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Using behavioral features in tablet-based auditory emotion recognition studies

Davide Carneiro, Ana P. Pinheiro, Marta Pereira, Inês Ferreira, Miguel Domingues, Paulo Novais

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rhythm. These aspects are essential for an efficient process of verbal communication between speaker and listener, and allow one to perceive the emotional state, intentions or personality traits of the other. The ability to convey and to accurately and rapidly decode emotions is fundamental for the success of communication and social interactions [2].

This paper introduces an innovative instrument to assess auditory emotional recognition that can be used both in research and clinical settings, focused on a Tablet. The user interacts with a mobile application to provide feedback about the auditory stimuli. To do so, the participant selects which one of several emotion words (arranged in buttons and set by the expert when defining the study) best characterizes the emotion conveyed by the voice. The participant also classifies the valence, authenticity and intensity of the emotion that was expressed. While developed specifically for the field of auditory emotion recognition, the system can be easily adapted to other domains. Compared with more traditional assessments, this application aims to provide a faster and more dynamic way of assessing vocal emotional recognition in healthy subjects as well as in clinical populations. Moreover, this application incorporates concepts from Context-aware Computing [3], Ambient Intelligence [4] and Behavioural Biometrics [5], providing an innovative and interesting plethora of new variables that will significantly enrich these studies.

1.1. Related Work

This multidisciplinary work brings together research from different fields, including computer science (namely human-computer interaction) and psychology. In this section we review some of the related work in these fields. While there are many works in the field of auditory emotion recognition in the field of psychology, these are all from a purely psychological perspective. Similarly, many researchers have studied human-computer interaction (although not so many have studied it with older users). However, this literature review shows that these two fields have never been brought together in the past.

From a psychological perspective, auditory emotion recognition refers to the capacity of a listener to infer emotions from sounds in the environment, including the voice. Studies in the last decades have consistently demonstrated differences in the processing of neutral vs. emotional cues. For example, compared to neutral cues, emotional vocal stimuli tend to capture more attention resources (e.g. [6, 7]) to be associated with faster responses

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