



MSc Studentships in Multimodal Data Integration for Epilepsy Surgery Assessment & Planning

The **WINTER (Winston Neuroimaging and Translational Epilepsy Research) lab** at Queen's University is recruiting two MSc students to work on multimodal data integration for epilepsy surgery.

Epilepsy is the most common serious neurological disorder and a third of patients do not respond to medication and continue to have seizures. This is associated with significant psychosocial consequences and increased mortality. For some, epilepsy surgery can be curative when medication is ineffective. We are introducing advanced MRI acquisition and analysis techniques and better ways of analysing EEG data to pinpoint the source of seizures and offer surgery to more patients.

Specific planned innovations include the utilisation of high-resolution structural MRI and perfusion MRI to identify a lesion or epileptogenic zone, post-processing of structural MRI to localise covert lesions not identified by visual inspection using techniques from the MELD (Multi-Centre Epilepsy Lesion Detection) project, post-processing of EEG data with electrical source imaging and integration of these data into a single 3D model using 3D Slicer.

We are based in the Centre for Neuroscience Studies at Queen's University, Kingston, Canada and have active collaborations with the School of Computing here and other universities within Canada and internationally. We have 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.

The ideal candidates will have experience in programming (Matlab, Python or similar), prior experience or a willingness to learn neuroimaging toolkits (e.g. FSL, FreeSurfer, MRtrix) and the aptitudes to work directly with patients. Dr. Winston supervises both in the Centre for Neuroscience Studies and Translational Medicine graduate programs, but international applicants would need to meet the requirements to be admitted via the Translational Medicine Graduate Program.

<https://neuroscience.queensu.ca/academic/graduate-program>

<https://deptmed.queensu.ca/academics/translational-medicine-graduate-programs>

Informal enquiries welcome. For further details:

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