Location: Department of Biomedical Engineering, McGill University, Montreal Canada.

Contract type; Fixed term until 31 May 2025

Reporting to: Prof Robert Kearney & Dr. Philip Warrick

Overview
An exciting opportunity for a postdoctoral researcher interested in applications of machine learning to medicine is available with the EARLY/MAESTRA project. This is an international collaboration, funded by both the Gates foundation and the NIH, which aims to use machine learning to identify fetuses at risk of developing hypoxic ischemic encephalopathy (HIE). HIE is a rare but catastrophic birth outcome, that can lead to fetal mortality and morbidities, including cerebral palsy, motor or cognitive disorders, and learning disabilities. The project’s collaborative team has world-leading expertise in signal analysis, system identification, machine learning, neonatology, obstetrics, and pediatric neurology.

We seek a motivated, detail-oriented, and capable scientist to join our group as a Postdoctoral Researcher to develop and validate algorithms based on classical machine learning and/or deep learning for the detection of infants at risk of developing HIE from clinical and fetal monitoring data. This is an excellent opportunity for candidates interested in acquiring experience in biomedical applications of machine learning. The post-doctoral fellow will be responsible for the development of predictive models based on a combination of epidemiological, clinical, and fetal monitoring data from more than 250,000 births. They will collaborate closely with our international multidisciplinary team, disseminate findings at conferences and in journal publications.

Two positions are available: one based in the use of classical machine learning methods, and one based on a deep learning approach.

Responsibilities
• Develop and evaluate predictive models for HIE from clinical and fetal monitoring data.

• Manage their own research and administrative activities, within guidelines provided by senior colleagues.

• Contribute to wider project planning, including ideas for new research projects.

• Contribute to discussions and share research findings with colleagues in the research groups;

• Contribute to scientific reports and journal articles and the presentation of data/papers at conferences.

• Represent the research group at external meetings/seminars, either with other members of the group or alone.
Postdoctoral Research Positions in Machine Learning for the Prediction of Hypoxic Ischemic Encephalopathy (HIE)

Selection criteria
Please send a CV, a supporting statement, and contact information for two persons willing to act as references to robert.kearney@mcgill.ca with the subject line: EARLY/MAESTRA Postdoctoral Fellowship. Applications will be judged against the criteria that are set out below. You should describe, with specific examples, how you meet each of the requirements listed below.

Essential Requirements
1. Hold a PhD/DPhil (or be close to completion) in Biomedical Engineering, Bio-Statistics, or Computer Science or a related discipline;
2. Knowledge and experience with developing and evaluating machine learning models applied to large datasets using either classical machine learning or deep learning methods;
3. Experience using MATLAB, Python and TensorFlow/PyTorch;
4. Ability to work independently, to lead on project deliverables, and manage a discrete area of a research project;
5. Excellent oral and communication skills, including the proven ability to write in English at a suitable standard for the preparation of written reports and to contribute to discussions with collaborators and scientists in different fields;
6. Ability to work on multidisciplinary teams with experts with diverse cultural and scientific backgrounds.

Desirable
1. Experience of collaborating with obstetricians or other healthcare professionals, especially in maternity;
2. Ability to contribute ideas for new research projects and research income generation;
3. A track record of publishing in multidisciplinary or bio-medical data analysis journals, commensurate with the post-holder’s career stage;
4. Demonstrable ability to present research results through presentations and to represent the research group at scientific meetings.