DEVELOPMENT OF A NOVEL VOICE VERIFICATION SYSTEM USING WAVELETS

**ABSTRACT**

This paper presents a novel voice verification system using wavelet transforms. The conventional signal processing techniques assume the signal to be stationary and are ineffective in recognizing non stationary signals such as the voice signals. Voice signals which are more dynamic could be analyzed with far better accuracy using wavelet transform. The developed voice recognition system is word dependant voice verification system combining the RASTA and LPC. The voice signal is filtered using the special purpose voice signal filter using the Relative Spectral Algorithm (RASTA). The signals are denoised and decomposed to derive the wavelet coefficients and thereby a statistical computation is carried out. Further the formant or the resonance of the voices signal is detected using the Linear Predictive Coding (LPC). With the statistical computation on the coefficients alone, the accuracy of the verifying sample individual voice to his own voice is quite high (around 75% to 80%). The reliability of the signal verification is strengthened by combining entailments from these two completely different aspects of the individual voice. For voice comparison purposes four out five individuals are verified and the results show higher percentage of accuracy. The accuracy of the system can be improved by incorporating advanced pattern recognition techniques such as Hidden Markov Model (HMM). Keywords: LPC, RASTA, Voice verification model