Postdoctoral Fellowship in Biomedical Engineering

Division of Biomedical Engineering
Faculty of Health Sciences
University of Cape Town

3D reconstruction of bone using X-ray images and Statistical Shape Models

The Division of Biomedical Engineering (www.bme.uct.ac.za), in collaboration with Lodox Systems (www.lodox.com) and the Graphics and Vision Research Group (Gravis-UNIBAS) of the University of Basel in Switzerland, has embarked on a shape modelling project for 3D reconstruction of human bones using 2D X-ray images.

Suitable candidates are invited to apply for a postdoctoral fellowship, funded by the DST/NRF South African Research Chair in Biomedical Engineering & Innovation held by Professor Tania Douglas. The fellowship is located in the Division of Biomedical Engineering under the supervision of Dr Tinashe Mutsvangwa and Professor Douglas. The research will be focused on developing and applying a flexible, yet robust, software platform for building 3D patient-specific bone reconstructions from low-dose 2D X-ray imagery and 3D statistical shape models. Application areas include patient-specific planning for orthopaedic surgery, human craniofacial modelling for forensic applications, and patient-specific 3D reconstruction of the femur for osteoporosis investigation. The successful candidate will contribute to aspects of platform development and application. Algorithm development will be done using Matlab and Scala-based tools Statismo and Scalismo.

Conditions of award

The fellowship has a value of R220 000 - R250 000 (depending on the candidate's experience and track record), is tax-free and is tenable for one year. The fellowship may be renewed for a second year on evidence of satisfactory academic progress.
- Limited additional paid work (maximum 12 hours per week) may be undertaken; remuneration for such work is taxable.
- No benefits or allowances are included in the value of the fellowship.

Requirements:
- A PhD degree in any of the following: Biomedical Engineering, Computer Science, Electrical Engineering, or related disciplines, obtained in the past 5 years.
- Applicants may not previously have held full-time permanent professional or academic posts.
- A background in medical imaging, image processing and experience in X-ray imaging are desirable.
- Programming experience particularly in C++ with a working knowledge of Java, Matlab and/or Python.
- Experience with ITK (Segmentation & Registration Toolkit) and VTK (The Visualization Toolkit) is desirable.

The successful candidate will be expected to produce peer-reviewed publications as a result of their research and will be expected to participate in the activities of the Division of Biomedical Engineering, including co-supervision of MSc and PhD students and limited lecturing. The successful candidate will be required to register as a postdoctoral research fellow at the University of Cape Town and to comply with the policies and practices of the postdoctoral sector.

Application Procedure

Applicants should send a letter stating their research interests and expertise, as well as a maximum four-page CV, which includes a list of publications and includes the names, email & telephone details of 2 referees, to Dr Tinashe Mutsvangwa, Division of Biomedical Engineering as soon as possible but no later than 30 April 2016.

Email: postdocfellowship2016@gmail.com; tel: (021) 650-1418.

Eligible and complete applications will be considered by 15 May 2016 and shortlisted candidates will be required to undergo an interview, in person, by telephone or over Skype. Selection will be based on the candidate's ability to meet the requirements stated above.

The successful candidate will be expected to take up the fellowship by mid-2016.

NB: Only short-listed candidates will be contacted. The University of Cape Town reserves the right to disqualify ineligible, incomplete and/or inappropriate applications. The University of Cape Town reserves the right to change the conditions of award or to make no awards at all.

"OUR MISSION is to be an outstanding teaching and research university, educating for life and addressing the challenges facing our society."