



FET Flagship Pilot session

The Dream of Robot Companions for Citizens

Global society is facing many new and critical challenges: the ageing of the population, with age associated diseases and challenges, increasing urbanization and yet associated isolation and an urgent need to preserve our environment. A new generation of robotic technologies, the robot companions for citizens can come to the help of man in all these areas. This new class of machines will help us to maintain our quality of life in a changing world. They will assist us at home, at work, and in hospitals. Before these robots can be given such responsibilities they must acquire the necessary skills to interact with us physically, emotionally, socially, and above all safely. We call these soft robots.

Robot Companions is an ecology of user focused, activity specific soft, gentle and sentient machines that will help and support humans in the broadest possible sense to support and sustain our quality of life and welfare. Robot Companions will have soft bodies based on the novel integration of solid articulated structures with flexible properties and display gentle behaviour based on new levels of perceptual, cognitive and emotive capabilities. Robot Companions will be cognizant and aware of their physical and social world and respond accordingly. They will attain these properties because of their grounding in the most advanced sentient machines we know: animals. They will validate our understanding of the general design principles underlying biological bodies and brains, establishing a positive feedback between science and engineering. As, in the recent past, Artificial Intelligence thrived on the metaphor of the “chess player”, the driving metaphor of Robot Companions will be that of the “robot dancing partner” which is able to autonomously learn to dance together with a human at a high-level of performance a range of styles. Beyond metaphor, examples of specific Robot Companion applications include Diabetic assist companions which will reduce the risk of patients going into fatal diabetic comas while they sleep and Robot Companions who help patients with their physical and emotional rehabilitation post physical accidents and stroke injuries.

We envisage that in the near future technologies derived from biologically-inspired principles will have a transformative impact on our society. These soft, gentle and sentient machines will be integrated in our society in order to help maintaining the quality of life of the population as we age and suffer injuries and physical and emotional challenges. We expect that these machines, will promote a paradigm shift from “Information and Communication Technologies” (ICT) to “Information, Communication and Robotic Technologies” (ICRT). We propose that Europe should embark on a programme that will advance these technologies by driving the science, in particular in the life sciences and the humanities, required for this transition. If achieved, these biomimetic systems will have a large social and economic transformative power: comparable to the introduction of the steam engine, the radio, the automobile or more recently the internet and mobile devices.

Speakers:

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