A STUDY ON THE IMPACT OF BACKGROUND MODEL IN GMM-UBM BASED SPEAKER VERIFICATION IN MULTI-SENSOR ENVIRONMENT

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ABSTRACT

In the traditional GMM-UBM based speaker verification (SV) system; it has been observed that the performance of the system depends upon the UBM data selection. Recording environment and specification of the imposter data influences the performance of the system. In this paper, we use two different dataset NIST SRE 2003 and a newly developed database of Arunachali Languages of North East India called Arunachali Language Speech Database (ALS-DB) to analyze the influence of UBM data selection on the GMM-UBM based speaker verification in multi-sensor environment. It has been observed that in multi-sensor environment, performance degradation due to sensor variability is more prominent in comparison to environmental variability of the background model. It has been observed that for same sensor, the average performance degradation due to change in background speaker model is 2.65% in terms of EER whereas for the same background model, the degradation due to sensor variability is 6.34%.

KEYWORDS: GMM-UBM, MFCC, Speaker, Verification