

Announcement of PhD & MSc Student Positions in Deep Learning for Medical Image Analysis

McGill University, MILA

September 2024 Openings

We are seeking applicants for PhD & MSc student positions in deep learning for medical image analysis, under the supervision of Prof. Tal Arbel. Prof. Arbel is a full professor in the Dept. of Electrical & Computer Engineering at McGill University, where she is director of the Probabilistic Vision Group ([PVG](#)) at the Centre for Intelligent Machines (CIM). She is a Canada CIFAR AI Chair at MILA, the Quebec AI Institute, and an associate member of MILA and the Goodman Cancer Research Center.

The student will join Prof. Arbel's vibrant research team whose focus is on the development of probabilistic machine learning and modern deep learning models for medical image analysis, for contexts such as neurological diseases and cancers. Students will help advance one of the open deep learning topics being worked on in the lab, with the overarching objective of building a new framework for image based personalized medicine. Topics include: uncertainty estimation and propagation, knowledge distillation, interpretability/explainability, domain adaptation, cohort bias adaptation and modeling, self-supervision, active learning, multi-modal predictions (e.g. merging clinical and imaging), temporal disease evolution modeling, lesion segmentation, probabilistic lesion detection and counting.

The position will take place in McGill University, located in the beautiful city of Montreal, a bilingual, multicultural metropolis in the province of Quebec, Canada. In addition to joining Prof. Arbel's team at CIM, the student will join the vibrant machine learning ecosystem at MILA, a community of more than 900 researchers specializing in machine learning and dedicated to scientific excellence and innovation led by Prof. Y. Bengio, a founder of modern deep learning. Through an awarded Collaborative Network Award grant funded by the International Progressive MS Alliance (IPMSA), the student will have access to an enormous dataset of over 10,000 patient real, multicenter, multi-scanner, multiple sclerosis longitudinal patient MRI on which to train and test their models. In addition to computer scientists, the student will collaborate with neurologists and experts in MS at the Montreal Neurological Institute (Canada), biostatisticians, medical imaging specialists, and members of the pharmaceutical industry.

PhD candidates must have completed a M.Sc. or M.Eng. in one of the following areas: computer vision, medical image analysis, machine learning, or deep learning. A good track record of publishing in top conferences and journals (e.g. CVPR, MIDL, MICCAI, IPMI, PAMI, TMI, MIA, NeurIPS, ICML) is a strong plus. All candidates must have strong mathematical skills, good programming skills, and knowledge and experience in the domain of machine learning and deep learning (e.g. Python, Tensorflow/Pytorch, C/C++, OpenCV). In addition to conducting independent research, the student will regularly collaborate with other graduate students.

Interested candidates should contact Prof. Tal Arbel (arbel@cim.mcgill.ca) and CC the MILA Research Scientist in Prof. Arbel's lab: Brennan Nichyporuk (nichypob@mila.quebec). Candidates should include a CV, academic transcripts, and relevant publications (or projects, blogs, links to github repos they deem appropriate). Selected candidates will be asked to apply through the university admission system by following the instructions found [here](#), and will need to provide the contact information of two referees.

PVG is committed to advancing equity, diversity, and inclusion in science. We welcome and encourage applications from underrepresented minorities, recognizing that a diverse community produces the highest quality and most impactful research.