

Effect of Clinical Depression on Automatic Speaker Verification

Authors : Sheeraz Memon, Namunu C. Maddage, Margaret Lech, Nicholas Allen

Abstract : The effect of a clinical environment on the accuracy of the speaker verification was tested. The speaker verification tests were performed within homogeneous environments containing clinically depressed speakers only, and non-depressed speakers only, as well as within mixed environments containing different mixtures of both clinically depressed and non-depressed speakers. The speaker verification framework included the MFCCs features and the GMM modeling and classification method. The speaker verification experiments within homogeneous environments showed 5.1% increase of the EER within the clinically depressed environment when compared to the non-depressed environment. It indicated that the clinical depression increases the intra-speaker variability and makes the speaker verification task more challenging. Experiments with mixed environments indicated that the increase of the percentage of the depressed individuals within a mixed environment increases the speaker verification equal error rates.

Keywords : speaker verification, GMM, EM, clinical environment, clinical depression

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