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Machine Learning and Emotions

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INTRODUCTION

Emotions play a primary role in shaping human intelligence in virtue of the continuous and mutual sensitive/cognitive exchange with the environment. On the other side, for machines, it is impossible to have forms of knowledge that are not programmed, managed, or piloted by humans. Furthermore, for humans the process of learning is deeply interwoven with the emotional ground of the living condition. And for machines? We could not improve the attitude of learning, in digital devices, without enhancing their capacity of sensing. There is a wide consensus among scholars that smart devices can learn emotions at different degrees, however, the rising of the emotional wave in digital devices has not yet been explored. Thus, also machines sense in a specific way. Any effort to highlight this extreme, although limited ability, could enhance fruitful interactions of machines with humans and develop strategies in deep learning techniques (Guo, 2022).

BACKGROUND

Philosophy can feel the gap by investigating whether machine sense and how. The aim of this paper is to indicate a zero degree of emotional power in smart devices: this ability does not exist *per se* but in the interaction with humans. The Onlife world, where the real and the digital are melted together, provides machines with an environment that makes possible the existence of an enlarged sensitivity. Through the lenses of metaphysics and system thinking an unprecedented challenge for data sciences is given. In fact, only a philosophical foundation of the big issues of this realm can bring about a change in the quality of understanding a more and more melted environment human/machines in the Onlife era.

The Environment of Emotions and The Act of Sensing

To give machines skills of emotional intelligence is one of the most challenging tasks in the domain of human-centered computing (Turing, 1950), especially since the very idea of 'affective computing' was coined by Picard (1997). Nevertheless, the implementation of artificial intelligence applied to smart robots (Kugel, 2002) has shown the necessity of including cognitive models able to respond to emotional interactions with the offline world for enhancing the quality of their interrelations with humans (Franzoni, 2019; Brezeal, 2003; Fellous, 2004).

The increasing anthropological frame applied to Machine learning and humanoid-robots domain invites philosophy to take part in the debate, by offering theoretical tools that might integrate the computational point of view. This paper is aimed at introducing an anthropological issue in the discussion about the 'emotional side' of machines, a still under-researched environment.

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As a point of departure, we should interrogate about the stuff of emotions, whose role is perceived as 'strategic' (Frank, 1991) in the making of consciousness (Damasio, 1994, 1999), although the discussion whether emotions are independent of cognition or not is disputed (Leventhal & Scherer, 1987; Lazarus, 1982). The most intrinsic nature of emotion is understood from the question:

How does a living substratum give rise to an emotion?

Despite its simplicity, this question marks a veritable turn for the discussion about an AI that feels, because it moves the focus of the problem from learned emotions, which are piloted and managed by humans to a minimum degree of self-sensing for smart devices. What lies beneath an emotion, for a human, is the capacity of *sensing*. In philosophical anthropology, the term refers to the capacity to grasp something essential of things (De Monticelli, 2005): it's an act that provides both sensitive and cognitive contents (Czerwinski, 2021).

It was philosopher and theologian Thomas Aquinas in the 13th Century to focus on the moral stuff of emotions, arguing that the inclination to the world of life orients the agent to what is primarily good, the *positum* or *datum*: only when this original positive is willed by the person, it becomes properly (moral) good. According to the *Quaestio 15* formulated in the Ia IIae Pars of the *Summa Theologiae*, the Aquinas' masterpiece, the philosopher could argue that sensing is an essential component of the will in virtue of two main movements: it orients action to the end and provides the will with a 'taste' of the object itself. In modern times phenomenology deeply investigated sensing as a sensitive act (*fühlen*) at the junction between human beings and the world of life.

Recently philosophy has relaunched the role of sensing in ethical conduct, for being the primary source of values and, since the early infancy, the original approach to what is good or bad (Fisogni, 2015). The physical substratum of consciousness is, nevertheless, an increasingly relevant topic also for neurosciences (Tononi, Boly, Massimini & Koch, 2016). We can briefly summarize the essential traits of sensing, before moving into the core of the investigation.

- Sensing is an original experience of human beings and it is deeply related to the human condition of being-in-the-world as a primarily source of thinking (Zajonic, 1986).
- Sensing is the source of emotions.
- Sensing plays a role in human conduct (Brock, 1992) not only because it picks up values, but primarily because it moves will towards the good, from the 'zero degree' of being something more than nothing (*positivum / datum*) to the highest level of a positive content that is willed for itself (the moral good). For Gendling what derives from sensitive approach to the environment – felt meaning – is a veritable power that shapes one's act. He assumes that «generally we act with such a "feel" of the action to guide us». (Gendlin, 1997: 68-69).
- Sensing also drives attention (a cognitive act) to the world of life from the inside, moving from emotions (Westerink & al., 2011).
- Sensing reveals the existence of other subjects/objects and provides the transcendental conditions for interpersonal relations.

The attitude of sensing, which the humans experience at the highest degree, for the cognitive and moral implications that it provides, is a common feature for all animated beings. Although animals are not persons, for some extent they hold a minimum degree of personal profile, at least some species like mammals. This capacity is properly rooted in sensing and consists of *being aware of themselves*. The