PhD Studentship in Machine Learning Applied to Multimodal Data for Seizure Prediction

The **WiNTER (Winston Neuroimaging and Translational Epilepsy Research) lab** at Queen's University is recruiting a PhD student to work on a multicentre CIHR-funded project on multimodal prediction of seizure recurrence after unprovoked first seizure to guide clinical decision-making. We are developing a predictive machine learning model of seizure recurrence risk using brain connectivity data derived from MRI, functional connectivity from EEG and quantitative neuropsychological data. The project is a collaboration between the First Seizure clinics in Kingston, Ontario and Halifax, Nova Scotia with data acquired at both sites.

The lab was founded to improve the understanding of the comorbidities of epilepsy and the diagnosis and surgical treatment of people with epilepsy primarily through neuroimaging techniques and translation into clinical practice. This has developed into employing more multimodal approaches, including robotic technology, neuropsychology, EEG and machine learning. There will be an opportunity to contribute to other ongoing projects if desired, including the use of multimodal neuroimaging in the planning of epilepsy surgery and robotic assessment of cognitive impairment.

The lab is based in the Centre for Neuroscience Studies at Queen's University, Kingston, Canada and we have active collaborations with the School of Computing here and other universities within Canada and internationally. The lab has an open and collaborative approach and works closely with the co-located District Epilepsy Centre at Kingston Health Sciences Centre that serves patients across South-Eastern Ontario to translate research advances into clinical benefit. Dr. Winston supervises both in the Centre for Neuroscience Studies and graduate programs at the School of Computing.

The ideal candidate will have a strong background in programming (Matlab, Python or similar). Prior experience or a willingness to learn neuroimaging toolkits (e.g. FSL, FreeSurfer, MRtrix), signal processing and machine learning are key. This position is funded for 4 years by the CIHR.

Informal enquiries welcome. For further details:

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