



Thesis Project Form

Title (tentative): Physiological model of spontaneous neuromotor recovery in subacute stroke survivors

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Description

Motivation and application domain

Future technological solutions to facilitate neuromotor recovery after stroke will benefit from understanding the interplay of compensation and true recovery and their underlying mechanisms

General objectives and main activities

The general objective is (i) to develop a model of sensorimotor control of upper limb movements, and how control is altered by a stroke; and (ii) a model of how spontaneous and/or exercise-induced control may lead to partial and/or total functional recovery.

The model will involve a detailed musculoskeletal model of the upper body, and biologically plausible control architecture and recovery mechanisms.

The model will be able to reproduce the typically observed stroke-related impairments (reduced dexterity, lack of force, spasticity) and the interplay between compensation and true recovery.

Training Objectives (technical/analytical tools, experimental methodologies)

Musculoskeletal modeling
Optimal control
Reinforcement learning

Place(s) where the thesis work will be carried out: Bioengineering Lab, DIBRIS

Additional information

Maximum number of students: 1