



## Thesis Project Form

**Title (tentative):** Realistic Neural Drive Modelling in various physiological conditions

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### Description

#### Motivation and application domain

Over the last years, the Compiègne team developed a multiscale, multiphysics model of skeletal muscle, mainly applied to the biceps brachii.

#### General objectives and main activities

The goal of the thesis work will be to take into account the very recent literature on the subject to build a new neural drive model, generating a realistic Motor Unit recruitment scheme, to be later merged into the muscle model. This model should produce the neural input of all the motor units of the muscle model, tailored for each specific anatomy simulated. It should be able to simulate both isometric and anisometric contraction of the muscle handling various physiological contexts as fatigue and aging. The expected end product is a stand-alone model, implemented in Python, that can be later interfaced with our existing models, or even included into them.

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

Physiological modeling  
Python programming

#### Place(s) where the thesis work will be carried out:

### Additional information

**Pre-requisite abilities/skills:** BMBI Laboratory, Université de Technologie de Compiègne, France

**Maximum number of students:** 1

**Financial support/scholarship:** Erasmus