

LURA/USRA Posting Information	
Position Type:	<input checked="" type="checkbox"/> Lassonde Undergraduate Research Award- summer research <input checked="" type="checkbox"/> NSERC USRA <input type="checkbox"/> Other (please specify)
Position Title:	Research Assistant/summer researcher
Location:	BCEE 328
Professor:	Hossein Kassiri
Department:	Electrical Engineering and Computer Science
Contact for Professor (Email, phone):	Email: Hossein@eecs.yorku.ca
# of positions available:	2
Project Description (200-500 words maximum)	<p>Monitoring and treatment of neurological disorders using a microelectronic brain implant has been investigated as a promising alternative for patients who are refractory to existing pharmacological solutions. The implanted system is required to record neural activity at high spatial resolution, process recorded signals, and trigger responsive action to control an undesired neurological event such as seizure.</p> <p>Given the fact that brain neuro-electrical activity is originally rooted from cell-level chemical communication among cells, simultaneous monitoring of electrochemical and electrophysiological brain activities could potentially lead to higher sensitivity and specificity in detection of neurological events.</p> <p>In integrated Circuits and Systems Lab we are developing is single-chip solution for multi-modal monitoring of brain activity. While the IC (integrated circuit) design will be done by a graduate student, the envisioned solution also requires characterization and experimental validation of microelectrodes that are designed to be sensitive to a single specific chemical agent. Additionally, a board-level prototype must be developed and tested prior to the IC fabrication for proof-of-concept evaluation.</p>
Duties and Responsibilities of the student:	<p>There are two positions for this project. The successful candidates will be responsible for</p> <ol style="list-style-type: none"> 1. developing a board-level design using off-the-shelf electronic component and available bio-chemical sensors to be used for chemical recording and analyzing the acquired data. 2. Electrical characterization and experimental testing of ion-sensitive microelectrodes.

Summer 2018: LURA/USRA Projects

Skills and Qualifications:	<p>The student should have the following qualifications:</p> <ul style="list-style-type: none"> - Familiarity with electronic circuits and systems. - PCB design experience is a plus. - Self-driven and interested in the field of biomedical electronics
Degrees, courses and Disciplines prerequisite*:	<ul style="list-style-type: none"> - Minimum requirement: EECS 2200, 2210 or equivalent - Preferred: EECS 3611 and EECS3201 or equivalent
Stipend	TBD
Are you willing to host external students? (There is an additional cost.)	Yes
Duration:	16 weeks minimum
Start Date:	05/01/2018 (estimated)
End Date:	08/31/2018 (estimated)
Materials required for application:	TBC

**The projects will be available for viewing to students outside of Lassonde School of Engineering; please be clear what type of programs/pre-requisites are required for the projects.*