

Dysphonic Voice Detection for Speakers' Biometry

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Phonation distortion leaves relevant marks in a speaker's biometric profile. Dysphonic voice production may be used in the biometrical speaker characterization. In the present paper phonation features derived from the glottal source (GS) parameterization after the vocal tract inversion is proposed for dysphonic voice characterization in Speaker Verification tasks (Gómez, 2012). Phonated speech segments from a telephonic database of 100 male speakers (Khoury, 2013) are combined in a 10-fold cross-validation task to produce the set of quality measurements exposed in the templates of Fig. 1. Shimmer, mucosal wave correlate, vocal fold cover biomechanical parameter unbalance and a subset of the GS cepstral profile produce accuracy rates as high as 99.57 for a wide threshold interval (62,08-75.04%). An Equal Error Rate of 0.64 % can be granted. Possible applications are Speaker Verification and Dysphonic Voice Grading.

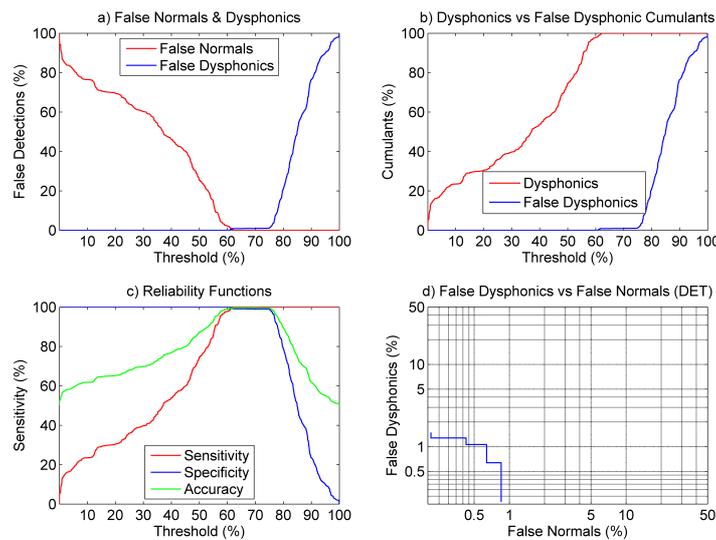


Figure 1 a) False detection rate in terms of detection threshold. b) Dysphonic and False Dysphonic Detection Cumulants (Tippett Plots). c) Merit figures: Sensitivity, Specificity and Accuracy. d) Detection Error Trade-off curves (Martin, 1997).

References

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