Looking for a PhD student in engineering

We are looking for a doctoral student in engineering for a project in the field of robotics-assisted rehabilitation. **This project would begin as soon as possible.**

Recently, our team built a virtual reality manual wheelchair propulsion simulator that combines visual immersion, tilting, and force feedback. This simulator aims to train wheelchair users to become more autonomous and adopt a propulsion technique that protects their shoulders.

This project aims to **reproduce the dynamics of a manually propelled wheelchair in complex outdoor environments on the simulator**. Specifically, the student will need to:

- Model the dynamics of a manual wheelchair propelled on outdoor sidewalks at different inclinations, on gravel, and during transitions between the sidewalk and the street.
- Characterize this model using an XSens motion capture system, instrumented wheels, and video cameras, and record sound samples.
- Reproduce these conditions on the simulator using motorized rollers (haptic feedback), virtual reality (visual immersion), a D-BOX robotic platform (tilting, vibration, and shocks), and acoustic speakers.

The student will be co-supervised by:

Rachid Aissaoui, PhD, ing. Professor,
Department of Systems Engineering, École de technologie supérieure (ÉTS)
Researcher, Open Innovation Laboratory in Health Technologies (LIO), CHUM Research Center
https://lio.etsmtl.ca

Félix Chénier, PhD
Professor, Department of Physical Activity Sciences, UQAM
Researcher, Mobility and Adaptive Sports Research Laboratory, Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal (CRIR)
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The candidate must demonstrate:

- Prior training related to the project
- Experience with Simulink and/or Unity
- Great autonomy, especially in programming and debugging
- Excellent motivation
- A good academic record
- Good oral and written communication skills

Please send your CV, transcripts, and a motivation letter by email to chenier.felix@uqam.ca