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Artificial Intelligence in Care: From Digital Assistant to Ethical Companion

La inteligencia artificial en los cuidados: del asistente digital al compañero ético

A inteligência artificial nos cuidados: do assistente digital ao companheiro ético

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Introduction: A Future That Already Lives Among Us

For decades, the collective imagination has projected the future as a scenario populated by humanoid robots: metallic beings coexisting with humans, executing the tasks of daily life with precision. Science fiction, through literature and cinema, presented us with artificial intelligence systems that we observed with amazement and a certain disbelief: from HAL 9000, controlling a spacecraft in *2001: A Space Odyssey*, to R2D2, capable of communicating in millions of languages and performing impossible calculations in *Star Wars*. Over time, the genre also incorporated ethical and moral dilemmas, such as those posed in *I, Robot*, where artificial intelligence not only executed orders but also began to deliberate about good and evil.

These visions, halfway between utopia and warning, placed artificial intelligence (AI) in a nearly unattainable future. However, while we waited for human-shaped robots, AI was quietly advancing along other paths: search algorithms, smartphones, and platforms that shape our everyday decisions. Everything seemed to happen without noise until OpenAI released ChatGPT and generative artificial intelligence (GAI) became democratized, marking a turning point that altered the collective perception of knowledge, creativity, and intellectual work. With this advance came something truly disruptive: for the first time, we could talk to GAI as we talk to another person, using natural and accessible language. This new way of communicating opened a completely different relationship between humans and technology—more direct, more accessible, and, above all, more human.

Until recently, machines imitated or replaced physical functions of the human body; today, they are beginning to replicate—or at least approximate—cognitive processes we once considered non-transferable: imagining, creating, and deciding. This expansion of capabilities provokes amazement and enthusiasm, but also vertigo. For this reason, scientists and professionals hope that this initial curve of fascination will soon reach a plateau of realism, where technological enthusiasm gives way to a phase of maturity, evaluation, and responsible application.

According to Gartner's Hype Cycle, [1] AI is currently at a transition point between euphoria and consolidation. This is the phase in which promises begin to be measured against facts, and projects must demonstrate their usefulness, safety, and sustainability. The speed of adoption is so vertiginous that regulatory, ethical, and educational frameworks are barely able to keep pace. In this context, UNESCO's Recommendation on the Ethics of Artificial Intelligence [2] serves as an essential compass. Its principles—transparency, fairness, non-discrimination, human oversight, and respect for dignity—are indispensable to guide the responsible incorporation of AI into healthcare and educational systems, where a bias, an omission, or an error can have direct consequences for people's lives and trust.

This framework is reinforced by the new European Artificial Intelligence Act (AI Act), which introduces concrete obligations for systems operating in health, well-being, and social care contexts. [3] Considered "high-risk," these systems must be auditable, traceable, trained with high-quality data, subject to human oversight, and explainable. Human supervision is not a technical detail: it constitutes an ethical principle that protects the very heart of care.

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AI as an Assistant: Freeing Time to Care

In healthcare, artificial intelligence should be understood not as a substitute, but as an assistant that expands human capabilities. Its role is to free up time for care by delegating routine and administrative tasks—such as data classification, report transcription, or alert generation—and returning to professionals the space that the system has taken away: gaze, listening, and presence alongside the patient. [4] True innovation does not lie in automating the act of caring, but in deepening its human dimension through the intelligent automation of tasks that do not require clinical judgment or emotional bonding. In care—understood broadly as caring for ourselves, caring for those we love, and sustaining life in community—AI opens a new scenario in which technology and humanity coexist in continuous interaction.

At this point, the Human-in-the-Loop (HITL) approach becomes especially relevant and has become a cornerstone for sustaining ethical care practices in an increasingly automated environment. This model asserts that no decision affecting a person's life, health, or autonomy should rest exclusively on an algorithm, because contextual interpretation, empathy, and moral deliberation are irreducibly human qualities.

This need for oversight becomes even more evident when we consider that each patient is now an inexhaustible source of information: wearable devices that record heart rate, sleep, or physical activity generate continuous and extensive data flows that must be interpreted with clinical judgment. This abundance of information, far from simplifying healthcare practice, demands reliable systems and professionals capable of discerning what is relevant, what is noise, and what could lead to erroneous decisions if analyzed without context.

Electronic health records that accumulate thousands of variables and home sensors that provide real-time information about environment and behavior complete this digital ecosystem. Integrating all this data exceeds human capacity for interpretation, analysis, and interconnection. In this context, AI—especially deep learning models—makes it possible to transform dispersed information into clinical knowledge, anticipating decompensations or adverse events even before the first visible signs appear. However, this promise will only be virtuous if accompanied by deep digital literacy among professionals and by an ethical culture that ensures data continues to belong to the patient, not to the algorithm. [5, 6]

The current challenge is not only technical, but also cultural. AI forces us to rethink what we mean by knowledge and what role human beings play in an environment where information is produced at difficult-to-assimilate speeds. Machine learning systems do not reason or understand: they respond with the statistically most probable option, not necessarily the most accurate. [7] This probabilistic nature requires clinical validation filters and shared responsibility, especially in fields where a decision may define a person's destiny.

A New Cognitive and Ethical Revolution

In education, the expansion of generative artificial intelligence has been so rapid that its implications are not yet fully understood. Students and residents use it naturally, often without distinguishing between assistance and substitution. The growing use of GAI in everyday activities is generating a deep debate about its cognitive impact on individuals. Recent studies from MIT warn that excessive dependence on generative models can reduce cognitive effort, affect knowledge retention, and alter the way we think and solve problems. [8] Conversely, a review and meta-analysis published in *Nature Human Behaviour* found that among more than 400,000 older adults, habitual use of digital technologies was associated with a lower risk of cognitive impairment and lower rates of cognitive decline. [9]

This evidence supports two opposing perspectives: "digital dementia," which warns that excessive dependence may erode cognitive skills, and "technological reserve," which suggests that active and critical use of technology can strengthen reasoning and mental flexibility. Both views highlight the importance of balance, in which AI accompanies human thinking without replacing it. From this perspective, perhaps the issue is not restricting its use, but teaching it later: allowing future professionals to first develop their natural intelligence—curiosity, judgment, and empathy—before

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incorporating artificial intelligence as support. Only those who know how to think can afford to automate.

Artificial intelligence represents a new revolution, but of a different nature than previous ones. If industrial revolutions transformed energy and matter, this one alters cognition and morality. Knowledge ceases to be exclusively human and is shared with systems that learn from us. Our responsibility is to orient that learning toward a more just, social, and humane model, where technology amplifies compassion rather than replacing it.

Individualizing Care and Recognizing the Invisible

AI can be a decisive ally in individualizing healthcare; it may well be the great solution for precision diagnosis and treatment. In the diagnosis of rare diseases or the detection of subtle patterns, it can become a silent guardian that warns of what the human eye cannot see. [10] As Sir William Osler of Johns Hopkins Hospital stated at the beginning of the 20th century: "A patient can only have the diseases that his physician knows." [11] Today, we may need to redefine the balance between knowledge and experience and introduce a new agent into the equation: the AI assistant. In this context, the horizon of knowledge may offer a second opportunity to refine diagnostic accuracy.

Along these lines, technologies are beginning to consolidate that accompany care both through data analysis and through direct interaction with people. Virtual assistants and agents designed to guide, educate, remind, or support everyday health decision-making are progressively being incorporated as complementary tools in care processes. Recent scientific evidence shows that these technologies can improve therapeutic adherence, reduce anxiety symptoms, promote self-care, and offer continuous support to people with chronic diseases, with a positive impact on health outcomes and on the care experience. [12]

This integration, however, does not place technology at the center of care. AI must be integrated as a member of the care team, but never as its leader. Its role is to propose, not to decide. Ethical deliberation, empathy, and moral responsibility remain exclusively human attributes. Cases are already emerging in which patients consult diagnoses suggested by applications, generating tensions and distrust in the therapeutic relationship. [13] The balance between technological autonomy and clinical judgment will be one of the most important competencies of the coming decade.

Therefore, before implementing any system—whether an algorithm, a virtual assistant, or a conversational agent—rigorous validation of accuracy, traceability, and bias must be ensured. Regulation must evolve at the same pace as innovation, without falling into paralysis driven by fear or into evidence-free euphoria. UNESCO and the World Health Organization agree on the need to move toward global AI governance that guarantees equity, transparency, and social justice. The question is not whether AI will be part of the future of care, but what kind of humanity we want to shape that future.

Conclusion

Artificial intelligence is not the end of humanism, but its new frontier. It forces us to decide what we want to preserve as essentially human. If used wisely, it can free time for what matters most: looking, listening, and accompanying. But it also reminds us that no algorithm can assume the ethical burden of a decision that affects a life. Therefore, in this technological revolution, the real challenge does not lie in what AI is capable of doing, but in how we choose to integrate it. Regulatory advances such as the AI Act and international ethical frameworks show that the future of care will depend not only on technical innovation, but on our ability to govern it with justice, equity, and respect.

Technological progress will not be a threat if we succeed in ensuring that each advance amplifies—rather than replaces—professionals and the dignity of care. Let us pursue an intelligent integration of artificial intelligence.

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