



## Project Researchers & PhD positions

Interested ? Apply at <http://www.medicalimagingcenter.be/vacatures.php?vacatureID=17>

The Medical Image Computing (MIC) group belongs to the Medical Imaging Research Center ([www.medicalimagingcenter.be](http://www.medicalimagingcenter.be)), located in the University Hospital Gasthuisberg. It is a unique multi-disciplinary research center that hosts almost 100 imaging researchers with diverse backgrounds including engineers, physicians, physicists, medical scientists, bio-engineers and biologists.

Today MIC counts 20 researchers who conduct application-driven research on quantitative image computing, including image reconstruction, segmentation, registration and visualization. Challenging applications are solved and validated in a clinical environment in collaboration with clinicians and biologists. These applications also serve as a basis to reveal the limits and shortcomings of the state-of-the-art in medical image computing. Based on this input, the research group gains a clearer insight into the field and investigates novel problem-solving hypotheses.

MIC aims to be a European top research group, reflected by an outstanding publication record and an extensive valorization with respect to international collaboration, acquired patents, spin-off creation and visibility in general.

### Project Researchers

The Medical Image Computing (MIC) group has several immediate opportunities for **project researchers** who like to solve challenging clinical applications in the fields of quantitative computing with a high impact in the healthcare field. Current applications include quantitative analysis of DW-MRI to predict and assess the response to radiochemotherapy in rectal cancer; quantitative analysis of dual-energy CT images in the cardiovascular and oncologic domain; and automatic quantification of lung emphysema using the latest imaging technology.

The primary role involves working with both the clinicians and researchers to develop useful tools that solve clinical problems. This requires a good understanding of the clinical problem, an insight in the different medical image computing methods, and the ability to improve current methods.

We look for candidates who hold a Master degree in engineering, computer science or a related field. The applicants should demonstrate an aptitude for interdisciplinary research. They are able to work autonomously and follow a project-oriented approach. Experience with computer vision, image processing, Matlab and/or C++ is a strong asset.

## Ph.D. positions

- The Medical Image Computing (MIC) group has also several opportunities for Ph.D. candidates who like to develop novel solutions for model-based image computing of multi-X medical imaging data. With multi-X we refer to the heterogeneous nature of the imaging data that have to be analyzed in current medical applications: the imaging data may originate from different imaging modalities, from different time points, or even from different patients, and may be acquired with different resolution, contrast and/or dimensionality.

The project will provide a fundamental contribution towards the reconstruction and analysis of multi-X images by considering *multi-scale statistical modeling*, *abandoning heuristics* and *joint image registration and segmentation*. The problem-solving strategy will offer a *unified approach to problems of image formation, image fusion and image quantification*. We expect (1) that this approach will be applicable to a wide variety of clinical and biomedical applications and (2) that it will improve the accuracy and reliability without the need of fine-tuning and other interactive tasks.

We look for Ph.D. candidates who like to contribute to the solution of these fundamental problems and are eager to validate their results on (pre)clinical applications in a multidisciplinary environment. They hold a Master degree in engineering, computer science or a related field and are able work autonomously. Experience with computer vision, image processing, Matlab and/or C++ is a strong asset.

- The Medical Image Computing (MIC) group has also research opportunities for Ph.D. candidates who have an interest in the development of statistical shape models and their application to forensic imaging data analysis. This project concerns, more in particular, the development and application of 3D ear models for person identification from still photographs or surveillance video footage. More in general, the methodology should be applicable to reconstruction and recognition of biological structures from multiple views using statistical a priori models.

We look for Ph.D. candidates with a keen interest in fundamental contributions to the science of morphometrics (measuring shape) which are validated on forensic cases as well as, by extension, to (pre)clinical applications in a multidisciplinary environment. They hold a Master degree in engineering, computer science or a related field and are able work autonomously. Experience with computer vision, image processing, Matlab and/or C++ is a strong asset.

