Capítulo VI

METHODOLOGIES FOR EXPERIMENTAL EVALUATION OF ASSISTIVE ROBOTICS HRI

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The development of intelligent service robotic systems is currently an active field of research in the robotics community. For example assistive robot manipulators that can aid elderly and disabled people in their daily life. These robots are typically intended to be used in complex unstructured environment, like the user's home, and on typical Activities of Daily Living (ADLs). The heterogeneous nature of the user group is another challenge, requiring flexibility and adaptability on the part of the assistive robot. The Human Robot Interaction (HRI) is an important part of making these robotic systems useful for the end-users. However, given the complexity and diversity of the robotic systems, the interaction between the users and the robot is not easy to evaluate experimentally in a way that can help drive the development process and make the utility of a given implementation clearly visible to the assistive robotics community. This article will outline some of the methodologies that can be used and give their potential and actual application in evaluating the interaction for an assistive robot manipulator, the ASIBOT robot at Universidad Carlos III de Madrid (UC3M). It is hoped that an emphasis on strong experimental methodologies can help move these systems out of the laboratories and into the homes of the real users awaiting them today.

1 Introduction

Assistive robots are currently being developed to support disabled and elderly people in their Activities of Daily Living (ADLs). Many of these tasks, such as self-care and pick-and-place tasks, require the use of the upper limbs. Assistive robotic manipulators have the ability to improve the quality of life by aiding in these ADLs and can provide the end-users with increased daily independence.

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