

**Are you interested in an exciting student job in applied research?
Then the ZIB is the place to be!
Become part of our international team!**



2 June 2022

The Zuse Institute Berlin (ZIB) is a non-university research institute under public law of the state of Berlin. In our research group “*Computational Diagnosis and Therapy Planning*”, which is part of the division “*Visual and Data-Centric Computing*”, we work on problems in the domain of medical image analysis. Our focus lies in the development of novel computer-assisted solutions with practical relevance in conjunction with automation and efficient algorithms. We are looking for a master student who is highly interested in medical image analysis. This offer is initially limited for a period of 18 months with a possibility of an extension and/or master’s thesis.

Student Assistant (m/f/d)
Reference Code: SH 04/22 (40 – 80 hrs/month)

Job Description – Project Goals

The project is a part of the Collaborative Research Centre 1444 (funded by DFG), which is carried out in cooperation with our clinical partners at the Charité Berlin. The main goal of the project is to investigate the bone healing processes in humans. More specifically, we are interested in the evaluation of deformations and strains in the bone fracture gap during active motion, after a surgical treatment. For that purpose, a special stereo-video fluoroscope was developed at the Charité that can acquire bi-planar X-ray images of the patient during typical loading conditions. Our goal is to quantitatively assess those medical images and to recover relative motion in the fracture gap from moving bone segments. In addition, we will employ various machine learning approaches to correlate different fracture types with the reported healing outcomes in order to determine the most important bone healing factors.

At the ZIB you will learn how to segment medical images, how to use convolutional neural networks (CNNs) for automatic image segmentation, how to build statistical 3D shape models from segmented data, and most importantly, how to work in a collaborative and international research team.

Your Tasks

- Pre-processing and segmentation of medical images (manually or with CNNs).
- Application, optimization and testing of newly developed geometry reconstruction algorithms (i.e., 2D-3D registration methods).
- Qualitative and quantitative evaluation of results and scientific data.
- Support with programming and with maintaining GitHub projects.

Your Profile

- Master student in computer science, mathematics or a related course.
- Very good knowledge and experience with programming in Python and/or C++.
- Strong interest in medical image processing and medical data analysis.
- Knowledge and interest in machine learning is desirable.
- Ability to work in a team and to work independently in a goal-oriented manner.
- Very good command of written and spoken English.

We offer active introductory training in a small and motivated team as well as a flexible working environment. The employment is based on the collective agreement for student employees with 40 - 80 hours/month and is limited to 18 months (with an option for extension). The preparation of a master's thesis is possible.

Female applicants are highly encouraged to apply. Since women are underrepresented in information technology, the ZIB is trying to increase the proportion of women in this research area.

Applicants with disabilities will be given preference if equally qualified.

Please send your full application, quoting the reference code **SH 04/22**, including CV and the standard supporting documents as well as your certificate of matriculation in pdf-format (**one file**) by **1 July 2022** (date of receipt) to: jobs@zib.de

Our private policy statement regarding application data is available at www.zib.de/impressum.

For further information about the position, please refer to our website www.zib.de or contact Marko Leskovar (leskovar@zib.de) or Dr. Stefan Zachow (zachow@zib.de).

For further job offers please visit our website at www.zib.de/jobads.