

2019 Call For Papers Submission

Primary Presenter Basic Information

Submission Deadline: September 2, 2018

I have read and will adhere to the NHCA policy on the Call for Papers. *

Yes

Primary Presenter

Name: *

Rachel Bouserhal

Credentials:

PhD

Company /

University: *

Ecole de technologie superieure

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Primary Presenter

Biography: *

Rachel is a passionate teacher, an inquisitive researcher, an adventurous cyclist and an ardent music lover. She completed her B.S and M.S in Electrical Engineering at MSU. She moved to Montreal in 2012 to follow her research interests. In June 2016, she completed her PhD at École de technologie supérieure (ÉTS). During her PhD she developed a low-complexity in-ear speech enhancement algorithm and modeled the vocal effort of talkers wearing HPDs. She is now a postdoctoral fellow at NSERC-EERS Industrial Research Chair in In-Ear Technologies. She works on understanding the audio-phonation loop and the role of signal processing and machine learning in the advancement of in-ear technologies.

Presentation Information

Applicable

Professional

Fields of the

Proposed

Presentation

***Other**

Presentation

Type: *

Engineering

Friday/Saturday Platform

Presentation

Title: *

Classification of nonverbal human produced audio events: a pilot study

Presentation

Description: *

The accurate classification of nonverbal human produced audio events opens the door to numerous applications beyond health monitoring. Voluntary events, such as tongue clicking and teeth chattering, may lead to a novel way of silent interface command. Involuntary events, such as coughing and clearing the throat, may advance the current state-of-the-art in hearing health research. The challenge of such applications is the balance between the processing capabilities of a small intra-aural device and the accuracy of classification. In this pilot study, 10 nonverbal audio events are captured inside the ear canal blocked by an intra-aural device. The performance of three classifiers is investigated: Gaussian Mixture Model (GMM), Support Vector Machine and Multi-Layer Perceptron. Each classifier is trained using three different feature vector structures constructed using the mel-frequency cepstral (MFCC) coefficients and their derivatives. Fusion of the MFCCs with the auditory-inspired amplitude modulation features (AAMF) is also investigated. Classification is compared between binaural and monaural training sets as well as for noisy and clean conditions. The highest accuracy is achieved at 75.45% using the GMM classifier with the binaural MFCC+AAMF clean training set. Accuracy of 73.47% is achieved by training and testing the classifier with the binaural clean and noisy dataset.

Presentation Learning Objectives

At least 1 (required) with up to 3 educational objectives required by AAOHN and CNE credit approval for ASHA for CEU approval.

Presentation

Learning

Objectives No.

1: *

Discuss the potential of the classification of in-ear non verbal events

Presentation

Learning

Objectives No. 2:

Presentation

Learning

Objectives No. 3:

Explain the advantages related to in-ear dosimetry

Co-Presenter Information:

Please list the name(s) and email(s) of all co-presenter(s) that will be presenting at the conference. NOTE: ALL co-presenters listed here will need to complete a co-presenter form. A link to the form can be provided after the submission of this form. If no co-presenters please indicate not applicable in the fields below.

Co-Presenter
Name(s): * N/A

Co-Presenter
Email(s): * N/A

Co-Author(s) Information

Please list the name(s) of all co-author(s) that will NOT be presenting at the conference. NOTE: ALL co-authors listed here do NOT need to complete any forms.

List co-authors
not presenting: Philippe Chabot, Milton Sarria-Paja, Patrick Cardinal, Jeremie Voix

Additional Forms Needed

These forms MUST BE INCLUDED in order for your submission to be reviewed. Please double check they have been completed, and you are not submitting a blank form. ***IF YOU ARE HAVING TROUBLE UPLOADING/SUBMITTING THESE FORMS, EMAIL nhcaoffice@hearingconservation.org OR CALL (303) 562-1924. Thank you.

Are you able to

provide your own
laptop and LCD
projector? No

Are you willing to
allow other
presenters to use
your laptop or
LCD projector
during the
conference? * No

Are you willing to
serve as a
moderator for any
of the sessions? Yes

If yes, when will
you be available
for moderating
the sessions? Thursday Morning
 Thursday Afternoon
 Friday Morning
 Friday Afternoon
 Saturday Morning
 Saturday Afternoon

Would you like to
moderate a
breakfast round
table chat? No

If yes, please
provide us with
the topic