

We combine excellence in research, teaching, and patient care. The **University Hospital Bonn (UKB)** is a maximum care hospital with more than 1,300 beds. With around 38 clinics and 31 institutes as well as more than 8,000 employees (over 5,000 full-time staff), the UKB is one of the largest employers in Bonn. Every year, the UKB treats around 50,000 inpatients and around 35,000 emergencies, as well as provides over 350,000 outpatient treatments.

In a collaborative DFG-funded research project between TU Munich (Prof. Nassir Navab), LMU Munich (Prof. Guillaume Landry and PD Dr. Christopher Kurz), and the University of Bonn (Prof. Shadi Albarqouni), a **full-time (38.5 hrs./week) Postdoctoral position** is available at the **Computational Imaging Research (CIR) Lab**, headed by Prof. Dr. Shadi Albarqouni, in the **Clinic for Diagnostic and Interventional Radiology** of the University Hospital Bonn, University of Bonn:

Postdoctoral position in Computational Medical Imaging - Robustness and Uncertainty in MRI-guided Radiotherapy (m/f/d)

starting January 2023 or as agreed upon. The position is limited to two years.

The Postdoc position will be based in the newly founded research lab for Computational Imaging Research (CIR), which **aims to develop** i) fully automated, highly accurate **innovative computational methods** that save expert labor and efforts, and mitigate the challenges in medical imaging; namely the availability of a few annotated data, low inter-/intra-observers agreement, inter-/intra-scanners variability and domain shift, ii) innovative **deep Federated Learning algorithms** that can fairly distill and share the knowledge among AI agents in a robust and privacy-preserved way, and iii) **affordable AI algorithms** suitable for low-quality data generated by low-resource settings and point-of-care. The Postdoctoral researcher will investigate the **robustness and uncertainty** in both discriminative (Spatio-temporal image segmentation) and generative (synthetic CT generation) deep learning-based models in MR-guided radiotherapy. The project will make use of data acquired with an MR-Linac (ViewRay MRIdian) that has recently begun clinical operation at the Department of Radiation Oncology of LMU Munich. The research project will offer a broad spectrum of topics in the scope of MR-guided radiotherapy, including deep learning-based image processing, as well as dose calculation and optimization. The postdoc will have the chance to closely work with clinicians and two Ph.D. students at both TU Munich and LMU Munich. If you have experience with computational methods in medical imaging, this is a great opportunity to be part of our team.

Your responsibilities:

- Develop innovative computational algorithms for Robustness and Uncertainty in both discriminative (Spatio-temporal image segmentation) and generative (synthetic CT generation) deep learning-based models in MR-guided radiotherapy.
- Publish and present scientific outcomes at Intl. conferences and high-impact journals
- Maintain close collaboration with the team members and clinical partners

Your qualifications:

- Ph.D. in Computer Science, Machine Learning, or equivalent with an interest in Medical Imaging
- Strong knowledge in Machine/Deep Learning with experience in discriminative and generative models, robustness, and uncertainty quantification.

- Track record of publications at top-tier conferences in the field (e.g., MICCAI, IPMI, and MIDL) and high-impact journals in the field (e.g., Nat. Mach. Intell., MedIA, and IEEE TMI)
- Excellent programming skills in Python, PyTorch, and MONAI including fundamental software engineering principles and machine learning design patterns
- Working in a Linux environment, with experience in shell and cluster (SLURM) scripting
- Excellent analytical, technical, and problem-solving skills
- Be highly motivated and a team player with excellent communication and presentation skills, including experience in communicating across discipline boundaries
- Fluent command of the English language

What we offer you:

- **A secure future:** remuneration according to the German salary scale TV-L (E13)
- **Flexible for families:** flexible working time, home office, onsite nursery, and parental care.
- **Provisions for later:** company pension scheme
- **Discounted public transport ticket:** discounted ticket for public transport (VRS)
- **on-site health management service:** Numerous health promotion offers
- **Employer benefits:** Discounted offers for employees
- Subsidized **continuing education and training**

The University of Bonn is committed to diversity and equal opportunity and is certified as a family-friendly university. It aims to increase the proportion of women in areas where women are under-represented and to promote their careers in particular. Therefore, we strongly encourage applications from qualified women. Applications will be handled in accordance with the State Equality Act (Landesgleichstellungsgesetz). Applications from individuals with a certified severe disability and from those of equal status are particularly welcome.

Contact:

If you meet the requirements and you are looking for a challenging job? Do not hesitate and send your application including a cover letter (highlighting your qualifications), a detailed CV (with links to previous projects and code), scanned academic degrees, and the contact details of two referees (preferably by e-mail in a single PDF file up to 5 MB in size) by **15th January 2023**, quoting the job advertisement no. **CIR/02/2023** in your email's subject to:

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