

Speaker recognition based on short Polish utterances

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Automatic speaker recognition by a computer system is an attractive functionality, which can be used e.g. in various types of call-center systems to verify the identity of speakers. During the experiments we used a databases of short Polish utterances described in paper [1]. The aim of my (our) research is fast speaker recognition based on recordings of duration about 1 s, while typically automatic speaker recognition systems need about 7 s. A selection of the speaker during the verification stage is realized by means of the Gaussian mixture model (GMM) approach. The speech preprocessing includes an algorithm for automatic removal of silence in the speech signal sequence as discussed in [2]. Experiments described in [2, 3] proved that removing silence from speech significantly improves speaker recognition even if the modelled speech contains only several words. To determine how each coder influences on the speaker recognition accuracy, we tested four GSM coders (AMR, EFR, FR, and HR) in matched conditions. The DET (*detection error tradeoff*) plots of the results of this experiment are shown in Fig. 1 [4]. Chosen parameters led to improvement of recognition accuracy from 26% to 16% EER (*equal error rate*).

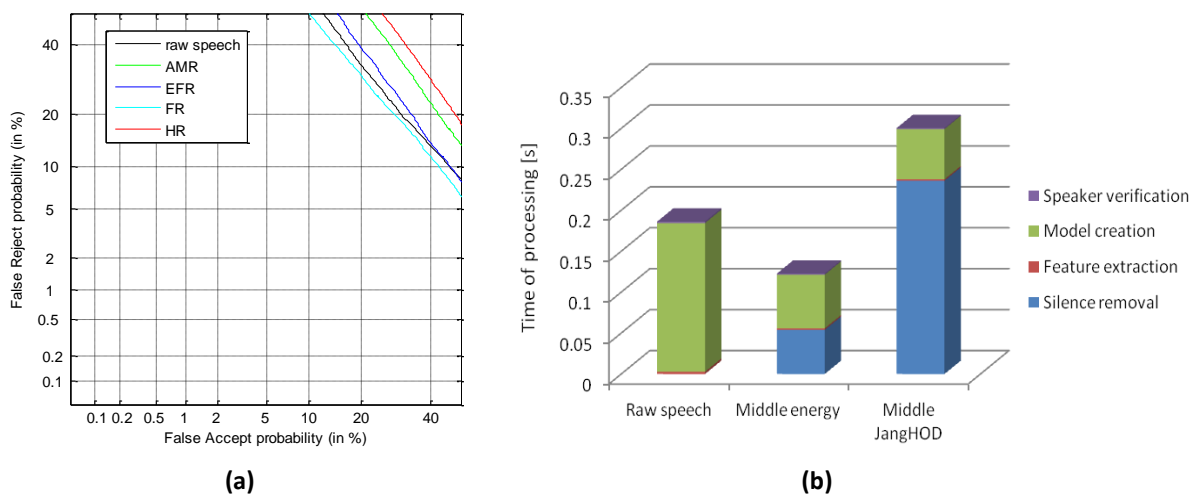


Fig. 1 Results of experiment of speaker recognition for matched GSM conditions [4]: (a) DET plot (False Reject vs. False Accept probability), (b) sum of times of computation without removing silence (Raw speech), and with removing silence by Middle energy and Middle Jang HOD algorithms.

References

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