Postdoctoral Fellowship:
Facial Expression Analysis and Auditory Perception

RHAD - LAB
Research in Hearing, Health & Assistive Devices

ÉTS
Le génie pour l'industrie

General Information

Advisors: Prof. Rachel Bouserhal (ÉTS) and Prof. Sylvie Hébert (UdeM)
Location: École de technologie supérieure (ÉTS), Montréal, Québec, Canada
Starting date: As soon as possible

1 Description

We are looking for a highly motivated and talented post-doctoral fellow to join our dynamic research team. The fellow's role is to develop an algorithm to identify, characterize and link various subtle facial expressions to the sensory and affective dimensions of loudness. This task will be accomplished by analyzing reactions to stimuli of different valence and intensity. Data analysis involves the use of computational linguistics, video data analysis and facial expression analysis using data-driven approaches and machine learning (ML) techniques. The underlying aim of this project is significant: to attempt the objective characterization of sound intensity perception. This objective measurement will contribute to a better assessment of loudness disorders, such as hyperacusis, which involve heightened sensitivity to sound. The theoretical underpinnings of this project are rooted in the existing literature on pain, where studies have demonstrated the distinction of facial expressions according to different dimensions of pain.

Joining our team offers an exceptional opportunity to merge the fields of facial recognition, auditory perception and ML. If you are passionate about interdisciplinary research and have strong skills in image processing, facial recognition and data analysis, we strongly encourage you to apply. Your contribution will be crucial in opening new perspectives in the field of hearing health and developing innovative solutions to the challenges of auditory perception.

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 one year through Prof. Bouserhal's NSERC Discovery Grant.

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 Research in Hearing, Health, and Assistive Devices (RHAD) is part of the Department of Electrical Engineering at the ÉTS. We explore the mysteries of 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 tinnitus and hyperacusis.

4 Responsibilities

- Apply facial recognition techniques to detect and classify facial expressions present in video clips.
- Work closely with the audiology research team to refine research hypotheses and project objectives.
- Work with previously collected and annotated video datasets.
- Analyze data to establish links between facial expressions and participants' perceptual assessments.
- Work closely with the PhD student who supervised the data collection and psychoacoustic analysis.

5 Eligibility Criteria:

- A recently obtained PhD (or in the process of obtaining) in a relevant field such as electrical engineering, computer science, cognitive psychology, or any related field.
- Ability to manipulate, process and analyze diverse video datasets, including videos of different qualities.
- Solid experience in relevant core competencies such as facial recognition, ML, image processing.
- Evidence of research achievements, ideally demonstrated by publications in leading journals in the relevant fields.
- Ability to collaborate effectively in an interdisciplinary team.
- Excellent 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, a cover letter explaining their interest in the position and their relevant skills, together with details of professional references, to 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.