PhD candidate (f/m/d) in optoacoustic sensor development

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, healthcare and environmental applications? Then the Chair of Biological Imaging (CBI) at the Technical University of Munich (TUM) and its integrated Institute of Biological and Medical Imaging (IBMI) at the Helmholtz Zentrum Muenchen (HMGU), Germany 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 Translational TUM 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. 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, biomedicine and computer science and our pipeline frequently yields high-impact papers, successful technology spin-offs and commercialization. Our research is regularly featured in major news channels and has received broad recognition including several prestigious awards and considerable research funding from national and international sources.

We now seek a highly qualified and motivated PhD candidate (f/m/d) to develop novel, compact optical systems and ultrasonic sensors for biomedical and environmental applications.

The Mission:

Multispectral optoacoustic imaging and sensing combine the high contrast of optical excitation with the high resolution and deep penetration of ultrasound. These characteristics give optoacoustic imaging many advantages over other imaging methods for applications in biology, medicine, environmental research and pollution monitoring. As the next step in developing optoacoustic devices for commercialization, we want to miniaturize both the illumination source and ultrasound detector in order to create low-cost, portable products for use in laboratories, clinics, and in the field. Importantly, we want to optimize every component of the sensor in order to increase signal-to-noise ratio and sensitivity.

The successful candidate will develop novel miniaturized illumination sources and ultrasound detectors for optoacoustic imaging and combine them with novel signal processing techniques based on artificial intelligence, machine learning and deep learning as part of her/his PhD project. The development process will give the successful candidate the opportunity to strengthen her/his skills on electronics, lasers, optics, prototyping and 3D printing and computation skills. She/he will be involved with every stage of device design, prototyping, testing and optimization, as well as with dissemination of results in the form of publications and, if appropriate, patents.
Qualifications

- High motivation, scientific curiosity and ability to work independently
- A degree in Physics, Optics, Electrical or Mechanical Engineering, or a related field and an excellent academic track record
- Practical experience in optics and fiber optics
- Experience in designing electronic circuits (analog filter, amplifiers, etc.)
- Experience in product design and development
- Programming capabilities (for example, Matlab, C/C++)
- Practical experience in hardware control, data acquisition and synchronization, system development and integration
- Team player skills and enthusiasm to work in a multi-disciplinary, collaborative environment
- Excellent command of the English language

The following qualifications are considered advantageous:

- Experience in 3D printing technologies
- Experience in experimental research
- Basic knowledge of optoacoustic imaging

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. TUM offers a wide variety of inspiring and challenging PhD programs, which will supplement your research training with outstanding opportunities for 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 3-year contract, with the possibility of extension. Salary will be commensurate with work experience and seniority (TV-L E13-65%). 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 “PhD student in sensor development” in the subject line.

For any question please contact:

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