

# Special issue on advanced intelligent control of servicerobots for healthy home living

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Nowadays, robots begin to blend more and more into our daily life supporting people in their daily tasks to improve healthy living.<sup>1</sup> To allow for smarter and more flexible robots, while being involved in tedious domestic applications, different kinds of control techniques have been designed and developed rapidly. For example, path planning and control of mobile robots with simultaneous localization, and mapping of home environment, dynamic and kinematic control of articulated robots to assist with housework, vibration suppression control of joint actuators to ensure the safety of task execution in health care, biofeedback-based control for physical, and/or cognitive or human-robot. These techniques are beneficial to improve the stability, accuracy, intelligence, and efficiency of different types of service robots to make our life more convenient and healthier. There are advanced control strategies to provide reliable and promising performance for the different service robots for a healthy home living scenario. Analyzing the underlying internal mechanisms (e.g., motion gearing and driving, task planning, and environment understanding) and suggesting new application paradigms will lead to a rapid evolution of these service robot fields, based on advanced control strategies that will enhance the robot's performance during tasks.

Two high-quality submissions, around the topic of “Advanced Intelligent Control of Service Robots for Healthy Home Living” have been selected for publication in this special issue. Robots are appearing in our daily lives for the assistance of humans to conduct labor-intensive works. However, for the safe interaction with humans, it is necessary for robots to have the awareness of humans and ability to avoid humans or other obstacles. In Reference 2, a control algorithm for obstacle avoidance and trajectory tracking for a redundant-manipulators is proposed with simulations envisioning the application in future smart-homes. Beetle Antennae Search,<sup>3-19</sup> which paves the foundation of the intelligence of this algorithm, is utilized and the simulation results show that the proposed solution can trace the reference path while successfully avoiding the obstacle accurately. In Reference 20, the authors present the design of bionic interactive interface for owl robot, which can be used for companion to improve the life quality. This robot is expected to greatly reduce the loneliness of solitary people.

These manuscripts have made significant contributions to the fundamental theoretical studies on advanced control of service robots, and design of advanced systems to provide enhanced healthy home living. These contributions should stimulate further progress in many applications, especially in the era when humans are embracing meta worlds.

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