

**Postdoctoral Fellow in Advanced Computational Neuroimaging Analyses
Hurwitz Brain Sciences Program at the Sunnybrook Research Institute
Departments of Medicine and Medical Biophysics
Temerty Faculty of Medicine, University of Toronto**

PIs: Andrew Lim, MD
Associate Professor
Neurology
University of Toronto

Maged Goubran, PhD
Assistant Professor
Medical Biophysics
University of Toronto

Description of the Position: We are seeking a postdoctoral fellow to lead development of novel, automated, scalable approaches to the analysis of large brain MR imaging datasets in support of a new CIHR-funded project integrating already-collected advanced MR imaging in >3000 adult Ontarians with whole genome genotyping and detailed measurements of sleep physiology to unravel the effects of sleep and circadian rhythm disruption on the human brain and on dementia.

The fellow will apply contemporary machine/deep learning and computational neuroimaging approaches to image segmentation, registration and other problems in the analysis of structural and functional MR data, and will work with others in the laboratory to relate these to genetics, sleep physiology, and cognitive outcomes. The fellow will be interested in developing research questions and optimizing analysis streams tailored to the study aims. New approaches and ideas are encouraged, as are independent projects that dovetail with current studies.

The position requires working closely with the PIs [Dr. Lim](#) (sleep and circadian physiology, neurology, genetics) and [Dr. Goubran](#) (neuroimaging, machine learning, computational neuroscience), and with graduate students, staff and developers in the lab to develop, improve and apply novel computational approaches to challenging image analyses and prediction problems. This will be performed in collaboration with our internal and external international collaborators including neurologists, radiologists, psychologists, geneticists and computer scientists. There will be opportunities for multiple publications on novel image analysis techniques, imaging genomics, and the links between sleep physiology and brain structure/function. Training in clinical research and in the acquisition, analysis, and interpretation of neuroimaging data will be provided.

This is a funded position. Stipend levels are in line with experience and CIHR stipend levels. A 2-year commitment is required. Contract is renewable contingent on performance.

Required Qualifications:

- PhD in received within the last 5 years or graduating PhD candidate in biomedical engineering, neuroscience, biological science, or related discipline, with a focus on the use of brain imaging analysis tools and techniques
- Strong research record
- Excellent verbal and written communication skills
- Proficiency with programming languages (Python/MATLAB, C/C++, etc.)
- Intermediate knowledge of Linux and scripting
- Experience in neuroimaging analysis
- Ability and willingness to work in a dynamic interdisciplinary team environment

Preferred Experience and Skills:

- Advanced knowledge of machine learning models for brain image segmentation, registration, and morphometry for image processing

- Experience with designing data analysis workflows and incorporating existing tools
- Advanced knowledge of computer vision
- Working knowledge of neuroimaging software: FSL, FreeSurfer, SPM, ITK
- Working knowledge of deep learning libraries Tensorflow, Keras or Pytorch
- Python software packaging, virtual environments, Anaconda/Conda, Jupyter/IPython
- Experience with statistical analyses and relevant software: example R or SPSS
- Experience with version control systems (Git) and software testing
- Demonstrated ability to learn quickly

Application

To apply for this position, please:

Send a) a cover letter, b) Curriculum Vitae, c) a writing sample (e.g. manuscript), d) statement of postdoc and career goals, and e) the names and contact information for three potential references to:

ontariosleephealthstudy@sunnybrook.ca

Links

- Sunnybrook Research Institute: www.sunnybrook.ca/research
- University of Toronto: www.utoronto.ca

The Sunnybrook Research Institute, fully affiliated with the University of Toronto, is a dynamic and collegial research environment that provides opportunities to participate in pioneering imaging analysis techniques that will be used to understand and treat dementia-related disease.

Applications are encouraged from qualified women and men, members of visible minorities, aboriginal peoples and persons with disabilities. In accordance with Canadian immigration requirements, this advertisement is directed initially to Canadian citizens and permanent residents. We thank you in advance for your interest. Only those candidates selected for an interview will be contacted. No phone calls please. Application screening will continue until a suitable candidate is identified.