Postdoctoral position

Smart dynamic seating and innovative design integrated to power wheelchairs

Center for Interdisciplinary Research in Rehabilitation and Social Integration
Centre intégré universitaire de santé et de services sociaux de la Capitale-Nationale, Québec, Canada

DESCRIPTION

The general objective of the proposed postdoctoral position is to identify, develop and evaluate innovations in mobility and seating integrated to power wheelchairs. The project will include two themes: 1) smart dynamic posture, and 2) innovative design. This project will focus on a user-centered design approach involving power wheelchair primary users, as well as people close to power wheelchair users, such as families, clinicians, etc. known as secondary users.

Smart dynamic posture – The activities related to this R&D theme are part of ongoing research within a larger research project already in progress funded by the Network of Centres of Excellence AGE-WELL (agewell-nce.ca, Portal for the Systematic monitoring and Training of User-Caregiver dyads after-Provision of Assistive Devices (MOVIT+)). The MOVIT+ platform (Optimal Mobility via information Technologies) is a remote access support resource (tele-monitoring and tele-training) currently under development and implementation in various Quebec health organisaitons and is designed for mobility assistive device users, their caregivers and the various stakeholders of the network. As part of this postdoctoral position, focus will be on: 1) identifying sensors that will measure moisture levels and shear forces between the cushion and the user's seat, 2) evaluate the accuracy, validity and reliability of the measurements provided by these sensors; and 3) interfacing the selected sensors with the MOvIT+ platform as well as with commercially available wheelchairs equipped with dynamic positioning systems.

Innovative design –- The activities related to this second research and development (R & D) thematic will consist of*:* 1) identifying emerging technologies and needs in terms of technology development to improve power wheelchairs, 2) identify, from the perspective of the wheelchair user, clinician and the family members, the priority needs in terms of technology development, and 3) develop and test prototypes in connection with the established priorities.

FELLOWSHIP CONTEXT

This postdoctoral position will be conducted as part of a *Mitacs Accelerate* industrial-program postdoc scholarship (mitacs.ca/en/programs/accelerate/industrial-postdoc). The Postdoctoral fellow will therefore be expected to divide his or her time between the Centre for Interdisciplinary Research in Rehabilitation and Social Integration (CIRRIS, www.cirris.ulaval.ca) of the *Centre intégré universitaire de santé et de services sociaux (CIUSSS) de la Capitale-Nationale*, and Amylior Inc. (amysystems.com).

CONDITIONS

The proposed postdoctoral position is 3 years. It will be supervised by Prof. François Routhier, PEng, PhD (Department of Rehabilitation, Université Laval), and Prof. Alexandre Campeau-Lecours, PEng, PhD (Department of Mechanical Engineering, Université Laval). Ideally, it will begin on or before September 1st 2019. The postdoctoral fellow will receive a grant from Mitacs Accelerate Industrial-program worth $50,000 per year. This postdoctoral position is a unique opportunity. The selected candidate will: 1) develop a unique expertise in rehabilitation engineering, 2) develop relationships with, minimally, two stake holders (the company and also wheelchair users and clinicians), 3) divide their time between business and academia (Amylior inc. and CIRRIS), and 4) develop skills related to management and entrepreneurship through Mitacs. In addition to this opportunity, the postdoctoral fellow will have access to training offered by Mitacs and AGE-WELL.

REQUIREMENTS

The sought-after candidates will have a technical profile, ideally with an engineering backgroud (eg. mechanical, biomedical, robotics, mechatronics). Given the importance of interactions as part of the user-oriented approach, the selected candidate must demonstrate skills for working in a clinical setting. Knowledge and interest in the field of rehabilitation and an excellent command of English and French (written and oral) will be considered assets.

CONTACT AND APPLICATION

For more information or to submit your application (single PDF document: letter, curriculum vitae, names / contact details of two referents, copy of the doctoral degree (if completed) and university transcripts), please contact Prof. François Routhier, PEng, PhD, at 418-529-9141 ext. 6256 or francois.routhier@rea.ulaval.ca. Application submissions are ongoing until March 15, 2019.

FOREIGN STUDENTS - WORK PERMIT

Foreign students will need to arrange for a work permit from Citizenship and Immigration Canada (CIC). Depending on the country of origin, CIC may require an Electronic Travel Authorization (eTA) or Temporary Resident Visa to enter Canada. These steps may require a few months.

CIRRIS

The CIRRIS is the research center of the *CIUSSS de la Capitale-Nationale* and is affiliated with Université Laval (Quebec, Canada) (ulaval.ca). Research activities conducted at CIRRIS focus on personal (disability and impairment) and environmental (barriers and facilitators) factors that influence social participation of people with physical disabilities. The dissemination of knowledge and the expertise of its members along with its close ties to clinical, government, private and community partners enable the CIRRIS to support the development of evidence based practice.

AMYLIOR INC.

Amylior inc., a Quebec based company, is a Canadian leader in the field of high-quality power wheelchairs. Since 1997, the company develops, manufactures and markets body positioning systems (dynamic posture) and power wheelchairs that are currently used in six countries (Canada, USA, France, Japan, Australia and New Zealand). This company is heavily involved in R&D for the improvement of existing products and the development of innovations that will meet the needs of its potential customers.