PhD Student Vacancy

Last application date
Oct 26, 2023
Department
LA26 - Department of Data Analysis and Mathematical Modelling
Team BionamiX – Paul Van Liedekerke
Contract
Limited duration
Degree
(Applied) Mathematics, Mathematical Biology or Mathematical Sciences, (Bioscience) Engineering, Physics, or equivalent
Occupancy rate
100%
Vacancy type
Research staff

Job description

Engineered and controlled in-vitro cell cultures will become key in future production of biologics, drug tests, tissue engineering, and even food production (e.g. artificial meat). The behaviour of those cells not only depends on their genetics; they also respond to changes of chemical signals, to their organization and embedding, and to bio-physical cues such as forces.

Computational models to predict experimental outcomes have the potential to speed up our knowledge and reduce the costs of development. For example, Individual-Based Models (IBMs) can reproduce complex emergent behaviours of many species systems as a consequence of the interactions between the individual species (agents).

The candidate will develop **computational models and new methods for (engineered) biological systems** that aim to capture bio- physical characteristics of cells, their internal machinery, environment effects such as gradients of chemical species and hydrodynamic stresses from fluids. In addition, hybrid strategies whereby these **mechanistic modelling** approaches and **machine learning methods** are combined to generate **surrogate models**, can be investigated.

We give some freedom to the precise research area but should be related to the following areas: Cell culturing, Tumors, Bioreactors, Bacteria (biofilms), Micro- ecological systems, ..

If successful, this will lead to the title of Doctor of Bioscience Engineering: Mathematical Modelling. The student will be based at Ghent University, Belgium.

Candidate Profile

- You have a MSc degree in a quantitative field such as (Applied) Mathematics, Mathematical Biology or Mathematical Sciences, (Bioscience) Engineering, Physics, or equivalent
- You have a strong interest and genuine passion for (computational) modelling of biological systems. You are motivated to collaborate with people with a different background or with a different occupation (such as biologists or research managers in companies)
- You have experience in at least one modern programming language (Python, Julia, R, C++, etc.)
- Having knowledge of spatio-temporal modelling paradigms, agent-based models, particle-based methods, or CFD are considered as strong quantitative assets
- Being fluent in English (both written and spoken)

Offer

Within the BionamiX team we provide a stimulating environment:

- Collaborate with a diverse team of researchers and scholars.
- Gain invaluable experience with mathematical modelling and programming to enhance your (academic) career.
- Possible collaboration with industrial partners

Ghent is a small city in the heart of Europe close to Brussels, with a rich historic background. With more than 50 000 students it provides a vibrant environment for research and an excellent quality of living.

How to apply

The PhD position will begin at the earliest beginning of 2024. Interested candidates should apply by sending their motivation letter, at least one reference letter, and their CV to Paul.VanLiedekerke@ugent.be before December 4, 2023.

The selection procedure consists of two steps. Firstly, a shortlist of the candidates will be made based on their motivation letter and CV. Secondly, the shortlisted candidates will be invited for an interview during which they'll have to present their master thesis research or a research paper.