Postdoctoral Position Available in Real-Time Surgical Simulation

Primary Host: Strasbourg Institute of Advanced Study within the iCube Laboratory.
Collaborators: University of Luxembourg, Cardiff University.
Project Leader: Prof. Stéphane Bordas, University of Luxembourg.
Duration: 24 months.
Salary: Competitive, to be confirmed.

9th October 2013

We are seeking to appoint a Research Associate (post-doctoral level) for a period of 24 months to develop algorithms suitable for the real-time simulation of cutting in surgical procedures. The successful candidate will build upon work already completed, see: http://youtu.be/KqM7rh6sE8s for a video sample of our work, which will appear shortly in the *Journal of Medical Image Analysis*.

The candidate will be based at the University of Strasbourg within the iCube Laboratory. Furthermore, they will collaborate with Prof. Stephane Bordas' group at the University of Luxembourg with the post-doctoral researchers employed under the ERC Early Starting Grant, in particular Dr. Jack Hale. They will also collaborate with the SHACRA team led by Prof. Stephane Cótin https://team.inria.fr/shacra/ and researchers at the University of Cardiff where Prof. Bordas holds an adjunct professorship.

This position forms part of Prof. Stéphane Bordas' appointment to the University of Strasbourg Institute of Advanced Study (USIAS) as a Fellow for 2013 http://www.usias.fr/fr/fellows-2013/. Funding is already in place for the successful applicant. There is also the possibility to extend this position up to 48 months through Fonds National de la Recherche du Luxembourg or the ERC Early Starting Grant.

To apply you need to have a PhD (or equivalent) in Engineering, Computing Science, Mathematics or a related subject. The candidate must be an expert and enthusiastic C++ programmer, as the work will be implemented within the SOFA framework http://www.sofa-framework.org/. The research will be carried out at the interface between computer science, mathematics, engineering and mechanics and as such we are open to candidates with a broad range of backgrounds. The project can be tailored to your particular strengths, the only requirement being that you can produce work of the very highest standard.

More specifically, we are looking for candidates with proven experience in at least two of the following:

- real-time simulation.
- coding iterative solvers and pre-conditioners on advanced architectures (GPU, MPI etc.).
- computer visualisation and graphics.
- coding advanced mesh generators.
- simulation of evolving discontinuities.
- image to mesh transition in biomechanics.

- domain decomposition methods.

as well as experience in at least one of the following general fields:

- algebraic model reduction for non-linear problems.
- a posteriori error estimation for non-linear problems.
- advanced numerical methods (extended finite element methods, meshless, cartesian grids).
- multiscale methods for fracture and cutting.
- model reduction techniques (POD, reduced basis, morphing).

It would be a plus if the candidate has some command of French or German.

The successful candidate will join a dynamic team formed of a dozen PhD students and post-docs at three geographical locations (Strasbourg, Luxembourg and Cardiff) under the leadership of Prof. Bordas. The post-doctoral researcher will have ample opportunities to develop their career through doctoral supervision and grant applications etc.

Interested candidates should contact Prof. Bordas via email with a CV and one-page covering letter outlining their suitability for the position. Informal enquiries and questions are also welcome.

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