



INTERNSHIP PROPOSAL:

EEG markers of emotional voice processing in others and the self

Supervisors

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Context

The internship is part of project CREAM (“Cracking the Emotional Code of Music”), and based in the “Perception and Sound Design” team of IRCAM (1 Place Stravinsky, 75004 Paris).

IRCAM (Institut de Recherche et Coordination en Acoustique et Musique), created by Pierre Boulez in 1977, is the world's largest computer music research institute as well as an important nexus for contemporary music creation (<http://ircam.fr>). The institute is ideally located at the center of Paris, next to the Pompidou Museum of Modern Art.

Based in IRCAM since Oct. 2014, the CREAM project is funded by an ERC Starting Grant and aims to further our understanding of how music and voice create emotions, by combining the methods of cognitive neurosciences and audio signal processing.

More information: <http://cream.ircam.fr>

Project description

The detection of emotional information in speech is an important ability for social interactions (Juslin et al., 2005). However, in some cases it may be more relevant to accurately extract affective information from one type of voice rather than another, for example when it's your best friend versus a neighbor that you don't like. Additionally, the question remains whether people process the affective acoustic information in their own voice in the same manner as they would process this information in someone else's voice (Pinheiro et al., 2016).

The aim of this internship project is to investigate how familiarity, social relevance and self-referential processes influence the neural processes involved in emotional speech perception. Research will involve behavioral and EEG data collection (specifically, with the Mismatch Negativity (MMN) ERP paradigm – Näätänen et al, 2007) to study the processes involved in emotional voice perception, as well as the use of new voice transformation technologies developed in the CREAM project (Rachman et al., 2016) as well as within IRCAM (http://www.dailymotion.com/video/x20jlil_voix-et-identite_tech).

Role in the project

The intern will participate in the design and programming of the experiment, data collection, as well as data analysis. The internship will provide experience with programming in Python (experimental design) and Matlab (EEG data analysis), as well as conducting psychophysiological research.

Profile

We are looking for a Master's student of a relevant discipline (cognitive neuroscience, psychology) with an interest in emotion research and EEG methods. Prior experience with programming in MATLAB and/or Python, as well as experience with EEG data collection and analysis, is preferred. The laboratory's working language is English. The intern is expected to attend lab meetings and ultimately present his/her data as well (either in French or English).

Conditions

Contractual aspects: The internship will be the object of a signed convention between the student, the university and CNRS (Centre National de la Recherche Scientifique).

Duration: 5-6months (e.g. Feb-June 2017)

Workplace: PDS team, IRCAM, 1 Place Stravinsky, 75004 Paris (France)

Remuneration: 541,06€/month (fixed national rate)

Applications should consist of a CV and a cover letter sent by email to Laura Rachman (laura.rachman@ircam.fr) and Jean-Julien Aucouturier (aucouturier@gmail.com). Interviews for selected applicants will be held in November-December 2016.

REFERENCES

- Juslin, P.N., & Scherer, K.R. (2005). Vocal expression of affect. *The new handbook of methods in nonverbal behavior research*, 65-135.
- Näätänen, R., Paavilainen, P., Rinne, T., & Alho, K. (2007). The mismatch negativity (MMN) in basic research of central auditory processing: a review. *Clinical Neurophysiology*, 118(12), 2544-2590.
- Pinheiro, A.P., Rezaii, N., Nestor, P.G., Rauber, A., Spencer, K.M., & Niznikiewicz, M. (2016). Did you or I say pretty, rude or brief? An ERP study of the effects of speaker's identity on emotional word processing. *Brain and Language*, 153-154, 38-49.
- Rachman, L., Liuni, M., Arias, P., Lind, A., Johansson, P., Hall, L., Richardson, D., Watanabe, K., Dubal, S. and Aucouturier, J.J. (2016) DAVID: An open-source platform for real-time transformation of infra-segmental emotional cues in running speech. <http://biorxiv.org/content/early/2016/01/28/038133>