

**WHEN:** Starting 1 January 2004, for 2 years. With excellent potential for continuation.

**WHERE:** The UNIVERSITY OF LIEGE, Belgium.  
(A brief description of the city of Liège is given below)

**PROJECT'S FRAMEWORK:**

Project is sponsored by the FNRS, which is the Belgian equivalent of NSF in the US. The centerpiece is a low-field (0.12 T) interventional MRI recently acquired by the world-reknown Departement of Neurosurgery led by Prof. Brotchi at Erasme Hospital, Free University of Brussels (ULB). Bulk of research will be carried out in EECS Department of the University of Liège (ULg). Close scientific and technical collaboration with ULB will require frequent visits to Brussels. In the EECS department in Liège, the selected candidate will contribute to the growth of a new dynamic group in image processing and computer vision. The group is led by faculty members with international experience at Ecoles des Mines, INRIA, MIT, and UMass Amherst. Several major projects are getting under way, so that candidate will be part of a select group of new recruits.

**Useful links:**

<http://www.ulb.ac.be/erasme/fr/services/medicaux/neurochir/index.htm>  
<http://www.ulg.ac.be> , <http://www.montefiore.ulg.ac.be>

**PROJECT DESCRIPTION:**

Interventional MRI is useful for tracking progress of surgery. Low-field (LF) interventional MRI is affordable. It thus has potential for widespread use in neurosurgery. Limitations are its small field of view and low resolution. The goal of the project is to augment LF 3D intra-op imagery with 3D pre-op imagery (MRI, PET, SPECT, etc) having, of course, full field of view and higher resolution.

The selected candidate will be tasked with defining and implementing best approach for augmentation. This approach may consist in deforming pre-op imagery to match current intra-op imagery and carefully blending deformed pre-op modalities with LF intra-op imagery. Solution will most probably involve some of the following techniques: segmentation of cortex surface (active contours, level sets, SPM), rigid and nonrigid registration, possibly 2D/3D meshing and finite-element techniques, image deformation, image blending, image fusion, 3D visualization. Implementation will be in C++ under ITK/VTK.

One goal is to build a proof-of-concept demonstrator that will be tested and evaluated as realistically as possible in a surgical theater environment. Another goal is to publish and participate actively in international conferences.

**PROFILE**

- PhD in electrical engineering, computer science or physics
- Strong interest in medical imaging
- Expertise sought (by rough order of preference): medical image processing, image processing and/or computer vision, handling of spatial or visual data, brain mapping, DT-MRI fiber tractography, physics of MRI, 3D visualization.
- Excellent publication record
- Strong programming skills and hands-on experience with real data
- C++ and/or Java at a minimum; Unix and Windows
- Knowledge of ITK and/or VTK is a plus!
- Working knowledge of English. (Knowledge of French NOT required.)
- Excellent verbal and written communication skills
- Self-starter and ability to work alone and as part of a team

**BENEFITS:**

Salary is determined based upon current regulations and is based upon your degree, experience, whether you are married and have children, etc. Approximate after-tax, take home salary is 1,700 to 2,000 euros per month. Your contribution to a health insurance plan will be a minor fraction of this, amounting to a few tens of euros per month. Keep in mind that the cost of living here is much lower than, say, in Boston or the San Francisco Bay Area!

**HOW TO APPLY:**

Candidatures will be considered until the position is filled. Prior to applying, candidates should check whether this position has been filled by consulting the page of J.Verly accessible via [www.montefiore.ulg.ac.be](http://www.montefiore.ulg.ac.be). (This page will soon be revamped!)

To apply for this position, please assemble ALL the information required below and send it in as a single package by email or by regular mail. (See address info.)

- Letter of motivation indicating why this job is for you and how this position fits in your career plan. Please indicate when you would be able to start work here.
- Resume or CV
- Personal web page, if any
- List of publications
- Copies of your 3 best publications relevant to project (if not easily downloadable by us from a website, please send us copies by email, in separate messages if necessary)
- Your research statement, if any
- Phone number(s) and best time(s) to call if we need to speak to you
- IMPORTANT: the name and contact information of 2 or 3 references, which we will be able to contact immediately. Please, let them know we are likely to call.

Once again, please provide ALL this information in a single package, except perhaps for the publications.

In all correspondence, specify "Application for FNRS position" in "Subject" field. (Application can be in English or French or a combination thereof.)

If the selected candidate is not from the European Union, we will initiate the procedure for applying for a working permit. Getting the permit may take 2 months.

**MAILING INFO:**

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**CITY OF LIEGE:**

Liège is the largest city in the French-speaking part of Belgium. It is strategically located. It is served by the TGV European high-speed train network: it is only 1 hour from Brussels (Capital of Europe), 2h15 from Paris and 3h from London. The Netherlands is 15 mins away and Germany 30. Liège is 40 mins from the heart of the Belgian Ardennen, with its lakes and forests, and 2h from the Belgian coast, with its beaches, boardwalks, bird reserve and fancy shops.

Liège is a University town. The sprawling main campus is located in the hilly, wooded, quiet suburb of Sart-Tilman "high" above the city. Downtown is a mere 10 min away. The EECS building is a wonderful building, with nicely landscaped surroundings. It is within walking distance from the 18-hole Royal Golf Course.

Liège is human-sized. You can walk everywhere downtown, including along the banks of the meandering Meuse river with its active barge traffic. The city has a rich history, lots of historical buildings and museums. It has a concert hall and an opera. Students are the major contributors to its famous nightlife in Le Carré.