Chair of Biological Imaging
Technical University of Munich

Postdoctoral fellow in advanced reconstruction methods for clinical multispectral optoacoustic tomography (f/m/d)

Are you passionate about science, full of ideas and innovative potential that drive change and enjoy working in an international, fast-paced environment? Are you motivated by the societal impact of research and seek an opportunity to play an instrumental part in the development of emerging technologies for biology and healthcare? Then the Chair of Biological Imaging (CBI) at the Technical University of Munich (TUM), Germany, and its integrated Institute of Biological and Medical Imaging (IBMI) at the Helmholtz Zentrum Muenchen (HMGU) is the ideal environment for you!

CBI is the cornerstone of a rapidly expanding bioengineering ecosystem in the Munich science area; 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 and medicine. Comprising 11 inter-disciplinary laboratories and scientists from more than 25 countries, IBMI offers state-of-the-art infrastructure for innovative research and a perfect environment to accelerate your career. Our research aims to shift the paradigm of biological discovery and translation to address major health challenges of our time and develop the medical solutions of tomorrow.

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, engineering, chemistry, biology and medicine and our pipeline frequently yields high-impact papers, successful technology spin-offs and commercialization. Our research is regularly featured in major news channels and received broad recognition including several prestigious awards and considerable research funding from national and international sources.

We now seek a highly qualified and motivated postdoctoral fellow (f/m/d) to drive the development of advanced reconstruction methods for clinical multispectral optoacoustic tomography (MSOT) projects.

The mission:

Multispectral Optoacoustic Tomography (MSOT) is a novel medical imaging modality that provides images of biological tissue with optical contrast and acoustic resolution at a depth up to several centimeters. By illuminating biological tissue with laser pulses of different wavelengths and recording ultrasound waves generated via the photoacoustic effect, MSOT can non-invasively detect different chromophores, such as oxygenated and deoxygenated hemoglobin or lipids, without the need for exogenous contrast agents. The underlying reconstruction problem is a highly challenging non-linear and ill-posed inverse problem. Even though the method has demonstrated its clinical value, the

reliable quantitative reconstruction of chromophore concentrations from clinical MSOT data has not been achieved so far.

The successful candidate will develop and efficiently implement advanced reconstruction methods for quantitative MSOT in an interdisciplinary team. She or he will also explore methods to integrate ultrasound data acquired in hybrid MSOT and ultrasound (OPUS) systems into the reconstruction. In addition, the candidate is expected to contribute to the institute's reconstruction software development, and to actively participate in the reconstruction and analysis of clinical MSOT data, provided by a team of trained clinicians. In particular, exploiting the benefits of data-driven methods in both reconstruction and data analysis are of great interest for MSOT and OPUS. The candidate can build on existing methods and software developed at the institute.

Your profile:

The successful applicant must have the following:

- A Ph.D. in Mathematics, Computer Science, Engineering, Physics, Optics or a related discipline.
- Excellent track record of research achievements and publications in top-ranked journals.
- Strong motivation, scientific curiosity and commitment to scientific excellence.
- Genuine interest in medical imaging and biomedical applications.
- Programming and software development skills.
- Experience in the management of large medical datasets is considered a strong asset.
- In-depth knowledge of signal and image processing and detection techniques.
- 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 and medicine to develop the solutions of tomorrow. IBMI 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. 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. We offer a competitive salary and benefits depending on work experience and seniority in accordance with the public service wage agreement (TV-L E13). 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. Preference will be given to disabled candidates with essentially the same qualifications.

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 "Postdoctoral fellow in advanced reconstruction methods for clinical multispectral optoacoustic tomography" in the subject line.

For any question please contact:

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