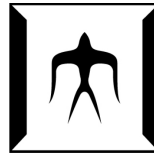




**POLITECNICO  
DI MILANO**  
DIPARTIMENTO DI  
BIOINGEGNERIA



Tokyo Institute of Technology



## ITALY-JAPAN INTERNATIONAL SEMINAR

# MUSCULOSKELETAL SYSTEM AND COMPUTATIONAL NEURO SCIENCE FOR REHABILITATION

June 15-18, 2009

### Organizers:

Dott. Paolo Ravazzani	Institute of Biomedical Engineering – CNR
Prof. Carlo Frigo	Dept. of Bioengineering, TBM Lab, Polytechnic of Milan
Prof. Yasuharu Koike	Tokyo Institute of Technology
Prof. Giulio Sandini	Italian Institute of Technology

## PRELIMINARY PROGRAM

### Venue

June 15-16, 2009:

**Milan** - TBM Lab, Dip. di Bioingegneria, Politecnico di Milano, via Garofalo 39

June 17-18, 2009:

**Genoa** – Istituto Italiano di Tecnologia, Via Morego 30

### Organization Secretary:

Dr. Alessia Bianchi  
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## First day (Milano, 15/6/09): Session 1-Introductory

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- 09.30-09.40 Welcome and introduction to the Seminar  
**C.Frigo - Y.Koike**
- 09.40-10.30 *Keynote lecture. Interdisciplinary Review of Human Movements Analysis*  
**Prof. Antonio Pedotti (Politecnico di Milano)**
- 10.30-11.20 *Keynote lecture: Learning and Adaptation to Dynamic Environments in Human Voluntary Movements*  
**Prof. Koji Ito (Tokyo Institute of Technology)**
- 11.20-11.40 *Coffee Break*
- 11.40-12.20 *Musculoskeletal modeling to analyze the role of dynamic coupling in motor strategies*  
**Prof. Carlo Frigo (Politecnico di Milano)**
- 12.20-13.00 *Musculo-skeletal models and prediction of joint properties*  
**Prof. Yasuharu Koike (Tokyo Institute of Technology)**
- 13.00-14.30 *Lunch*
- Free communications*
- Visit to the TBM Lab Politecnico di Milano
- 20.00 *Social Dinner*

## Second day (Milano, 16/6/09): Session 2-Motor Learning

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- 09.00-09.40 *Pontine neurons provide precise copies of cortical motor commands to the cerebellar internal models.*  
**Prof. Shinji Kakei (Tokyo Metropolitan Inst for Neurosci)**
- 9.40-10.20 *Neural correlates of predictive and postdictive switching mechanisms for internal models*  
**Prof. Hiroshi Imamizu (NICT BiolICT Group/ATR Computational Neurosci Labs)**
- 10.20-11.00 *Comparing muscle activation patterns in reaching movements with computational model prediction*  
**Hiroyuki Kambara (Tokyo Institute of Technology)**
- 11.00-11.20 *Coffee Break*
- 11.20-12.00 *Bilateral interaction modulated by movement symmetry and relative directions*  
**Mr. Sakurada (Tokio Institute of Technology)**
- 12.00-12.40 *Kinematic strategies of upper limbs lowering during suggestions of heaviness: a real-simulator design*  
**TBI (Scuola Superiore Sant'Anna, Pisa)**
- 12.40-13.20 *Fundamental electrical quantities in stimulation of the nervous system: influence of domain dimensions and boundary conditions*  
**Dott . Paolo Ravazzani (CNR Italy)**
- 13.20-15.00 *Lunch*
- Transfer to Genoa*

### Third day (Genoa, 17/6/09) : Session 3-Brain Interface and robotics

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- 09.00-09.10 *Welcome and introduction*  
**G.Sandini, Koji Ito**
- 09.10-9.50 *New frontiers in brain-computer bidirectional communication*  
**Prof. Luciano Fadiga (IIT – RBCS department and Univ. of Ferrara)**
- 9.50-10.30 *Fundamental research about Brain Computer Interface for stroke rehabilitation*  
**Mr. Takahashi (Tokio Institute of Technology, Tokio)**
- 10.30-10.50 *Coffee*
- 10.50-11.30 *Robotics as a critical investigation tool for Arm Motor Control*  
**Dr. Lorenzo Masia: (IIT – RBCS Department)**
- 11.30-12.10 *Single-trial classification of vowel speech imagery using common spatial patterns*  
**Mr. Charles DaSalla (Tokio Institute of Technology)**
- 12.10-12.50 *Current results and future perspectives on the control of hand prostheses using peripheral intraneural interfaces*  
**Prof. Silvestro Micera ( Scuola Superiore Sant'Anna )**
- 12.50-14.30 *Lunch*
- 14.30-15.20 *Keynote: Towards reasoning and coordinating action in the mental space*  
**Prof. Pietro Morasso (IIT – RBCS department and Univ. of Genova)**
- 15.20-16.00 *Towards home-based training of balance and mobility in Parkinson's Disease: functional and neural correlates*  
**Prof. Lorenzo Chiari (University of Bologna)**
- 16.00-16.40 *Adaptive learning and lesion compensation in patients after cerebellar injury: any lessons for computational motor control?*  
**Prof. Juergen Koncza (IIT – RBCS department and Univ. of Minnesota)**
- Visit to Istituto Italiano di Tecnologia (IIT, Genova)
- 20.00 *Social Dinner*

## Fourth day (Genoa, 18/6/09): Session 4-Musculo-skeletal control and robots in rehabilitation

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- 9.00-9.50      *Keynote: Neuroimaging studies of motor-related behaviors*  
**Prof. Takashi Hanakawa (National Centre of Neurology and Psychiatry, Univ. of Kyoto)**
- 09.50-10.30    *Wearable, Artificial Sensory-Motor System for Upperlimb Control in Rehabilitation*  
**Dr. Federico Lorussi (Università di Pisa)**
- 10.30-11.10    *Modular control of posture and movement*  
**Prof. Thierry Pozzo: TBA (IIT - RBCS department and University of Dijon)**
- 11.10-11.30    *Coffee Break*
- 11.30-12.10    *Using robots to promote neuromotor recovery and motor skill learning*  
**Prof. Vittorio Sanguineti: (IIT – RBCS department and Univ. of Genova)**
- 12.10-12.50    *A New Power Assist System Based on Wrist-Joint Equilibrium Point and Stiffness*  
**Mr. Kawase – (Tokio Institute of Technology)**
- 12.50-13.00    *Closing remarks*  
**Y.Koike-C.Frigo**
- 13.00-14.30    *Lunch*

*End of the Seminar*