Title: Scalability of in silico medicine models

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Funding source: project COMBPIOMED2 (Grant N. 823712)

Research Project

The CompBioMed Centre of Excellence on high performance computing in Computational Medicine is an EU-funded consortium that works on the scalability of in silico medicine solutions. The centre has now received additional funding that runs from 1-1-2019 to 30-9-2023; in this round Alma Mater Studiorum – University of Bologna joins the consortium with Prof Viceconti as principal investigator. In CompBioMed2 our team will be responsible for the Neuro-musculoskeletal applications, and will contribute to the Verification, Validation & Uncertainty Quantification (VV&UQ) activities. The resulting research project involves the porting and adaptation of existing Neuro-musculoskeletal in silico medicine solutions, developed by our group or partner University of Sheffield, to target HPC platform available within the consortium. The goal is to exceed the 1000 simulations per study, either to model very large virtual cohorts, or to extensively explore the model predictions over the entire input space. This increased scalability of these solutions will be used to develop beyond-state-of-the-art VV&UQ of in silico medicine models, required for the regulatory certification of such solutions necessary to their clinical and industrial use. In the project we will collaborate closely with the Insigneo Institute in Sheffield, the SANO institute on computational medicine in Krakow, and national supercomputing centres for Spain, Germany, Netherlands, and UK.

The research contract (Assegno di Ricerca), has an annual salary before taxes of € 26,174.00. While the initial contract is for 12 months, if successful the post holder contract could be extended until the end of the project, in September 2023.

The ideal candidate for this position holds a degree in biomedical engineering with a strong background in information engineering good spoken and written English, and one or more of the following skills

- Familiarity with high performance computing
- Good programming skills
- Familiarity with numerical methods for the solution of ODE and PDE systems
- Familiarity with Medical imaging methods
- Familiarity with the regulatory procedures for medical devices and/or drugs

While a PhD is not formally required, we expect most candidates to have one, or being very close to graduation.

Place of work: all activities will take place at the institutional sites of the department DIN, or at the istituto ortopedico Rizzoli (Bologna).

Sede di svolgimento delle attività: le attività si svolgeranno presso le sedi istituzionali del DIN e presso l’istituto ortopedico Rizzoli (Bologna).