TUM

Opportunities for Talents

Postdoctoral fellow in
advanced signal/image analytics in clinical optoacoustics (f/m/d)

The Chair of Biological Imaging (CBI) at the Technical University of Munich (TUM) and the Institute of Biological and Medical Imaging (IBMI) at Helmholtz Munich are an integrated, multi-disciplinary research structure and form the cornerstone of a rapidly expanding bioengineering ecosystem in Munich, Germany; including the Research Center TranslaTUM and the Helmholtz Pioneer Campus, which integrate bioengineering with oncology and metabolic disorders, respectively. CBI scientists develop next-generation imaging and sensing methods to measure previously inaccessible properties of living systems, hence, catalyzing breakthroughs in biology, medicine and the environment. Comprising 11 inter-disciplinary laboratories and scientists from more than 25 countries, CBI offers state-of-the-art infrastructure for innovative research and a perfect environment to accelerate your career.

Join our team and be part of our rich and dynamic research culture of enquiry and innovation. CBI researchers come from the top ranks of physics, chemistry, engineering, and biomedicine and attract significant investment from national and international sources. Our scientists serve in international societies and conferences and are recipients of a multitude of top international and German awards, including the prestigious Gottfried Wilhelm Leibniz prize and 11 ERC awards. In addition to scientific excellence, CBI promotes entrepreneurship, company spin-off activities, and collaborations with other top academic institutions and leading corporations in the photonics, pharmaceuticals and healthcare sectors.

We now seek a highly qualified and motivated **postdoctoral researcher (f/m/d)** to drive the development of an advanced signal and image analysis framework for clinical optoacoustics.

The mission:

Optoacoustics, and in particular multispectral optoacoustic tomography (MSOT) and raster-scan optoacoustic mesoscopy (RSOM), enable label-free imaging of oxy- and deoxyhemoglobin as intrinsic tissue biomarkers to resolve oxygen saturation and utilization as metabolic/functional indicators. Moreover, optoacoustics images lipid distribution and water. Therefore, it has strong potential to provide dynamic measurements of tissue physiology and disease pathophysiology. However, MSOT and RSOM are currently not optimized or validated for clinical studies. Our goal is to develop novel methods to develop advanced data analysis and representation methods, improve optoacoustic data quality, validate and quantify MSOT/RSOM readouts in humans within the context of vascular, metabolic and tumor diseases and increase their clinical utility.

The successful candidate will be instrumental in re-designing the MSOT/RSOM analysis framework, adapting it to clinical studies and validating it for disease imaging against established gold-standard imaging techniques. Given the prevalence of vascular, metabolic and tumor diseases in modern societies, this project has huge potential for high-impact research findings and exploitation. You will be integrated into a network of high-profile researchers within the Clinical Bioengineering Group, CBI and University Hospital 'rechts der Isar', giving you excellent opportunities for scientific interaction and professional growth.

Your profile:

The successful applicant must have the following:

- A Ph.D. in Applied Mathematics, Biostatistics, Electrical Engineering, Physics or related discipline.
- Excellent track record of research achievements and publications in top-ranked journals.
- Strong background in biostatistics and biomedical signal/image analysis.
- Strong background in applying imaging/sensing techniques to study tissue processes.
- Strong motivation, scientific curiosity and commitment to scientific excellence.
- Hands-on experience with clinical measurements is an advantage.
- Experience with preclinical/clinical optoacoustics is an advantage.
- Programming skills in R, MATLAB, and Python are an advantage.
- Team player skills and enthusiasm to work in a multi-disciplinary, collaborative environment.
- Excellent command of the English language.

Our offer:

We offer you the unique chance to make a difference in future healthcare. At CBI, we strongly believe in scientific excellence and innovation. This is your opportunity to be part of and to advance your career in a world-leading research institute, where bioengineering principles meet today's challenges in biology, medicine and environmental health to develop the solutions of tomorrow. CBI provides a highly international, multi-disciplinary environment with excellent opportunities for professional growth. You will be part of a dynamic, professional and highly motivated team within a stimulating environment and gain international exposure through our partners and collaborators across Europe and the world. We support career development, continued education, and life-long learning.

Situated on the foothills of the Alps, Munich is consistently ranked as one of the most vibrant and enjoyable cities in the world, with an exceptionally quality of life. Greater Munich is also home to several world-class universities and research institutes, creating a truly inspiring intellectual atmosphere.

The successful applicant will initially have a 2-year contract, with the possibility of extension. Salary will commensurate with work experience and seniority (TV-L E 13). As an equal opportunity and affirmative action employer, TUM explicitly encourages applications from women as well as from all others who would bring additional diversity dimensions to the university's research and teaching strategies. Qualified applicants with physical disabilities will be given preference.

Your application:

We are looking forward to receiving your comprehensive application including your letter of motivation, CV and academic transcripts of records preferably in English and in a single PDF file, via email to cbi.recruitment@tum.de. Please indicate "Postdoc in advanced signal/image analytics in clinical optoacoustics" in the subject line.

For any question, please contact:

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