EVolving morphologies for human-Robot sYmbiotic interactiON

Fact Sheet

Project Information

**EVRYON**
Grant agreement ID: 231451

Funded under
FP7-ICT

Overall budget
€ 3 668 497

EU contribution
€ 2 727 180

Coordinated by
UNIVERSITA CAMPUS BIO MEDICO DI ROMA

Italy

**Start date**
1 February 2009

**End date**
31 May 2012

Closed project

Project description

Embodied Intelligence
EVRYON aims at providing a novel design methodology for harvesting the potential of structural intelligence in the development of Wearable Robots, using a 'design for emergence' approach.

The goal of the EVRYON project is to develop a novel approach for the design of Wearable Robots (WRs) that can be used for such applications as rehabilitation, assistance, human augmentation and more. Such systems should aim at the optimal trade-off between performance, i.e. the level of assistance to be provided to the user, and some critical requirements, such as minimal weight and encumbrance, low
energy consumption and several other factors that can impact the effectiveness of WRs. Under this regard, better WRs can be developed if 'embodied intelligence', and particularly 'structural intelligence', are properly *exploited*. To this aim, EVRYON will develop an open-ended design process where both robot morphology and control are co-evolved and optimized in a simulation environment, where also the dynamical properties of the human body are taken into account. The EVRYON design methodology will originate advanced tools for assisted mechatronic design, that will be validated by developing an active orthosis for the lower limbs. The orthosis will include a novel hip module for improved ergonomics and a distributed sensory apparatus that will also monitor the motions of the upper body for an improved user intention detection. The EVRYON WR will integrate kinematic, dynamic and control solutions produced by the co-evolutionary optimization process. Custom variable impedance modules will allow the tuning of the dynamical properties of the robot so that walking will arise as an emerging dynamic behaviour. The WR prototype will be tested on a group of elderly subjects with age-related motor decay so to assess its acceptability and its ability to restore proper walking and increase personal autonomy.

**Programme(s)**

**Topic(s)**

**Call for proposal**

FP7-ICT-2007-3

**Funding Scheme**

**Coordinator**

**UNIVERSITA CAMPUS BIO MEDICO DI ROMA**

Address

Via Alvaro Del Portillo
I-00128 Rome
Italy

Activity type

Higher or Secondary Education Establishments

EU contribution

€ 851 900

Website [🔗](#)

Contact the organisation [🔗](#)

Administrative Contact

Eugenio Guglielmelli (Prof.)
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<th>Country</th>
<th>EU contribution</th>
<th>Address</th>
<th>Activity type</th>
<th>Website Contact</th>
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