



# THE NEUROBOTICS SUMMER SCHOOL 2007

## BRAIN-MACHINE INTERFACES



SEPTEMBER 16-21, 2007, VOLTERRA, ITALY

### Organizing Committees

#### Chairs:

Alain Berthoz  
Paolo Dario

#### Programme committee

Silvestro Micera (Chair)  
Michael Black  
Vittorio Gallese  
Klaus-Peter Hoffmann  
Peter Janssen  
Karim Jerbi  
Oliver Tonet

### General information

Official language: English.

Maximum number of participants: 48.

The school is directed primarily to PhD students and is open to advanced undergraduate students, post docs and technical professional.

### Accommodation and Venue

SIAF (International school for advanced education [www.siafvolterra.it/en/index.php](http://www.siafvolterra.it/en/index.php)) in Volterra, Italy

### Course fee

Course fee is 650€.

The fee includes accommodation (double rooms), meals (breakfast, lunch, dinner and refreshments) and materials. The transportation between Pisa and Florence airports - SIAF are included in the fee (any other travel expenses are not included).

### Contact information

Additional information are provided by Dr. Silvestro Micera ([micera@sss.up.it](mailto:micera@sss.up.it))

### Application

Deadline for application: **June 30, 2007**

Download the application form from [www.neurobotics.org/](http://www.neurobotics.org/) and submit it to Ms. Federica Radici ([f.radici@crim.sssup.it](mailto:f.radici@crim.sssup.it)) or by fax: +39050883497

### Background

NEUROBOTICS is a European Integrated Project launched in 2004 to investigate novel design methodology and to build high performance robots based on a deep collaboration between the communities of Robotics and Neuroscience. The NEUROBOTICS Consortium consists of sixteen partners from seven European countries, with links to researchers in the USA and Japan. An important goal of the NEUROBOTICS Project is educating a new generation of multidisciplinary researchers able to implement the lessons learned within NEUROBOTICS even after the conclusion of the project. These researchers should possess the capability of designing robots by integrating rigorous methodologies typical of neuroscience with most advanced designs and technologies typical of robotics. A key aspect of this Neuro-Robotic approach to robot design is the interface between the human being and the robotic artefact. One important mechanism for achieving this goal is the NEUROBOTICS SUMMER SCHOOL.

### Goals and formats of the Summer School

The NEUROBOTICS SUMMER SCHOOL 2007 will specifically focus on **the design and development of "brain to machine interfaces" to design hybrid robotic artefacts**. In addition to **lectures** by members of the NEUROBOTICS consortium and international prestigious experts, the course includes **workshops** and **seminars** designed to promote interdisciplinary interactions between students from the neuroscience and robotics communities, and plenty of **opportunities to interact with renowned neuroscientists and roboticists**.

### Lectures

Each day lectures will be held by a neuroscientist and by a roboticist/technologist on related topics as outlined in the preliminary program (see below). The lecturers will consider the different backgrounds of the students.

### Workshops

Groups of 8 students will be given daily at least one task to be reported in plenum the following day. These tasks will be defined by the lecturers and represent unresolved research issues ('real problems'). The groups will consist of a mix of students from neuroscience, robotics and interface technology. The workshop tasks will thus promote interdisciplinary interactions.

### Programme

16/9 Sunday	17:00-19:00	Registration at the SIAF in Volterra
	19:00	Welcome dinner
17/9 Monday – Invasive CNS BMIs	09:15-11:00	<b>Vittorio Gallese:</b> <i>Organization of the motor system</i>
	11:15-13:00	<b>Daryl Kikpe:</b> <i>Neural interfaces with the CNS</i>
	14:15-18:00	Workshops
18/9 Tuesday – Invasive CNS BMIs	08:15-10:00	Workshop presentations
	10:15-11:00	<b>Andrew Schwartz:</b> <i>BMIs using single units in primary motor cortex</i>
	11:15-12:00	<b>Karim Jerbi:</b> <i>Invasive techniques for human computer and human robot interactions: BRAIN TV</i>
	12:15-13:00	<b>Silvestro Micera:</b> <i>BMIs using pre-motor signals and shared control issues</i>
	14:15-18:00	Workshops
19/9 Wednesday – Non-Invasive CNS BMIs	08:15-10:00	Workshop presentations
	10:15-11:30	<b>Paolo Maria Rossini:</b> <i>Non-invasive imaging techniques for cortical analysis</i>
	11:30-13:00	<b>Fabio Babiloni:</b> <i>BMIs using non-invasive imaging techniques</i>
	14:15-18:00	Workshops
20/9 Thursday – Invasive PNS BMIs	08:15-10:00	Workshop presentations
	10:15-11:00	<b>Xavier Navarro:</b> <i>Functional organization of the PNS</i>
	11:15-12:00	<b>Klaus-Peter Hoffmann:</b> <i>Neural interfaces with the PNS</i>
	12:15-13:00	<b>Kenneth Horch:</b> <i>PNS-based control of artificial limbs (TBC)</i>
	14:15-18:00	Workshops
21/9 Friday	08:15-10:00	Workshop presentations
	10:15-11:00	<b>Paolo Dario and Alain Berthoz:</b> <i>Synthesis and future issues</i>
	11:15-12:00	Course evaluation