

AESTHETIC EMOTIONS IN HUMAN-ROBOT INTERACTION. IMPLICATIONS ON INTERACTION DESIGN OF ROBOTIC ARTISTS

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ABSTRACT. *Human-robot interaction is a challenging interdisciplinary research field. Emotions play a vital role in improving communication, as well as in the mutual understanding between humans and robots. Several theories on the existence and nature of basic or fundamental emotions have been proposed. Robots are now capable of expressing various human-like emotions using mainly facial movements. A project currently under development at “Politehnica” University of Bucharest aims at developing a robotic artist capable of thrilling aesthetic emotions in a human or robotic audience. This paper is a theoretical study concerning the nature and number of emotional states a robotic artist should suggest and it is based on the theory of Rasa, a key concept in Indian aesthetics. Modalities of expressing these emotions and consequent implications for the development of robotic artists, as well as innovative human-robot interaction in artistic environments are presented and discussed.*

Keywords: Human-robot interaction, Robotic artists, Basic emotions, Aesthetics, Interaction design

1. Introduction. There are a growing number of robotic systems designed to interact more or less directly with humans, such as entertaining robots, museum docents, educational robots, telepresence or medical robots. Recent spectacular applications are emphasizing the “human” side of robots which now have anthropomorphic appearances, more or less capable of suggesting human-like emotions. Such humanoid robots are able to display a set of cues mimicking the natural communication between humans. These applications and the future ones, such as intimate robotic companions envisaged in [1], motivate the design and development of robots that can interact with and learn from humans in a more natural way than the current robots.

In [2], the author argues that people generally apply a social pattern when perceiving and interacting with autonomous robots. From the robot’s perspective about the human-robot interaction, the same author introduced four subclasses of social robots: socially evocative, social interfaces, socially receptive and sociable. Human-like faculties such as emotions, empathy and the capacity to perceive and understand non-verbal social cues would give robots much greater ability to interact with humans. Important work has already started on endowing domestic robots with such abilities. Many results have been obtained at theoretical and even practical levels and important research funds have been attracted. However, many issues have remained unsolved, starting with the elucidation of the neuro-physiologic foundations of affect and emotion and ending with the design of a realistically emotional embodied agent or robot.