UNIVERSITY OF GENOA
DEPARTMENT OF INFORMATICS, BIOENGINEERING, ROBOTICS AND SYSTEMS ENGINEERING
MASTER'S PROGRAM IN BIOENGINEERING

Thesis Project Form

Title (tentative): High-density electromiography for gesture recognition

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Description

Motivation and application domain

In high-density electromyography (hd-EMG), electrical muscle activity is recorded using matrix electrodes comprising many detection points. This provides a high resolution spatially distributed snapshot of activity across many muscles. This information can then be used to e.g. recognize wrist and hand gestures that the subject performs, thereby enabling gesture recognition for the control of external systems.

General objectives and main activities

The general objective is to develop novel approaches to recording and processing high-density electromyography.
Main activities include:
Definition of an experimental protocol for data collection using a technology developed at AAU (Neuraloop).
Using machine learning to process the collected data and assess the developed pattern classification and regression using both offline analysis and online control.

Training Objectives (technical/analytical tools, experimental methodologies)

The trainee will start by reviewing the literature about the use of HD EMG for gesture recognition, and then he will be trained to set up and conduct the recording. Together with the supervisor, the trainee will define an experimental protocol for data collection and processing.
As a final step, the trainee will prepare a project report presenting the methods and results.

Place(s) where the thesis work will be carried out: Aalborg University, Denmark

Additional information

Maximum number of students: 1

Financial support/scholarship: Erasmus+