

ETHICS AND ARTIFICIAL INTELLIGENCE IN MEDICINE: EMPOWERING HUMANS IN THE AGE OF SOCIAL AUTOMATION

A. PESSION^{1,2}



¹Pediatric Alma Mater Studiorum, University of Bologna, Bologna, Italy

²President of the Italian Society for Inherited Metabolic Disease and Neonatal Screening

CORRESPONDING AUTHOR

Andrea Pession, MD PhD; e-mail: andrea.pession@unibo.it

KEYWORDS: Ethics, Artificial intelligence, Human intelligence.

ABBREVIATIONS: AI: Artificial intelligence; HI: human intelligence

“Every art and every inquiry, and similarly every action and pursuit, is thought to aim at some good; and for this reason, the good has rightly been declared to be that at which all things aim.”

ARISTOTELE, NICOMACHEAN ETHICS, BOOK I, 1094°

“To define a thing is to subordinate it to a tangle of intellectual relations, which for this very reason destroys true knowledge.”

ROBERT M. PIRSIG, LILA: AN INQUIRY INTO MORALS, 1992

Ethics, or moral philosophy, represents the systematic attempt to provide arguments for and against possible solutions to moral dilemmas or to assign to human behavior a deontological and normative status according to an ideal behavioral model. The solutions referred to by ethics are in no case conclusive, but always and in any case, considered in relation to the social coordinates of reference. Ethics, therefore, does not normally and necessarily identify a single answer to moral dilemmas but elaborates an analytical and critical thought on the merits of topics of axiological interest. On the other hand, in philosophy, it is difficult to find definitive and conclusive arguments. Formulating ethical considerations, therefore, coincides with the attempt to construct arguments that can help us analyze problems that have “value” in the world and for the world, distinguishing them from those that represent a mere reality of fact.

Artificial intelligence (AI), defined as “a system’s ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation”¹, will lead to significant changes in today’s world. Historically, the term AI dates back to 1956, when it was first used in a conference at Dartmouth College in the USA. Since then, the development of AI has,

in part, been shaped by the field of neuroscience. The scientific community has sought to develop intelligent machines capable of performing complex tasks in a manner similar to that of humans by utilizing their understanding of the human brain.

Technology is the power to transform and control. AI, as the Internet has been in the very recent past, is the enabling technology that mainly characterizes this phase. This technology pushes the horizons of research even further, from biotechnology to nanotechnology, from cognitive sciences to earth sciences. It makes intelligent automation possible in factories, autonomous vehicles in smart cities and robots in outer space. The power of technology in the age of AI modifies and expands its boundaries, making it possible to push the physical and mental limits of humans (human augmentation), rewrite biological structures (genetic editing), and give machines intelligence, integrating it with human intelligence (brain-computer interface). The moral philosophy, with regard to the question of AI, nowadays plays an increasingly central role in the international debate, which is no longer limited, as in the past, to the logical-theoretical dimension of the problem but rather finds itself obliged to address in particular the ethical issues that arise from what is defined by many as one of the greatest industrial revolutions in history, often identified with the name of Industry 4.0. Themes and concepts such as reliability, legality, ethics and responsibility, therefore, become fundamental. Thus, philosophy must pay attention to exponential technological development to be correctly regulated and controlled in the future for a second axial turn (axial revolution)².

The ethical implications of AI are so relevant that the **“ethics of artificial intelligence”** is now recognized as a branch of ethics that studies the economic, social, and cultural implications of the development of AI systems.

In medicine, although the development of AI algorithms has been fast-paced, the actual use of most AI algorithms in clinical practice is still markedly below their conceivably broader potential. This is partly because the incorporation of any algorithm into extant workflows is predicated on its capacity to withstand rigorous scientific validation, clinical and personal utility, and application context. Furthermore, the algorithm must be equitable. In this context, there is considerable potential for the combination of AI and human intelligence (HI). Examples of AI applications in medicine include digital health, drug discovery and translational pharmaceutical research, diagnosis of diseases in newborns, remote monitoring of health by smart devices, radiological diagnosis, real-time Big Data analytics for prompt diagnosis of heart attacks, and facial analysis software for the phenotypic diagnosis of syndromic profiles. While it is acknowledged that there is a necessity for integration of AI and HI, it is also recognized that AI technology does not have to replace medical specialists or scientists and that there is instead a requirement for such experts in HI.

AI will become increasingly important. The challenges it poses are not only technical but also anthropological, educational, social, political and therefore ethical. It is precisely these implications that must make us reflect on an aspect that is too often neglected in the current technocratic and efficiency-oriented mentality, as it is decisive for personal and social development: the **“sense of limit.”**

This is the focal point of our ethical reflection on AI. The advent of this powerful and promising technology offers a unique opportunity for human beings, especially if they are doctors, to rediscover the power of their own thought and spirituality in the era of social automation. In essence, some fundamental questions arise that warrant reflection. What is the human being today, what defines our uniqueness, and what will be the future of our species, *Homo sapiens*, in the age of AI? That is, how can we remain fully human and orient the cultural change taking place towards the good? In this age that risks being rich in technology and poor in humanity, our thoughts can only start from the human heart. Only by equipping ourselves with a spiritual gaze, only by recovering the wisdom of the heart, can we read and interpret the novelties of our time and rediscover the way to fully human communication.

The wisdom of the heart will be the virtue that allows us to weave together the whole and the parts, the decisions and their consequences, the strengths and the frailties, the past and the future, the **“I”** and the **“we”**.

Doctors, therefore, have nothing to fear from the advent of AI, which allows them a superhuman operation, i.e., capable of transcending the possibilities and limits of human nature, but on the contrary, they have a unique opportunity to rediscover the value of their professionalism and their social role. The doctor who reclaims a form of medicine centered on the human being and grounded in goodwill will once again interpret the enchanting secrets of the medical art, mastering realms of knowledge that extend far beyond the already vast domains of medical science. In this way, medicine will return to being, above all, an art that cares – not merely a science that cures³.

The combination of AI and HI has the potential to generate synergy for the purpose of responsible innovation and veritable prospects for improving healthcare, ranging from prevention to diagnosis, and to therapeutics. However, the potential unintended consequences of automation resulting from AI should be borne in mind by scientific cultures, the workforce, and society at large.

ARTIFICIAL INTELLIGENCE-ASSISTED TECHNOLOGIES:

No artificial intelligence-assisted technologies were used in the production of this article.

CONFLICT OF INTEREST:

The author is the Editor-in-Chief of JIM. He declares no other conflicts of interest to disclose.

ETHICS APPROVAL AND INFORMED CONSENT:

Not applicable.

ORCID ID

Andrea Pession – <https://orcid.org/0000-0002-0379-9562>

REFERENCES

1. Kaplan A. Artificial intelligence: emphasis on ethics and education. *Int J Swarm Intelligence Evolution Comput* 2020; 9: 1-2.
2. Pacilè MT. Per una rinascita spirituale dell'uomo. Karl Jaspers, la svolta assiale e il progetto della Weltphilosophie. *Moral Philosophy* 2024; 6: 37-60.
3. Cristianini N. Sovraumano. Oltre i limiti della nostra intelligenza. *Il Mulino* 2025.