Workshop on

Advanced AI Methods and Interfaces for Human-Centered Assistive and Rehabilitation Robotics

(a Fit4MedRob event) co-located with AIxIA 2024
26 November 2024 – Bolzan, Italy

Motivation and scientific relevance to the conference audience

This workshop stems from the Fit for Medical Robotics (https://www.fit4medrob.it/) project, an initiative funded by Italian MUR to foster research activities in technological assistance and rehabilitation. In Fit4MedRob, the integration of AI and Robotics plays a crucial role. Indeed, among the main missions of the project the goal of fostering "Next Generation Components" foresees the development of new intelligent interfaces and AI algorithms to improve the interpretation of users' intentions and to implement safer and richer interactions between humans and robots. Therefore, a workshop co-located with AIxIA 2024 seems to us a natural venue where the first research results can be presented and disseminated.

Workshop Abstract

Developing intelligent robots for rehabilitation and assistance tasks entails a series of challenges. Indeed, such robots should have innate abilities of computation, sensing, reasoning and adaptation as well as of responding and interacting with users and the environment. It is pivotal to allow robots with the ability to foresee and/or interpret needs, mental or health status of patients to develop seamlessly controlled rehabilitation robots or personal care robots aimed to assist frail individuals or patients. Next-generation robots, either under user control (e.g.: prostheses) or autonomous ones, will require advanced autonomous capabilities to acquire and process signals from connected humans and the surrounding environment and be equipped with learning, prediction and reasoning capabilities. The workshop aims at gathering research contributions related to robot intelligence and seamless interaction between robots and humans. These include technologies to record the signals from the individual, computational approaches to process them, and high-level cognitive architectures to understand the context and control the robot safely while interacting with the individual(s).

This volume contains the papers presented at the Workshop on Advanced AI Methods and Interfaces for Human-Centered Assistive and Rehabilitation Robotics (a Fit4MedRob event), held within the XXIII Conference of the Italian Association for Artificial Intelligence (AI*IA 2024), November 25-28th, 2024, Bolzano, Italy. There were 9 short papers were accepted for this volume. An invited talk was presented by Laura Fiorini (University of Florence, Italy) entitled "Advanced Cognitive and Physical Stimulation using Socially Assistive Robots".

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