

ABC Robotics Monthly Seminar

Speaker: Prof. Maura Casadio, Department of Informatics, Bioengineering, Robotics and Systems Engineering, University of Genoa

Date: Monday, May 31, 2021

Time: 10:15-11:00

Location: via zoom <https://zoom.us/j/5647021747>

Title: Body-machine interfaces from rehabilitation to robot control

Abstract: Body Machine Interfaces (BoMIs) establish a way to interact with a variety of devices, allowing their users to extend the limits of their motor abilities by exploiting the redundant degrees of freedom of their bodies. BoMIs have been originally developed for people with cervical spinal cord injury. If adequately programmed, these interfaces could help reshaping motor strategies and promote long-term functional recovery and in the same way they can help in a seamless control of a robotic arm. I will review the earlier studies focused on a family of human-machine interfaces that create a many-to-one mapping between body motions and movements of an external controlled object. Within this framework I will then discuss the possibility to switch between movement and muscle control as well as the possibility to identify the control space as a low-dimensional latent manifold of the input data by using nonlinear dimensionality reduction techniques.

Bio: Maura Casadio is Associate Professor of Biomedical Engineering at the University of Genoa, Italy. She received a master's degree in Electronic Engineering (2002) at the University of Pisa, a Master's degree in Bioengineering (2007) and a PhD in Robotics and Bioengineering (2006), both at the University of Genoa. She worked (2008-2011) as postdoctoral fellow in the Department of Physiology, Northwestern University and the Robotics Laboratory, Rehabilitation Institute of Chicago. Her main areas of interest are neural control of movement, robots for rehabilitation and body-machine interfaces.