Method for generating an awareness signal of a collaborative robot and its hardware system

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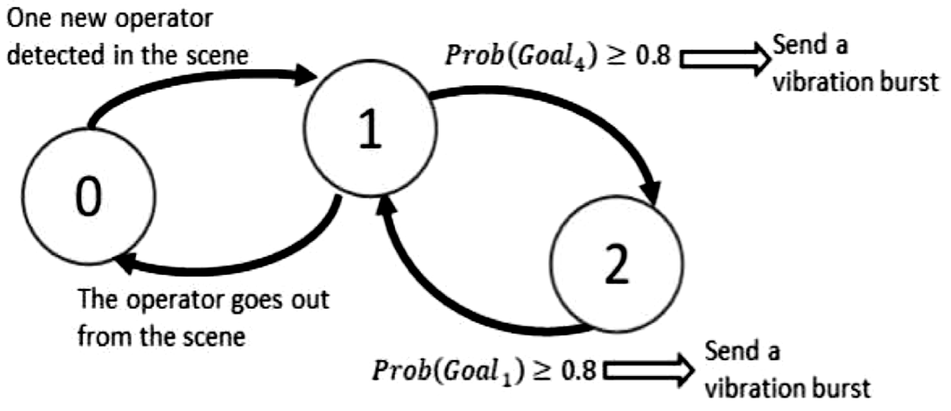
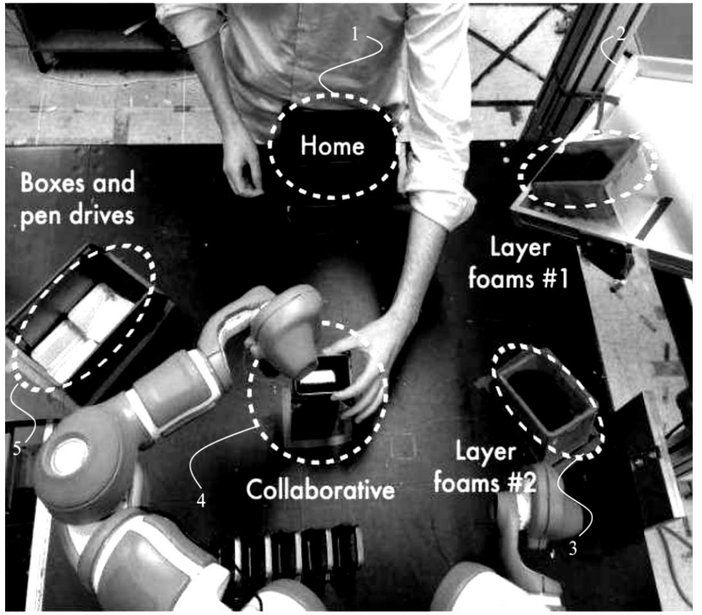
Invention

The invention consists of a method and related devices designed to manage the interaction between collaborative robots and human operators. In current human-robot collaboration scenarios, the operator is only warned of potentially dangerous situations, failures, or the completion of certain phases of a process. Through the generation of an awareness signal from the robot to the operator during his duties, the technology of the patent allows to establish a more advanced type of collaboration, in which the operator is made aware of the correct interpretation of his intentions by of the robot and that the latter can support him in the task they are carrying out together. Following the overcoming of a probability threshold that the operator moves in a specified sector of the workspace, the robot can therefore not only detect the movements of the operator but also predict and anticipate them, thus guaranteeing the effectiveness of the coordinated and safety for humans. The awareness signal of the interpretation or prediction by the robot is transmitted through tactile or odorous signals, thus allowing correct communication between the operator and the robot even in situations where the use of visual or auditory signals are difficult to perceive.

Politecnico di Milano is a co-owner of the patent.

Drawings & pictures





Industrial applications

The technology can be applied to Industry 4.0, specifically in the field of robotics and artificial intelligence, for human-robot collaboration aimed at assembling products and transporting bulky and heavy loads.

Possible developments

The group is looking for industrial partners operating in the specified application areas and establish collaborations aimed at the technological maturation of the invention, improving the prototype and its adaptability to different robotic systems and/or environments. The University of Siena is available to sign specific agreements for the technological maturation, license or option of the patent title linked to the invention.

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