



Postdoctoral Fellowship in Multimodal Data Integration for Epilepsy Surgery Assessment & Planning

The **WiNTER (Winston Neuroimaging and Translational Epilepsy Research) lab** at Queen's University is recruiting a postdoctoral fellow 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.

Experience with a variety of neuroimaging toolkits (e.g. SPM, FSL, FreeSurfer, MRtrix, 3D Slicer), programming in Python and knowledge or experience of machine learning are all assets. You will develop pipelines for the project and supervise and train at least two new MSc graduate students working on this project (starting September 2024). The position is initially supported by 1 year of funding from the SEAMO Innovation Fund.

Application is via an up-to-date CV, a summary of previous research work and the names of three references. Informal enquiries welcome.

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