Open Post-Doc in Visual Analytics for Radiotherapy

The Department of Medical Physics at the Danish Center for Particle Therapy of Aarhus University Hospital, Denmark and the Visualization Group at TU Wien [1], Austria invite applications for a one-year PostDoc position offering applicants an exciting opportunity to join a project in the area of Visual Analytics for Model-based Decision Making in Image-Guided and Adaptive Radiotherapy.

The main contact people are Prof. Ludvig P. Muren [2] from Aarhus University Hospital and Dr. Renata G. Raidou [3] from TU Wien. The position is available from 1st September 2019. It is funded by a research grant from VARIAN medical systems for one year, with potential extensions.

Job Description:

Decision making in radiotherapy planning is a complicated process. A wide array of data sources should be taken into account, each with inherent uncertainties adding to the limitations in our knowledge about tumor and normal tissue dose-response relationships. Novel visual analytics strategies dealing with large data dimensionality and complexity have the potential to enable well-informed model-based decision making, both on individual level and in retrospective studies of patient cohorts.

This project will develop visual analytics prototype solutions that will improve understanding of complex radiotherapy data including functional imaging (exemplified with diffusion weighted MRI associated with cell densities) and organ motion data (exemplified with on-treatment repeated cone-beam CT). The system will combine and integrate automated machine learning methods with “human-in-the-loop” visualizations to account for uncertainties in dose response parameters, as well as variations due to changes in patient anatomy. This will provide the essential clarity needed to perform well-informed model-based decision making regarding selection of the optimal treatment modality and adaptations, at individual patient and cohort levels.

Required Profile:

- Applicants should hold a PhD in Computer Science or a related field.
- Knowledge or interest in one or more of the following: (bio-, medical) visualization, visual analytics, uncertainty visualization, parameter sensitivity analysis, cohort/ensemble visualization
- Strong analytical skills
- Good skills in programming (preferably C++, OpenGL, CUDA, python or similar)
- Abilities to work as an independent and flexible researcher in interdisciplinary teams

- Abilities to work in translational research, able to explain complex concepts to the wide range of professionals involved in radiotherapy
- Good communication skills, knowledge of English in speaking and writing
- Prior publications in the mentioned areas
- Travelling flexibility between Vienna and Aarhus

Application:

The official application should be in English and it should include:

- Short motivation letter
- CV
- Certificates of degrees so far
- List of publications
- A copy of the thesis of the highest obtained degree in PDF form (*if the applicant has not finalized the PhD dissertation, the list of publications is adequate*)
- The names and contact details of three potential references

TU Wien and Aarhus University are committed to increasing female employment in leading scientific positions. Female applicants are explicitly encouraged to apply. Preference will be given when equally qualified. Furthermore, please note that applicants will not be reimbursed for travel costs incurred in connection with this call.

Salary:

Appointment shall be in accordance with the collective labour agreement between the Danish Ministry of Finance and the Danish Confederation of Professional Associations [4]. Further information on qualification requirements and job content may be found in the Memorandum on Job Structure for Academic Staff at Danish Universities [5]. Salary depends on seniority as agreed between the Danish Ministry of Finance and the Confederation of Professional Associations.

Contact Information:

The application should be sent to Renata Raidou **before 24 June 2019**, by mail at rraidou@cg.tuwien.ac.at . For more information, feel free to contact Renata Raidou, at the same mail.