PhD Student Position
in Machine Learning for Fluid Simulation

Doctoral Programme
Computational Interdisciplinary Modelling
University of Innsbruck, Austria

Within the scope of the Doctoral Programme ("Doktoratskolleg") Computational Interdisciplinary Modelling (DK-CIM) of the University of Innsbruck, the Interactive Graphics and Simulation Group and the Unit of Environmental Engineering invite applications for the position of a PhD student, focusing on the acceleration of solvers for Navier-Stokes equations via machine learning techniques.

Description

We are seeking a motivated and talented PhD student with interest and skill in physically-based simulation, fluid simulation, data-driven approaches, and/or machine learning techniques. The main focus will be on the development of data-driven machine learning methods for accelerating computations in physically-based simulations. The main application domain will be the simulation of fluids in environmental engineering scenarios such as flows in hydraulic networks and structures as well as surface flows. Of special interest will be (particle based) semi-Lagrangian solutions, fluid-solid boundaries, mesh adaptivity, as well as learning correction methods. A further target will be the tracking and characterizing of the simulation error, also via machine learning.

The work will be jointly supervised by Prof. Wolfgang Rauch, head of the Unit of Environmental Engineering and Prof. Matthias Harders, head of the Interactive Graphics and Simulation Group.

Candidates should have earned a Master or Diploma degree in either Computer Science, Environmental Engineering, Physics, Applied Mathematics or other related fields. Good knowledge in physically-based simulation is expected. In addition, some experience with machine learning methods is of advantage. Further, knowledge of domain-specific applied fluid simulation is also a plus. Experience and knowledge in C/C++ programming is expected, as well as a good level in English, both written and spoken.

The position is open immediately until filled. It is offered on the level of a non-permanent university research student for three years at a 75% rate (i.e. 30 hours per week). Successful candidates will become employees of the University of Innsbruck with full social security coverage under Austrian national law. The gross salary for the position will be about 2.048,30 €/month (14x).

PhD level studies will be carried out according to DK-CIM regulations. Note that a final doctoral degree would be possible either in Computer Science or in Engineering. The Doctoral Programme is committed to increasing the percentage of female employees in science and therefore explicitly invites women to apply.

Environment

The Doctoral Programme ("Doktoratskolleg") Computational Interdisciplinary Modelling, Research Area Scientific Computing (Speaker: Univ.-Prof. Dr. Alexander Ostermann) at the University of Innsbruck in Austria is bringing together mathematicians, computer scientists, engineers, chemists, meteorologists, and physicists within an interdisciplinary framework to develop and apply methods and models for innovative computational approaches to scientific problems. A detailed description of the program, of the required qualifications and additional details about applications can be found at http://dk-cim.uibk.ac.at/. General questions regarding the doctoral programme can be directed to Dr. Judith Courian, Tel.: +43 512 507 39851, Email: scientific-computing@uibk.ac.at.

The University of Innsbruck, founded in 1669, is a public institution, located in the capital of the Austrian federal state of Tyrol, beautifully situated within the Alps. It offers a complete set of academic curricula, with currently about 28'000 students. The city of Innsbruck provides an outstanding quality of life and opportunities all around the year. A large student population imprints a distinctive, international atmosphere upon this lively mountain city.

How to apply

Candidates should prepare application documents comprising a complete CV, grades and transcripts, relevant certificates, and URLs to relevant prior publications. Please apply online via the career portal of the University of Innsbruck (job code 9283) at https://orawww.uibk.ac.at/public/karriereportal.home. Deadline for application is April, 1st, 2017.

For further questions, please get in touch with:

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