

Research Topics for  
**Doctorate in Bioengineering and Robotics,**  
curriculum in **Cognitive Robotics, Interaction and Rehabilitation Technologies**

**Research Topics**

1. Psychophysics and Neurophysiology of Tactile-Visual Integration and interaction..... 1
  2. Human-Artificial Interaction System And Tools Development..... 1
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**1. Psychophysics and Neurophysiology of Tactile-Visual Integration and interaction**

**Tutor**

Monica Gori

**Research Line**

[Unit for Visually Impaired People](#), IIT, Genova

**Description**

The goal of the project is to study the multisensory integration and visual-tactile interaction of motion. The PhD will be involved in doing Psychophysical and EEG experiments. Unit for Visually Impaired People (IIT) is looking for a PhD in the field of informatics and artificial intelligence.

The goal of the project is to understand brain principles behind early interactions of vision and touch:

- The study of perceptual mechanisms of sensory integration.
- Improvement of methods and tools for interaction study.

**Requirements**

The PhD student will be involved in doing psychophysics, neurophysiology measures and analysis, application of mathematical modelling and programming. A background in neuroscience or experimental psychology is required. Programming skills are also desired.

**Contact**

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**2. Human-Artificial Interaction System And Tools Development**

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## Tutor

Monica Gori

## Research Line

[Unit for Visually Impaired People](#), IIT, Genova

## Description

The Unit for Visually Impaired People (IIT) is looking for a Ph.D. candidate with an M.Sc. in artificial intelligence, computer science, computer engineering, robotic engineering, biomedical engineering, or related fields. The candidate will contribute to developing new technologies for individual state modelling in an ecological urban context.

The Unit for Visually Impaired People (U-VIP) Research line is coordinated by Monica Gori, who has extensive experience in the field of psychophysics for multisensory processing, and that has been working for over twenty years on the perceptual and motor correlates of many pathologies, among which blindness, deafness, dyslexia, psychiatric disorders, multiple sclerosis, in childhood and in adulthood.

The research focuses on the quantitative characterization of individuals to develop and validate user-centered urban technologies for inclusive engagement.

The candidate will work in a challenging and international environment using science to develop new technological solutions with a concrete impact on society.

Specifically, the goal of the Ph.D. project is to investigate the mechanisms underpinning the (inter- and intra-) individual variability in motor and perceptual abilities in humans, developing new methods to characterize this variability.

The Ph.D. student will design experiments concerning the assessment of perceptual and motor human abilities by studying/applying statistics and machine learning approaches (in particular, supervised learning, learning with partial feedback, and reinforcement learning) to quantify the subject's individual characteristics and will develop new applications/ technological solutions to extract the information of interest.

## Requirements

An M.Sc. in artificial intelligence, computer science, computer engineering, robotic engineering, biomedical engineering, or related fields. Knowledge of Python (strongly preferred for machine learning), R, and MATLAB environments.

## Contact

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