Title (tentative): Influence of haptic perturbations on the motor memory of a precision task

Thesis advisor(s): Casadio Maura, Rajiv Ranganathan, Michigan State University

E-mail: Maura.Casadio@unige.it

Address: Via Opera Pia 13, 16145 Genova (ITALY)

Phone: (+39) 010 33 52749

### Description

#### Motivation and application domain

The goal of this project is to test the influence of haptic feedback on motor memory when learning a novel motor task.

#### General objectives and main activities

The general objectives and activities are:

1. To create a task by programming a bimanual robot that allows precise control of the variability experienced during learning of a novel motor task and to apply haptic perturbations.
2. To test human subjects learning the task – participants will be assigned to different groups where each group will learn with different amount of variability and will experience different haptic feedback. Kinematic and force data will be recorded throughout the training sessions.
3. To analyze the data in order to investigate the effects haptic feedback on the motor memory of the task.

#### Training Objectives (technical/analytical tools, experimental methodologies)

The things that I will learn:

1. Theoretical basis of motor learning and variability
2. Designing experiments and protocols on the KINARM Robotic manipulandum
3. Working and testing with human subjects
4. Data analysis and statistical testing

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

Michigan State University, Department of Kinesiology

### Additional information

Maximum number of students: 1

Financial support/scholarship: Fondo Giovani