

PhD-student (f/m/d) in data-driven modelling and simulation

You want to apply your data science knowledge to the basic research questions and societal challenges of our modern world? Our scientists in HDS-LEE address some of the most pressing issues of our time, such as energy transition, climate change and resource scarcity, brain function, drug design, identification of diseases at very early stages.

As Helmholtz School for Data Science in Life, Earth and Energy (HDS-LEE), we aim to educate and train the next generation of data scientists during their doctoral thesis in close contact to domain-specific knowledge and research in three application domains: Life and medical science, earth science, energy systems and material science.

We are located in the ABCD (Aachen-Bonn-Cologne-Düsseldorf) triangle of North-Rhine-Westphalia, Germany. Partners are the universities of Aachen (RWTH) and Cologne (UoC), German Aerospace Center (DLR), Max-Planck-Institut für Eisenforschung (MPIE), and Forschungszentrum Jülich (FZJ).

Visit HDS-LEE at: <https://www.hds-lee.de/>

Project overview

We are looking for a PhD-student (f/m/d) in data-driven modelling and simulation to work within a project linked to the “Helmholtz School for Data Science in Life, Earth and Energy (HDS-LEE)”. You will investigate hybrid models integrating AI and medical knowledge for predictive simulation in medicine.

In detail, the hybrid modelling framework will be set up in five consecutive development steps:

- Develop a learning scheme to train a hybrid model for a dynamic system coupled to adaptive control integrating AI - and knowledge-based components
- Develop a hybrid modelling software framework dedicated to model that class of controlled systems
- Develop an algorithm to assess the range of reliability for both the dynamic- and control system given data and prior knowledge
- Develop a sensitivity analysis strategy to assess the impact of new control measures on the outcome
- Demonstrate the algorithm on Covid19 pandemic data or patient data from intensive care patients.

Your Profile

- You have a high Interest to apply your data science knowledge to medical science
- University degree in either computational engineering science, computer science, applied mathematics, data sciences, simulation sciences, or physics
- Good experience with modelling and numerical simulation
- Good Programming skills in Matlab, Python and C++
- Experience with machine learning methods and dynamic systems in life science context is dvantageous.
- Good experience with parallel computing is a clear advantage.
- Ability to work independently as well as collaboratively in an international, interdisciplinary team; good communication and organizational skills
- Very good command of the English language (TOEFL or equivalent evidence)
- High level of scholarship as indicated by bachelor and master study transcripts and two reference letters

Our Offer

The HDS-LEE PhD position will be located at RWTH Aachen University. We offer you

- Outstanding scientific and technical infrastructure – ideal conditions for successfully completing a doctoral degree
- A highly motivated group as well as an international and interdisciplinary working environment
- Continuous scientific mentoring by your scientific advisors
- Chance of participating in (international) conferences
- Unique HDS-LEE graduate school program
- Qualification that is highly welcome in industry
- Further development of your personal strengths, e.g. via a comprehensive further training program

We offer you an exciting and varied role in an international and interdisciplinary working environment. The position is for a fixed term of 3 years. Your salary is in line with 100 % of pay group 13 of the Collective Agreement for the Public Service (TV-L).

Equal career prospects for women and men. We especially foster women in data science and offer individual career planning. We welcome applications from disabled persons.

Become a part of HDS-LEE.

Apply to and contact for further information: Prof. Dr. Andreas Schuppert schuppert@ices.rwth-aachen.de

Apply until: 31th October 2021

Starting date: 1st December 2021