



*Scholar's Corner: Confucianism in and for the Modern World*

# Digital Confucius and Virtuous AI: *Confucianism in the Age of AI and Robotics*

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## I. Confucian AI, an Oxymoron?

In recent years, scientists and philosophers have expressed their concerns on the possible dangers and negative impacts of AI technology. They voice their pessimism by asking the following questions: What are the uncontrollable and irreversible consequences of AI over the sustenance of human civilization? Will AI evolve into superintelligence and surpass human intelligence and its reflective thinking? Will critical and creative thinking survive the technological singularity? Does it pose a threat to humanity and human flourishing? Do human beings fall prey to the clever and effective algorithmic processes of AI? Simply, is AI an existential threat to humanity or another industrial and intellectual revolution for human wellbeing?<sup>1</sup> Most of these questions focus on the negative consequences of machine intelligence whose abilities are not fully and effectively monitored and controlled by human engineers because of the complexity of the computational processes involved in machine learning, realistic simulations, and stochastic generalizations. Although AI can bring convenience, effectiveness, and precision in individual decisions and facilitate social

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<sup>1</sup> There are two different viewpoints on the advancement and the possible dangers of AI: AI optimism and AI pessimism. Stephen Hawking and Elon Musk, for example, take AI as an existential threat that can annihilate humanity, but Jack Ma (a well-known Chinese entrepreneur) takes it as a new opportunity for human flourishing and material wellbeing.

wellsbeing, it may pose a harmful risk to the promotion of human values and the diversity and creativity in our thoughts and feelings for ourselves and others.

In this rather pessimistic context, discussion of AI ethics (i.e., a branch of moral philosophy that promotes a philosophical reflection on the nature, use, and development of AI) naturally emerged (Bugaj and Goertzel 2007; Coeckelbergh 2020; Liao 2020; Lin, Abney, and Bekey 2012; Wallach and Colin 2008). How to build an ethical machine that does not harm human beings and threaten human civilization? How to program an ethical machine? Can we build an artificial moral agent (AMA), an AI agent that can act ethically and makes ethical decisions on their own processes and assist human users in a virtuous way? Considering the dangers of AI technology that may pose a threat to humanity and human civilization, many scholars argue for the unbiased understanding and critical assessment of AI and the development of ethical AI, for example, an artificial moral agent and assistive companion that interacts with human beings with moral decorum. In this broad, interdisciplinary, and critical dialogue, can Confucianism contribute to AI ethics, specifically the development of an ethical AI or AMA?

There is a serious challenge in the philosophical integration of Confucianism and AI. AI is a mechanical system of computation that does not fit naturally with the ideal image of a virtuous Confucian moral agent. In the *Analects* (2.12), Confucius states that the Confucian gentleman (*junzi* 君子) is not a vessel (*junzi buqi* 君子不器), i.e., a confined and limited tool of delivering the appearance of virtue. What the passage implies in the context of AI is that an ideal Confucian agent (the Confucian gentleman) is not a virtue machine or an expert system of virtue because Confucian virtue is not a programmed or mechanically implemented rule of human conduct. If AI is simply a medium (a vessel), it is not a virtuous Confucian moral agent. Therefore, the notion of Confucian AI or Confucian virtue machine is an oxymoron to many Confucian scholars. In other words, there is an intrinsic conflict between an ideally virtuous Confucian moral agent (*junzi*) and AI. If *junzi* is not a vessel, his virtue is not explained by programmed intelligence of AI. Simply, he is not a virtuous expert system of AI.

Part of the conflict between Confucianism and AI derives from the relation and role specific nature of Confucian moral agent. Confucian philosophy characterizes a moral agent from the perspectives of relational, situational, and role specific interaction and moral cultivation (Ames 2011, 2016; Mattice 2019; Rosemont and Ames 2016). Ames (1994, 198), for example, defines a person as “an undetermined range and locus of experiences expressed through specific roles and relationships,” which a mechanical system of computation may not fulfill or actualize in its top-down and rule based-algorithmic process. If a program does not have any character, an algorithm is not a person, and information processing does not implement any social relations and roles, a computational system cannot cultivate any Confucian virtues. Specifically, Confucian virtues such as *ren* 仁, *yi* 義, and *li* 禮 are virtues of interpersonal relations that can be cultivated by playing specific roles in particular social relations. Sor-Hoon Tan (2019) explicitly points out the lack of human relationality and interpersonal interaction as a critical limitation of AI (current AI technology). One can build an expert system of virtue but, without genuine interpersonal relationality, it only serves the computational and transactional needs of human users. This type of moral expert system cannot become an ideal Confucian moral agent because the ideal goal of Confucian AI (AI that exemplifies interpersonal and relational Confucian virtues) is not to program a virtue machine but to develop a well-rounded, socially embedded, and situation specific system of moral agency that is open to social learning and moral cultivation.<sup>2</sup> Is Confucian AI an oxymoron or can we build a Confucian system of AI such as digital Confucius or AI *junzi*? Can Confucianism provide a philosophical insight by integrating AI and Confucian virtue in the context of building an artificial moral agent?

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<sup>2</sup> In this paper, Confucian AI refers to a system of AI that exemplifies virtues with interpersonal relationality, role obligation, and self-cultivation (or self-learning). It also refers to a particular approach to develop ethical AI (i.e., the bottom up, relation- or role-based approach in contrast to the top down, rule-based approach to ethical AI).

## II. Confucian Moral Agent and AI

Typically, a system of AI is regulated by computational rules and algorithms that are encoded in computer programs. From the perspective of computation, therefore, a system of ethical AI can be conceived as a computer program of ethics that encodes a specific set of moral rules and principles. Asimov's ([1950] 2004) three laws of robotics are a good example of how moral rules are used to regulate the behavior of a computational system of a machine agent (i.e., a robot). Typically, moral rules, such as the three laws, are programmed and implemented in a system by following the top-down and rule-based approach to AI ethics. In this context, AI ethics is the matter of identifying, formalizing, and implementing general principles and rules of ethics into a system of AI. Since a computational system is regulated by its programs, there is a general expectation that an AI system, if properly programmed with moral rules, can be a moral agent. According to this rule-based approach to AI ethics, the ethical issues of AI can be solved by engineering a moral expert system with the appropriately programmed rules and principles of ethics.

There are, however, some limitations in this approach to ethical AI. Rules does not always solve moral dilemmas and ethical conflicts where different rules conflict with each other. In addition, general rules cannot deal with exceptional situations of a moral agent. Some of these limitations are dramatically depicted in Asimov's ([1890] 2004) *I, Robot*, and Stanley Kubrick's (1968) *2001: Space Odessey* where robotic systems deviate from the three laws of robotics and start killing human beings. Although rules and principles provide general guidelines of an ethical AI, they are not fully sufficient in developing an artificial moral agency.

An alternative approach, therefore, is needed to complement or replace the traditional or conventional (i.e., top-down, rule-based) approach to AI ethics. Several robot ethicists develop their arguments to support an approach that can substitute the rule-based deontological approach. Wallach and Colin (2008), in their discussion of AMA, discuss the limitations of the top-down and rule-based approach to AI ethics. Following this line of thinking, Hughes states

that “programming machines with top-down, rule-based ethics, such as the following of absolute rules or attempting to calculate utilitarian outcomes, will be less useful than generating ethics through a ‘bottom-up’ developmental approach, the cultivation of robotic ‘character’ as it interacts with the top-down moral expectations of its community” (2012, 77). Abney also states that “The emphasis on being able to perform excellently in a particular role, and the corresponding specificity of the hypothetical imperatives of virtue ethics to the programming goals, restricted contexts, and learning capabilities of non-Kantian autonomous robots, makes virtue ethics a natural choice as the best approach to robot ethics. . . .” (2012, 51).

In this context of the role and relation specific virtue ethics, Zhu and colleagues (2020) argue for a particular form of AI/robot ethics, i.e., Confucian ethics of AI/robotics. They state that “. . . a morally competent robot would be one that is capable of acting well in the contextualized responsibilities specified by the role(s) and associated relationships assigned to the robot” (Zhu et al. 2020, 6). By following this line of thinking, one can conclude that the role and relation specific approach of Confucian ethics provides an inspiring model of AI ethics. Kim and Strudler (2023) take several steps further to explain the superiority of Confucian AI ethics over the top-down rule-based approach to AI ethics. They argue that assigning role obligations to robots (compared with assigning moral or legal rights) is a better way to understand and regulate artificial moral agents because the concept of (moral or legal) rights assumes exclusive or adversarial relation between machines and human beings but the relationship-based rites approach encourages the cooperative teamwork and companionship. They state that “the Confucian alternative is superior to the robot-rights perspective because, rather than being adversarial, it is team-encouraging—unlike the concept of rights, which is inherently adversarial” (Kim and Strudler 2023, 85). If, as they argue, the relationship-based rites approach to robot ethics is superior to the rule-based approach of deontology, Confucian ethics has a good chance to become an inspiring paradigm of AI ethics.

With this critical observation of AI ethics, the role and relation specific approach of Confucianism is a good alternative to the top-

down, rule-based approach to AI ethics. Instead of programming fully formalized moral rules and principles and implementing them in a system of AI, Confucian virtue ethics takes a relation specific framework of AI ethics. In Confucian ethics, moral agency is characterized by relation and situation specific considerations, other-caring emotions, other-tolerating dispositions, interpersonal trust, and the self-cultivating process of moral learning exemplified by such Confucian virtues as *ren* 仁, *li* 禮, *shu* 恕, *he* 和, *xin* 信, and *xue* 學. I believe that the Confucian approach can be a natural fit with social and assistive AI, i.e., AI technologies found in chatbots, social bots, and assistive bots where AI systems assist human users and develop personal relations with human beings. In this context, the relation-based role specific ethical approach of Confucianism provides an excellent virtue-based paradigm of AI ethics.

### **III. Current Trends in the Comparative Confucian Study of AI Ethics**

Currently, there are four distinctive discussions in the comparative Confucian study of AI ethics. First, there are several philosophers and ethicists who express their concerns on the advancement of AI and analyze the limitations of current AI technologies from Confucian viewpoint in their applications such as utilization of AI in carebots (robotic systems that provide care and support of elderly and vulnerable population) (Muyskens et al. 2024) and in spiritual education and religious teaching (Tan 2020). According to Muyskens et al. (2024) and Charlene Tan (2020), an AI or robotic agent programmed to serve human users may not successfully simulate or form interpersonal relations (human machine relations) with the role specific, affective, supportive, and emphatic virtues of Confucianism. Sor-Hoon Tan (2019) makes a critical comment on the acceptance and use of AI in everyday life. She argues that AI replaces human interactions with AI-human (machine-human) interactions that conflict with Confucian ideal of human relationality and its vision of virtuous life.

Second, one can argue that an unbiased, objective, and reflective understanding of AI is possible from the viewpoint of Chinese philosophy. According to Bin Song (2020, 2021, 2023), Chinese philosophy can accommodate AI better than Western intellectual and religious traditions because Chinese intellectual traditions including Confucianism, Daoism, and Buddhism developed an all-encompassing and holistic world view that can integrate humanity, the physical environment, and machines like AI. From this holistic and integrative viewpoint, AI is not necessarily understood as a technological threat to humanity and human values but as a new form of interactive information technology that stimulates an inclusive and balanced understanding of the co-existence of humanity and machine.

Third, currently, AI is developed, designed, programmed, and understood mainly from the perspective of Western values such as individual autonomy and freedom and cultural-social traditions such as Western systems of governance and economy. For example, following Kantian deontology and utilitarianism, an AI moral agent is understood as a rational and autonomous decision maker who has the ability of recognizing and following universal moral rules or running a cost benefit analysis of possible outcomes of an action. In this environment, using AI encourages and promotes specific schools of Western philosophy and cultural values that may not represent the full spectrum of how AI should be designed and developed and how human machine interaction should be understood and cultivated. Therefore, recognizing diverse cultural values and moral traditions and utilizing their distinct viewpoints are critically important in the development of ethical AI (Angle 2021; Cave and Dihal 2023; D'Ambrosio 2023; Hongladarom 2020; Seok 2021, 2022, 2023, 2024; Wong 2023).

Fourth, Confucianism can serve as a design philosophy of AI (i.e., how an AI system organizes its information processing structure to serve specific cognitive or moral functions). It can propose a particular set of rules and processes in designing and developing socially active and culturally sensible AI in its interaction with human beings. It can give insights in improving AI or overcoming the limitations of current technologies of AI by suggesting the affective structure of robot design (Liu 2021) or by proposing general rules, norms or virtues that govern

the functions of AI (Liu 2022).

Although the four Confucian approaches represent the different aspects of Confucian philosophy of AI, they can be integrated to understand how Confucian moral philosophy contributes to AI ethics as a role and relation specific, non-anthropocentric, other-caring, other-tolerating, trustworthy, and self-cultivating learning approach to AI and artificial moral agent.

#### **IV. Conclusion: Future of Confucian AI**

As Confucius states, the Confucian gentleman is not a vessel. However, Confucian AI (AI that exemplifies Confucian virtues with interpersonal relationality, role obligations, and self-cultivation) is seriously considered as a practical and effective model of ethical AI. It is not an oxymoron or the blind acceptance of virtue machine as I discussed in the previous sections. Nor is it a blind attempt to build an expert system of Confucian virtue by following the top-down, rule-based approach. Rather, it is a particular form of ethical thinking that utilizes the essential characteristics, (i.e., role, relation, and situation specific and learning intensive approach) of Confucian moral philosophy in the development of ethical and virtuous AI. As a unique form of AI ethics, Confucian AI complements or replaces the conventional rule-based approach and facilitates the construction of socially interactive and culturally appropriate models of virtuous AI.

One may cast some doubts on the necessity, practicality, and viability of Confucian AI by pointing out that generative AI systems, with no specific Confucian cultivation, can develop social relations with human users by their interactive chat functions, and that asking a computational machine to cultivate Confucian virtues is not practical or reasonable because implementing, cultivating, and perfecting these virtues in a computational system is very difficult. Even human beings find it challenging to cultivate Confucian virtues.

Confucian AI, however, makes some insightful and practical suggestions that can be implemented in AI systems. Although the current technology of generative AI exemplified in such systems as ChatGPT



and Gemini can be used to serve the functions of personal conversation and interactive communication, these systems are not trained and developed for specific roles and relations with human users. Typically, AI systems interact with users in a generic and anonymous fashion. Human users ask questions or talk to a system of AI, and it responds back to human users in an appropriate (i.e., highly probable and statistically significant) way with its amazing computational power supported by machine learning. It also follows the universal standard of moral conduct without necessarily recognizing specific relations it has with its users. The goal of Confucian AI, however, is to reconceptualize how an AI system is trained, organized, developed, accessed, and used, by considering and emphasizing specific relations it has with human users. Developing intriguing algorithms for LLMs (large language models) of natural language processing and building a transformer architecture for a neural network system, for example, can increase or upgrade the computational power of AI to communicate and interact with human beings, but the ethical issues of AI may not be resolved completely or fully by such types of algorithms or computational architectures. Rather, ethical AI, from the perspective of the interactive virtue approach, emerges from the broad social environment where human beings and AI as moral agents perceive and interact with each other in their social roles and relations. Confucian AI takes this agent- and virtue-based approach to AI by focusing on how the social roles of an AI system can be given and how its relation specific duties and virtues are identified.

In this context, the limitations and weaknesses of the rule-based, top-down approach can be overcome by a new paradigm of the role- and relation-based virtue approach to AI by letting the system play certain roles, identify the social environment, differentiate interpersonal relations beyond the anonymous system-user relationship or formally framed human-computer interaction, and interact with users as the system's friends, advisors, or companions, through role specific duties and expectations. In this way, relation specific moral dispositions can emerge from the computational framework of open and interactive AI. This relational approach is particularly important in programming social and companion bots because they are engineered

to simulate and develop social relations with human users. Although implementing perfect Confucian virtues in an information processing machine, considering the current level of AI technology, is very challenging, training a system of AI to recognize role specific duties and to cultivate relation specific dispositions as the system interacts with human beings would be possible. In other words, Confucian AI, as some information scientists and ethicists (Kim and Strudler 2023; Zhu et al. 2020) observe, is not a computational fantasy or a moral pipe dream but a practical approach that may drive the future of virtuous AI.

In addition to the discussion of the necessity, practicality, and viability of developing a virtue-based AI system, Confucian AI raises some philosophical questions about the nature of the Confucian heart-mind. Is the Confucian heart-mind computational? Is it compatible with the functional and algorithmic processes of computation that specify the moral agency of AI? Can a machine learn to exemplify the affective disposition and inner dedication of the Confucian heart-mind? These are not the questions of simulating the Confucian gentleman but the deep philosophical questions about the computational and moral psychological nature of the Confucian heart-mind. I think the future of Confucian philosophy of AI depends on how to answer these challenging questions about the nature of the Confucian heart-mind in relation to Confucian virtues and self-cultivation. Although the answers may not come easily, the philosophical seriousness of these questions demonstrates that Confucianism is not simply an archaic and abstract moral tradition but an active and inspiring school of thought that can provide a critical understanding of moral cognition and virtuous AI.

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