Open Early Stage Researcher/PhD Position at University of Bremen, Department of Mathematics & Computer Sciences, Germany, as part of

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European Innovative Training Network
Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC)
1 full ESR/PhD Position, TV-L 13, reference number A266/17 / ROMSOC-ESR04
- under the condition of job release-

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The employment is fixed-term and governed by the Act of Academic Fixed-Term Contract (Wissenschaftszeitvertragsgesetz - WissZeitVG). Therefore, candidates may only be considered for appointment if they still have the respective qualification periods available in accordance with §2 (1) WissZeitVG.

ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska Curie Actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes.
We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry. Within the ROMSOC network we offer the following PhD position at University of Bremen, Department of Mathematics & Computer Sciences:

Data driven model adaptations of coil sensitivities in MR systems.
Reference number: ROMSOC-ESR04

We are looking for a mathematician interested in machine learning for the following application: Magnetic particle imaging (MPI) is an evolving MR (magnetic resonance) technology aiming at non-radiative, non-invasive imaging of functional parameters such as blood flow or targeted metabolic processes. In particular, reconstruction quality is limited due to the restricted approximation quality of PDE-based models. Data-driven approaches, based on neural networks and deep learning, would allow to incorporate expert information obtained from experimental measurements and to improve diagnostic potential of MPI technology.
The PhD candidate shall analyze limitations of PDE-based models (Maxwell and derived models) for coil sensitivities. The work comprises development of concepts for data-driven operator adaptations under efficiency constraints as well as the implementation of deep-learning methods for model adaptation. The PhD candidate will spend secondments for technical and scientific training at SagivTech Ltd. (Israel). The PhD degree will be awarded by University of Bremen, Germany.

Requirements:
  - Master degree (or equivalent) in Mathematics, Industrial Mathematics, Scientific Computing or other related disciplines.
  - Experience in numerical simulation of complex systems.
  - General programming skills .

- Strong interest in interdisciplinary scientific work.
- Ability to work independently and as part of a team.
- Strong motivation to pursue a PhD degree.
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modeling and simulation in engineering or medical applications, and personal ambition.
- Excellent command of English, together with good academic writing and presentation skills.

Starting Date:	1st of March 2018
Contract:	Full-time contract for 36 months (18 months at each hosting institution)
Host institution:	University of Bremen, Department of Mathematics & Computer Sciences, Bremen, Germany
Salary:	The position is funded by the European Commission with a salary 100% TV-L 13 linked to the German system.
Information/Contact:	Prof. Dr. Peter Maass (Primary Supervisor) Email: pmaass@uni-bremen.de
Application:	Applications (motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis, reference letter etc) with indication of the position reference number should be send to pmaass@uni-bremen.de Applicants that apply for more than one individual research project should indicate the order of preference (e.g. 1st, 2nd and 3rd choice).
DEADLINE	**15.12.2017**

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred. Applicants with a migration background are welcome.

Eligibility: *The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in Germany for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative.*