

Projektbeispiele: Robotik und Rehabilitation

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MAAT - Multimodal interfaces to improve therapeutic outcomes in robot-Assisted rehabilitation

The MAAT project aims at developing a new robotic system for the administration of highly sophisticated therapy for stroke patients in order to (i) maximize patient motivation and involvement in the therapy and (ii) continuously assess the progress of the recovery from a functional and neurological viewpoint, with special attention on the issue of safety in human-robot interaction. The uniqueness of the MAAT approach is to include the patient in the loop in a very personal way: multi-modal physiological data (such as motion, forces, voice, muscle activity, heart rate, skin conductance etc.) and an immersive virtual reality system will be exploited to adaptively and dynamically change the complexity of the therapy in accordance with specific patient requirements and ability. For the experimental validation of the MAAT approach, two prototypes of robotic platforms with multimodal sensing capabilities will be developed by using enabling technologies available in the ECHORD equipment list. Two different commercial robot manipulators will be used as the key components of the MAAT platforms: modularity, dexterity, flexibility and adaptability of these systems will allow the execution of a wide variety of therapeutic exercises that will significantly extend the current state-of-the-art, paving the way for a new generation of re-hab robotics products. The close collaboration with qualified medical experts in the areas of neurology and medicine and rehabilitation at the University Campus Bio-medico in Italy and at other clinical centers in Spain, will be of great benefit for preliminary clinical validation of the MAAT systems on post-stroke patients.

MAAT YouTube-Video



ASTROMOBILE - Assistive Smart RObotic platform for indoor environments: MOBILity and intEraction

The ASTROMOBILE project aims to develop and demonstrate that a smart robotic mobile platform for indoor environments with an embodied bi-directional interface with the world and the users can be conceived to improve services useful for humans. The ASTROMOBILE applications range could be very wide, including industrial environments, security, **rehabilitation robot**, personal and companion robot, etc...In particular, this project wishes to address the use of a smart robotic mobile platform in a domestic environment, covering possible applications, such as a personal robot for non-self-sufficient people, for telework or for security. The ASTROMOBILE robot-assistant cooperates with users in the indoor environment to help them in daily life or working activities. Therefore, natural speech recognition control could be very helpful, because the speech skill of elder people stays intact the longest.

ASTROMOBILE YouTube-Video



Paro Therapeutic Robot

PARO is an advanced interactive robot developed by AIST, a leading Japanese industrial automation pioneer. It allows the documented benefits of animal therapy to be administered to patients in environments such as hospitals and extended care facilities where live animals present treatment or logistical difficulties.

- Paro has been found to reduce patient stress and their caregivers
- Paro stimulates interaction between patients and caregivers
- Paro has been shown to have a Psychological effect on patients, improving their relaxation and motivation
- Paro improves the socialization of patients with each other and with caregivers
- World's Most Therapeutic Robot certified by Guinness World Records

PARO YouTube-Video

