

Thursday December 1st

Welcome

9.30: Paolo Dario (Scuola Superiore Sant'Anna, Italy)

Session 1: Neurophysiology of touch

10.00: Ronald Johansson (Umeå University, Sweden)
Rapid use of tactile neural inputs during dexterous object manipulation

11.00: Coffee Break

11.30: Henrik Jorntell (Lund University, Sweden)
Learning the statistics of tactile neural inputs in the cuneate nucleus

12.00: Sergey Antopolsky (SISSA, Trieste, Italy)
Behavioral and physiological evidence for a purely temporal tactile code in rats

12.30: Lunch break

Session 2: Touch perception and tactile coding

14.00: Antonio Bicchi (Pisa University, Italy)
Haptics for upper limb prosthetics: from tactile illusions to interfaces

14.30: Vincent Hayward (Institut des Systèmes Intelligents et de Robotique, France)
The computational skin

15.30: Coffee break

16.00: Calogero Oddo (Scuola Superiore Sant'Anna, Italy)
Neuromorphic artificial sense of touch for bionics and biorobotics

16.30: Alberto Mazzoni (Scuola Superiore Sant'Anna, Italy)
From microneurography to neuroprostheses through network models.

17.00: Concluding remarks of first day

Friday December 2nd

Session 3: Touch restoration, neuroprostheses and biorobotics

9.30: Sliman Bensmaia (University of Chicago, USA)
Biological and bionic hands: natural neural coding and artificial perception

10.15: Silvestro Micera (Scuola Superiore Sant'Anna, Italy / École polytechnique fédérale de Lausanne, Switzerland)
Intraneural implants enable long-term bidirectional control of hand prostheses

10.45: Coffee Break

11.10: Antonio Frisoli (Scuola Superiore Sant'Anna, Italy)
Wearable haptics: virtual manipulation with cutaneous fingertip devices

11.40: Christian Cipriani (Scuola Superiore Sant'Anna, Italy)
Non-invasive, temporally discrete feedback improves grasp control of closed-loop myoelectric transradial prostheses

12.00: Simona Crea (Scuola Superiore Sant'Anna, Italy)
A discrete event-driven sensory feedback device for lower-limb amputees

Concluding remarks

12.20: MP Maria Chiara Carrozza (Scuola Superiore Sant'Anna, Italy and Italian Chamber of Deputies)
Biomedical engineering and biorobotics in the EU research framework

The workshop takes place on the premises of The Biorobotics Institute of Scuola Superiore Sant'Anna, viale Rinaldo Piaggio 34, in Pontedera (15 mins by train from Pisa, 50 mins from Florence).

The event is free, but registration is compulsory.

To register, please write to local organizer Alberto Mazzoni (a.mazzoni@sssup.it)

ORGANIZERS

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ACKNOWLEDGMENTS

Italian Ministry of Foreign Affairs and International Cooperation, Directorate General for Country Promotion (Economy, Culture and Science)—Unit for Scientific and Technological Cooperation, via the Italy-Sweden bilateral research project on "Brain network mechanisms for integration of natural tactile input patterns", the Swedish Research Council, NEBIAS European project (EUFP7-ICT-611687) and Scuola Superiore Sant'Anna internal funds.



Sant'Anna
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WORKSHOP ON TACTILE CODING AND NEUROPROSTHESES

Neurophysiology of touch and development of artificial tactile sensation are two fields of research with an ever-increasing interchange. Advanced neuroprostheses are progressively focusing on reproducing the naturalistic processing of tactile sensations in the peripheral and central nervous system. In turn, biomimetic tactile sensors and behavioral studies on patients implanted with tactile neuroprostheses can contribute to the understanding of tactile coding. This workshop aims at fostering the integration of neurophysiological, computational, haptic and biorobotic studies on touch with contributions by leading experts in these fields.

