



Thesis Project Form

Title (tentative): Hyper-synergies in physical human-human interaction

Thesis advisor(s): De Vicariis Cecilia, , Daniele Borzelli, Andrea D'Avella, Vittorio Sanguineti

E-mail: cecilia.devicariis@dibris.unige.it

Address:

Phone:

Description

Motivation and application domain

Human-human interaction is ubiquitous in our daily life. For instance, walking in a crowded place or lifting a sofa together, in team sport playing, dancing or rehabilitation. Few studies addressed the mechanisms underlying coordination. The project aims to investigate these mechanisms using electromyographic techniques in a force production joint task.

General objectives and main activities

The main objective of the project is to investigate the muscle activities of interacting humans in physical contact. To this purpose, the project will involve several activities:

1. Based on the scientific question an experimental setup and protocol will be designed and developed, by integrating existing technologies in the laboratory (EMG, Robots).
2. Data collection: pairs of participants will be recruited for the experiment.
3. Data analysis: to unveil and describe electromyographic, and kinematic synchronization between interacting participants.

Training Objectives (technical/analytical tools, experimental methodologies)

1. Synchronization of different acquisition systems (Planar robots, EMG)
2. Experiments with humans
3. Data analysis in Matlab/Python

Place(s) where the thesis work will be carried out: UNIGE

Additional information

Maximum number of students: 1