Monitoring of voice over a long period with smartphone applications and contact microphone

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ABSTRACT

In recent years, the growing interest in the recognition of voice disorders as occupational diseases has required screening methods adaptable to the clinical requirements, capable to extend the collection of baseline data. In this framework, the use of smartphones has gained increasing interest, thanks to advancements in digital technology, which made them suitable for recording and analyzingacoustic signals. Two smartphone applications, based on the Voice Care® technology, have been developed for long-term monitoring of voice activity when combined with a cheap contact microphone embedded in a collar. The applications have been tested in laboratory and used for the monitoring of teachers at kindergarten, primary school, and university. Vocal Holter App allows the selection of short and long term monitoring mode, and three different clusters of vocal parameters related to intensity, intonation, and load, respectively. Most of the results are based on the distributions of occurrences of vocal parameters. A headlight informs the person under monitoring of pathologic voice. Vocal Holter Rec allows data recording and to perform a personalized analysis based on updated parameters. The equipment allows downloading and saving data on a dedicated web site for further processing, comparisons over time, or sharing with physicians or rehabilitators.