**Titolo (provvisorio):** Development of myo-controlled hand prosthesis

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### Descrizione

#### Motivazione e campo di applicazione

The upper-limb amputee population is steadily growing, particularly in developing countries. This points at a need of hand prostheses which are at the same time controllable, fully functional and inexpensive. Fast prototyping and 3D printing would speed up the design, implementation and test of novel designs.

#### Obiettivi generali e principali attività

The overall goal of this project is to use fast prototyping and 3D printing to design a low-cost prosthetic hand. The specific objects are:

1. To design and implement the mechanical structure using 3D printing techniques and miniature actuators (CD motors)
2. To develop and implement software modules for myoelectric control and sensory substitution
3. To test the device with different grasping modalities

#### Obiettivi di apprendimento (strumenti tecnici e analitici, metodologie sperimentali)

1. Tools and applications for design and 3D printing of mechanical parts
2. Electronics design and EMG processing
3. Control theory applied to prosthetic devices
4. Data analysis and machine learning techniques for real-time processing of EMG signals

#### Luogo/i in cui si svolgerà il lavoro:

Neurolab

### Informazioni aggiuntive

**Abilità e capacità richieste:** Mechanical design, Matlab and Arduino programming would be a plus

**Numero massimo di studenti:** 1