



PhD Student - User-Centred Design & Clinical Assessment of BCI-Controlled Exoskeletons

This is a funded position with a term length of four years and offers a benefits package found at [Graduate Students' Association Health & Dental Plan](#).

Location – Work primarily takes place at the University of Alberta – North Campus and at the Glenrose Rehabilitation Hospital in Edmonton.

About the Assistive Technology Labs (AAT Lab) and the Imagination Centre Brain-Computer Interface (BCI) Program

The [AAT-Lab](#) is directed by Dr. Kim Adams in the Faculty of Rehabilitation Medicine of the University of Alberta. The AAT Lab studies the role of assistive technology (AT) for engaging children with significant physical impairments in learning and play. The AAT Lab's clinical research stream supports the evaluation and implementation of AT and assistive robots for children to engage in play and learning. The AAT Lab's technical research is focused on developing new hybrid brain-computer interface (BCI) paradigms, robotic controls, and robotic interface designs.

The [Imagination Centre BCI Program](#) is a clinical and research program directed by Dr. John Andersen and based out of the Glenrose Rehabilitation Hospital. The BCI Program explores solutions to help patients across the lifespan achieve functional goals, increase independence, and enhance participation using BCI technology. The BCI Program is one of very few programs exploring pediatric BCI use globally and is a founding member of BCI-CAN, a coalition of research facilities committed to driving forward pediatric BCI research and innovation.

About the PhD Student Position

Qualified applicants are invited to apply for a PhD position focused on user-centred design and clinical assessment of brain-computer interface (BCI)-controlled exoskeletons. This study is focused on collecting patient, family, and clinician perspectives on BCI-controlled exoskeletons designed for children with neurological impairments and performing clinical evaluations of motor performance while using the exoskeletons.

The successful candidate will be working on a large research team with expertise in mechatronics, control engineering, signal processing, deep learning, and pediatric BCI. This is an interdisciplinary and intersectoral research program, involving engineering, medicine, and rehabilitation medicine faculties. The successful candidate will have strong collaboration and coordination skills to work directly with both research teams at multiple levels, rehabilitation centres, and industry partners to contribute to this research project successfully.



In addition to program-related coursework, the successful candidate will be responsible for mentoring and guiding undergraduate research assistants within the program. The student will receive formal training in the following practical areas:

- i) Biomedical data collection and signal processing
- ii) User-centered design methodologies
- iii) Patient-oriented research strategies
- iv) Clinical motor assessments
- v) Equity, Diversity, and Inclusion

The successful candidate will also have access to opportunities for learning and collaboration with interdisciplinary BCI experts through the BCI-CAN Network.

Duties

- Design experiments/data collection protocols and collect administrative approvals
- Oversee and conduct participant recruitment, research sessions, data collection, and analysis of research results
- Write research grants, scholarship applications, reports, presentations, and manuscripts for publication
- Present at conferences and team meetings
- Train and supervise undergraduate and master's level students
- Foster collaboration and knowledge sharing with partners

Minimum Qualifications

- Completion of a MSc degree in Rehabilitation Sciences, Neuroscience, Kinesiology, or a health-related discipline, OR an engineering discipline with a Biomedical specialization
- Minimum GPA of 3.3
- Keen interest and/or experience with: brain-computer interfaces, assistive technologies, clinical research and methodologies, child development, and/or clinical motor assessments
- Proven ability to work independently
- Strong communication skills and fluency in spoken and written English

Preferred Qualifications

- Comfortable working with technology
- Experience working with children with physical impairments
- Experience with user-centred design or patient-oriented research methodologies
- Interest and experience in interdisciplinary and translational research in collaboration with health scientists, engineers, and the healthcare system



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Application Instructions

Please submit the following documents to bcilab@ualberta.ca:

- Cover Letter
- Curriculum Vitae, including a List of Publications
- Transcripts, compiled as a single PDF document
- References

Please and quote “AAT Lab PhD Position” in the subject line of your email. Documents must be submitted in a .pdf format and named “FirstName LastName – Document Type” (e.g., “Jane Doe – Cover Letter”).

All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.

The University of Alberta is committed to an equitable, diverse, and inclusive workforce. We welcome applications from all qualified persons. We encourage women; First Nations, Métis and Inuit persons; members of visible minority groups; persons with disabilities; persons of any sexual orientation or gender identity and expression; and all those who may contribute to the further diversification of ideas and the University to apply.