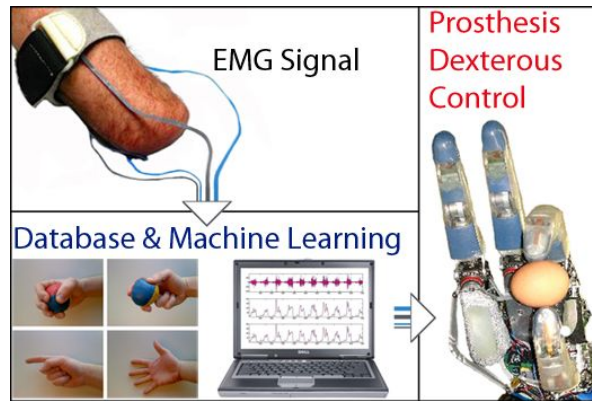


Surface electromyography classification using machine learning

Master Thesis Proposal in Biomechanics



(source: <http://medgift.hevs.ch/silverstripe/index.php/projects/ninapro/>)

Surface electromyography (sEMG) is the main means for controlling prosthetic arms in case of hand amputees. The research community is working vigorously to increase the level of control in hand prosthesis. The first step towards that is to develop a mapping between the recorded sEMG and the desired movement with high accuracy and confidence in order for the patient eventually to trust the use of the prosthetic part. The aim of this thesis is to test and implement signal processing and machine learning techniques for building the mapping between sEMG and a large number of hand movements

- The main aim is to use publically available data (<https://www.idiap.ch/project/ninapro/database>) and probably data acquired during the course of the thesis, to train machine learning models that can identify the intended movement.
 - Signal processing methods for the extraction of information from the raw sEMG will be employed.
 - Machine learning methods will be used for the mapping between the extracted information of the signal processing stage. Paradigms from the emerging deep learning field are of special interest but other factors will also be considered
- Knowledge in signal processing and basic machine learning techniques is a plus.
- Basic knowledge of at least one programming language is required.
- The participant will have a weekly discussion with her/his supervisor in order to be guided.

Proposal from George Georgoulas and George Nikolakopoulos, Control Engineering Group, SRT

George Georgoulas, geogeo@ltu.se

George Nikolakopoulos, Room A2556, geonik@ltu.se