

Master's of Applied Science: Multimodal Emotional Data Collection



General Information

Advisors: Prof. Rachel Bouserhal (ÉTS) and Prof. Sylvie Hébert (UdeM)
Location: École de technologie supérieure (ÉTS), Montréal, Québec, Canada
Starting date: September 2026 or January 2027



1 Description

We are seeking a highly motivated Master's student to contribute to an innovative research project aimed at better understanding the physiological and emotional responses associated with sound-induced distress in individuals with decreased sound tolerance (DST). DST can significantly affect quality of life, leading to discomfort, distress, and avoidance of everyday listening environments. This project aims to develop a multimodal data collection framework to characterize the physiological, behavioral, and subjective responses associated with sound-induced distress. Using wearable technologies, including hearables and other physiological sensors, the student will participate in the design and implementation of a study involving individuals with DST. The project will be co-supervised by Prof. Rachel E. Bouserhal (ÉTS) and Prof. Sylvie Hébert (UdeM) and involves interdisciplinary collaboration among researchers in engineering, audiology, and health sciences.

The student will join the Research in Hearing, Health, and Assistive Devices (RHAD) Lab, directed by Prof. Rachel E. Bouserhal at ÉTS. The laboratory develops advanced signal processing and machine learning algorithms for health monitoring applications using signals captured from wearable devices, with a particular focus on hearables and other unobtrusive sensing technologies. The selected candidate will benefit from a collaborative and multidisciplinary research environment and will work closely with academic, clinical, and community partners.

2 Supervision and Funding

Supervision will be provided by Prof. Rachel Bouserhal (ÉTS, Research in Hearing, Health and Assistive Devices Lab) and Prof. Sylvie Hébert (UdeM, The Tinnitus and Hyperacusis Research Laboratory). Funding is provided for the duration of the Master's through Prof. Bouserhal's FRQ Relève Professorale.

3 Location

ÉTS is located in Montréal, Québec, Canada. Since 2016, Montréal has constantly ranked as Quacquerilli Symonds' Best Student City in North America. Montréal is also recognized for its quality of life. Close to both peaceful rural beauty and exciting ski slopes, this dynamic city offers lively districts and many green spaces. Located in the heart of the city, the ÉTS campus is easily reached by bicycle or public transit.

The RHAD Lab is part of the Department of Electrical Engineering at the ÉTS. We explore the complex interaction between the human body, its environment and the signals it generates. This project is in close collaboration with the Université de Montréal's Tinnitus and Hyperacusis Research Laboratory, affiliated with renowned institutes such as BRAMS, CRBLM and CIRCA, we share an interest in the in-depth understanding of phenomena related to DST.

4 Responsibilities

- Designing experimental protocols and data collection procedures;
- Recruiting and coordinating research participants;
- Collecting physiological and self-reported data;
- Processing and analyzing biomedical signals;
- Developing algorithms for multimodal data analysis;
- Contributing to scientific publications and conference presentations.

5 Eligibility Criteria:

- A Bachelor's degree in Electrical Engineering, Computer Engineering, Biomedical Engineering, Computer Science, or a related field;
- A strong interest in signal processing, machine learning, and digital health technologies;
- Experience with programming (e.g., Python, MATLAB, or equivalent);
- The ability to work collaboratively in interdisciplinary teams;
- Experience in data analysis, biomedical engineering, or health-related research is considered an asset.
- Strong written and oral communication skills in French and/or English.

6 How to Apply

Interested candidates are requested to submit their applications, including a CV, academic transcripts, contact information of two references, and a cover letter explaining their interest in the position and their relevant skills to Prof. Rachel Bouserhal [Rachel.Bouserhal@etsmtl.ca]. We encourage all qualified candidates to apply, regardless of origin, gender, sexual orientation or disability status. We are committed to diversity and inclusion in our team.