

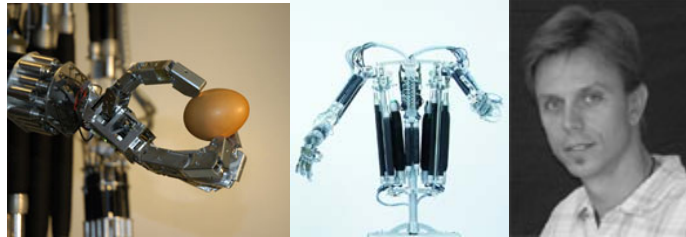
ICT Proposers´ Day Budapest, Jan 22th 2009

Institution/Company (name, address):

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Expertise:

Our expertise lies on the one hand in the modeling and control of robotic components, especially the fluidic muscle actuator MAS/DMSP of the company Festo, and on the other hand in the design and development of large complex robotic applications, especially biological inspired anthropomorphic robots. We work in this field since nine years and our main project, the humanoid robot torso ZAR, was developed in 6 years to the version 5. It consists of 2 arms with a five finger hand each in manlike proportions and radius of action. A fluidic muscle pair controlled by an angular and two air pressure sensors drives each joint.

Detailed information can be found of our project homepage www.zar-x.de.

Topics (project idea, fields of interest):

We are interested in every kind of projects in the context described above, but not limited to it. Other fields of interest and continuing research and developments are:

- Complex basal nonlinear and/or adaptive closed-loop control
- New ways towards compliant non-rigid actuators, kinematics and structures
- Compliant control and compliance push and supported control strategies
- Hybrid path planning and control strategies
- Advanced offline/online movement learning and optimization
- Evolutionary optimization of movements according to different requirements

Key words:

Bionics; biological inspired functionality and control; fluidic muscle; compliant control; adaptive, nonlinear and hybrid control; path planning; artificial intelligence; online learning strategies; structure and parameter optimization; evolution strategies