RoboCom++
Rethinking Robotics for the Robot Companion of the future

Main area: Cooperative Robots
Keywords: Robotics, Soft Robotics, Bioinspired Robotics, Morphological Computation, Cognitive Robotics, Intelligent Materials, Ethical, Legal, Economic and Social Aspects.
Duration: 36 months
Total project funding: € 2.825.012

Abstract

The main objective of the RoboCom++ proposal is to lay the foundation for a future global interdisciplinary research programme (e.g., a FET-Flagship project) on a new science-based transformative Robotics, to be launched by the end of the H2020 Programme. RoboCom++ will gather the community and organise the knowledge necessary to rethink the design principles and fabrication technologies of future robots. RoboCom++ will aim at developing the cooperative robots (or Companion Robots) of the year 2030, by fostering a deeply multidisciplinary, transnational and federated effort. The mechatronic paradigm adopted today, although successful, may prevent a wider use of robotic systems. For example, system complexity increases with functions, leading to more than linearly increasing costs and power usage and decreasing robustness. RoboCom++ will pursue a radically new design paradigm, grounded in the scientific studies of intelligence in nature. This approach will allow achieving complex functionalities in a new bodyware with limited use of computing resources, mass and energy, with the aim of exploiting compliance instead of fighting it. Simplification mechanisms will be based on the concepts of embodied intelligence, morphological computation, simplexity, and evolutionary and developmental approaches.

Exploring these concepts in order to develop new scientific knowledge and new robots that can effectively negotiate natural environments, better interact with human beings, and provide services and support in a variety of real-world, real-life activities, requires a coordinated and federated initiative. Ultimately, the Companion Robots conceived in RoboCom++ may foster a new wave of economic growth in Europe by boosting the deployment of ubiquitous robots and web-based robotic services.

The RoboCom++ community will pursue these ambitious objectives by cooperating along three main lines of action: 1) building the community and the tools for research reproducibility (benchmarks, metrics, data sharing protocols, test platforms, standards); 2) proof-of-concept research pilots; and 3) defining the long-term S&T roadmap, competitiveness strategy, governing and financing structure, and the ethical, legal, economic and social framework of a future FET Flagship –like initiative on Robotics .

RoboCom++ will actively pursue collaboration with industry, along with dissemination, community outreach and participation of EU citizens and stakeholders, with particular attention to the issue of robots and jobs, and to the analysis and proposition of viable policy options.

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