisciplinary is attained, the combination of knowledge creates the ideal environment for a thorough evaluation of the benefits and dangers of novel research. Projects and interdisciplinary research from many sectors can also be promoted by a committee with members from diverse backgrounds.[40]

The creation of an ethical committee for AI is progressively spreading throughout the world. For instance, the UK held in-depth talks in September 2016 regarding the possible moral and legal dilemmas raised by robotics and artificial intelligence. The UK government reacted swiftly in January 2017 and acknowledged the significance of the ethical, legal, and societal concerns related to robotics and artificial intelligence in the report "Robotics and Artificial Intelligence."[41]

Furthermore, several organizations have started making significant investments to establish specialized response systems for associated problems. Two parts make up the ethics review committee's content: first, a thorough analysis of the moral dilemmas facing AI researchers and developers; second, an examination of the moral dilemmas facing AI goods and services. There should be similar ethical norms introduced by the AI sector. Before conducting related research and development, R&D staff are required to adhere to the relevant ethical principles. This is the fundamental ethical principle that practitioners need to follow. Furthermore, the first option should be to program explicit difficulties that cannot be resolved by certain techniques by hand. Such an ethical dilemma, which involves killing one person to prevent harm to many, can only be programmed manually; pre-programming is not an option.

There is a lack of independence from the evaluated study, as well as inadequate transdisciplinary or representative population and minority group participation, which not only does not enhance the

quality of the research but may rather impede it.[42] Simultaneously, guidelines that outline legal and ethical needs and standards must be introduced. Strengthening the ethical bottom line's limits is also necessary for those working on related research and development projects. as well as ethical evaluations of AI products.

4.2. Smart fairway and MASS Collaborative Development

If artificial intelligence is fully autonomous, functions within a moral framework, and eventually develops into a legal entity with legal obligations, intelligent ships will have to make moral choices on their own.

Without discussing the possibility of a pause in the development of artificial intelligence technology, the MASS is prompted to cooperate with the smart fairway when sailing along the coast. For example, if the Intelligent Aids to Navigation applicable to the smart fairway scan the information of fishing ships that are obstructing the waterway in advance and send this information to the MASS, the MASS can change its route in advance. At the same time, the information capture of smart fairway and the combined application of smart fairway and vessel traffic management systems can be used to send patrol boats to remove fishing boats that obstruct navigation in the fairway. Therefore, when artificial intelligence is used in a certain field, it is necessary to consider the development and construction of supporting facilities for artificial intelligence in that field, and to avoid the emergence of ethical dilemmas of artificial intelligence in practical ways.

5. Conclusions

MASS Navigational safety and ethical issues for the future growth of commercial operations. Two topics are identified in this article: (1) the connection between intelligent ethics and the practice of artificial intelligence (MASS); and (2) the connection between the ethics and the legislation of artificial intelligence (MASS).

This article suggests that MASS may face moral dilemmas when it comes to coastal navigation. Given its autonomy and capacity for self-learning, MASS will have to make morally and ethically difficult decisions. Artificial intelligence should not be handed decisions that could endanger human life because its primary purpose is to assist and serve humans. However, MASS may raise the frequency of maritime transportation incidents in confined waters. The following is the conclusion: (1) According to the definition of ethical subjects, which encompass both individuals and organizations, artificial intelligence can be viewed within a moral and ethical framework; (2) an artificial intelligence that is capable of learning is deemed to lack personality since it is unable to identify itself as the bearer of rights and obligations. However, the meaning and extension of the personal body evolves throughout time; (3) the concept of a responsible subject may expand since conceptions of behavior and responsibility are not exclusive to humans, such as the concept of a legal person. The assumption of responsibility by artificial intelligence is a legislative decision and response after the legislator confirms that intelligent robots can take on responsibility and committing actions that pose a serious risk to society, rather than a substantive requirement that establishes whether it can be a subject of criminal activity. (4) The development of artificial intelligence in a particular industry must be halted due to the potential for completely autonomous AI to break the "Three Laws of Robotics." An organization that assesses AI ethics has the authority to decide whether to suspend. When other technologies in the industry can objectively rule out or control the formation of ethical difficulties of AI, the industry can resume its development of AI. (5) Other international treaties and national legal systems pertaining to the application of AI in a certain business must be considered when evaluating the ethics and legal framework of AI. At the same time, domestic rules can be utilized to control and prevent the creation of ethical dilemmas in AI when it is difficult to

establish international norms or where uniformity is problematic.

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