# Thesis Project Form

**Title (tentative):** Role of variability in motor learning

**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 overall goal of this project is to examine how humans learn novel coordination patterns, and how we can facilitate the learning of new coordination patterns. In particular, the goal is to examine the effect of prior coordination patterns on learning new ones. This knowledge is critical for understanding rehabilitation of movement patterns in conditions like stroke.

### General objectives and main activities

1. To create a task on a bimanual robot to study motor learning of a novel coordination pattern
2. To test human subjects learning the task - participants will be assigned to different groups where they will each group will learn prior coordination patterns before learning a novel coordination pattern. Kinematic and force data will be recorded throughout the training sessions.
3. We will then analyze the data to see how the prior coordination pattern experienced during training has an effect on the learning the new coordination pattern.

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

1. Theoretical basis of motor learning and transfer
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 2018/2019