MSc: Enhancing the personalisation of an eHealth behaviour change program (ACCELERATION): using deep learning models of emotional expression

Project summary:

The ACCELERATION program aims to improve behavioural risk factors associated with the development of non-communicable chronic diseases (NCDs: cancer, cardiovascular disease, diabetes). It is a structured 12-week ehealth program that was developed using an integrated knowledge translation process. It primarily targets increasing physical activity, as well as increasing fruit and vegetable consummation, and reducing tobacco smoking. It uses well established behavioural and motivation techniques to enhance intrinsic motivation in participants.

The current funded study will leverage laboratory based tasks and ecological momentary assessment techniques to be able to capture facial and voice-based emotional data. This data will then be used to personalise certain aspects of the ACCELERATION program to enhance individual behavior change. The position will be based at the Montreal Behavioural Medicine Centre (http://mbmc-cmcm.ca), which is a collaborative centre between the CIUSSS-NIM Hôpital du Sacré-Coeur de Montreal, Concordia University, and UQAM

Position summary:

The individual who is selected for this position will be expected to work with study PI's, Drs. Simon Bacon (http://mbmc-cmcm.ca/member/simon-bacon/), Eric Granger (https://www.etsmtl.ca/Professeurs/egranger/Accueil?lang=en-CA), and Kim Lavoie (http://mbmc-cmcm.ca/member/ kim-lavoie-2/), in delivering the project. The PhD student will be able to work on a variety of research-related aspects of the study including:

- Delivery of the psychophysiological and ecological momentary assessment testing protocol
- Recruitment of participants
- Post-testing data processing and analyses
- Development of deep learning based algorithms
- Participating in stakeholder engagement activities

Required Qualifications

- A Bachelor's degree in a related discipline (e.g., Kinesiology, Computer Science, Psychology, Engineering)
- Ability to communicate (orally) in both English and French
- Effective oral and written communication skills
- Excellent interpersonal skills
- Demonstrated research experience (e.g., honours thesis, conference presentations, peer-reviewed publications)

- Ability to work autonomously and take a lead role on projects under the supervision of the principal investigators

Preference will be given to candidates with:

- Prior experience conducting research in at least one of the following areas
    - Stress testing
    - Ecological momentary assessment
    - Cardiovascular, respiratory, or inflammatory marker assessment
    - Applied psychological assessments
    - Multimodal data capture
    - Deep learning models
- Openness to learn new methods and techniques in an applied clinical setting

Provincial, national and international candidates are encouraged to apply

Start date, Duration, Stipend, and Location

The MSc will start in September 2023 (though there is also the possibility of starting during the summer of 2023); funding has already been received.

The funding package consists of a 2-year stipend (consistent with Fonds de Recherche du Quebec funding levels) plus conference / training funding. For out of province and international candidates there are also tuition waivers potentially available.

The successful candidate will be registered at Concordia University in the Department of Health, Kinesiology, and Applied Physiology (www.concordia.ca); the actual work would be conducted at the CIUSSS-NIM, Hôpital du Sacré-Coeur de Montreal (https://rechercheciusssnim.ca/). Please note that the language of instruction at Concordia is English.

To apply, please forward the following:

- A complete curriculum vitae, including summary of GPA's, a full publication list (including hyperlinks where possible) and email contact details for two referees
- A letter of motivation and statement of research accomplishments and future research goals
- An example of written research work

How to apply:

- The complete application package must be emailed to: apply@mbmc-cmcm.ca. Please include "ACCELERATION Emotion Expression MSc" in the subject line.
- Queries about the application should be sent to Dr. Bacon (simon.bacon@concordia.ca).

- The closing date for receipt of applications is **Friday December 2, 2022, 5 pm ET**. Interviews will be conducted in **January 2023** and the successful candidate will need to apply to the University by the official application deadline.