

Assistance Robotics: the role of human-like modes of control

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The overall framework of this project is to restore autonomy to disabled people by increasing their field of intervention. This involves a teleoperated system, composed of a mobile teleoperated robot-mounted arm and a remote control station. The required objective for the design of a "non-totally autonomous" machine, controlled and supervised by a human operator, is its adaptation to the user's capabilities. According to this logic, the ideal system should perfectly fit into the human sensori-motor capabilities. The system would disappear from the field of consciousness and the operator would use it as a "natural" extension to his/her own body (hence the concept of *natural interface*).

Concretely, we designed an experimental task, in which the operator had to control remotely the displacements of the robot, using a monitor linked to a camera on-board the mobile base and a keyboard interface. First, we implemented a functional, human-like, speed-curvature trade-off on the mobile base. Secondly, we tested the role of a mobile camera on the robot, controlled by the operator. Experimental data show that, both on the teleoperated device side and on the operator's interface side, the implementation of human-like modes of control result in easier and smoother control of the robot trajectory.