PhD or postdoctoral project
"Motion tracking and management in MR-guided radiotherapy"

1 PhD or Postdoc position available

In a research project based at the Department of Radiation Oncology of the University Hospital of the Ludwig-Maximilians-Universität München (LMU), a PhD position in medical physics (Dr. rer. nat.), or a postdoctoral position (TVL-E13), investigating MRI for motion tracking and management in MR-guided radiotherapy is available.

An MR-Linac (ViewRay MRIdian) has recently began operation at the Department of Radiation Oncology of the University Hospital of the LMU. Our research group is focusing on the use of imaging for adaptive radiotherapy, and we have experience with time-resolved imaging at the MR-linac, as well as with time resolved dose calculations. Expertise in deep learning for MR-guided radiotherapy is also available.

The general goals of the project are: (1) implementation of deep learning based real-time tumor tracking. (2) Improving the time-resolved MRI sequences used for tumor tracking. (3) Generation of 4D synthetic CTs and (4) implementation of time-resolved dose estimation for moving tumors.

The research project will offer a broad spectrum of topics including advanced 4D MRI, deep learning based image processing, 4D Monte Carlo dose calculations and general handling of 4D data. Moreover, extensive imaging data acquisition using moving phantoms at the Department of Radiation Oncology's MR-Linac will be performed. The project duration will be 36 months (PhD) or 24-36 months (Postdoc).

The ideal candidate has
- PhD: Highly ranked MSc in Physics, preferably in Medical Physics or Biomedical Engineering
- PostDoc: A PhD in medical physics with focus on MRI, hands-on MRI expertise
- Good understanding of electromagnetic and nuclear processes relevant to radiotherapy and medical imaging
- Experience in (medical) applications of MRI, (time-resolved) imaging, data processing, and radiation physics
- Experience in programming with either C/C++, Python or MATLAB, and Linux
- Experience in deep learning, preferably with TensorFlow, PyTorch or Keras
- Experience with Monte Carlo transport and interaction codes
- Fluent English knowledge (spoken and written)
- Technical proficiency, scientific creativity, team working skills

The working place will be at the Klinikum Grosshadern, which is well connected with public transportation to the rest of the city of Munich. The successful candidate will work in a highly motivated and well-established team within a multidisciplinary and international network embedded in a stimulating scientific environment with a long tradition of collaboration and excellence in biomedical research, with outstanding research and clinical infrastructures. Disabled candidates are preferentially considered in case of equal qualification. Applications from women are encouraged.

In order to apply for the position please send your electronic application **(letter of motivation, curriculum vitae, last school certificate and university degree, publication list, other qualification certificates such as TOEFL, and the contact information of two references)**, preferably in PDF format, **until 15.04.2020** to the project leaders:

Prof. Dr. Guillaume Landry (Guillaume.Landry@med.uni-muenchen.de)
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