4. CONCLUSION

In this paper, we have proposed a new speech compression technique integrating a psychoacoustic model and uniform Filter Bank which is designed using optimization. The role of the psychoacoustic model is to determine which portions of the speech signal to remove without loss of sound quality to the human ear. The proposed technique was evaluated and compared to a second technique based on psychoacoustic model and MDCT (Modified Discrete Cosine Transform) filter banks having 32 filters. This evaluation is performed by computing the bits before and after compressing, SNR, PSNR, NRMSE and PESQ. The obtained results from bits before and after compressing, SNR, PSNR, NRMSE and PESQ, show that the proposed technique outperforms the other compression technique (based on the psychoacoustic model and the MDCT filter banks of 32 filters). In fact, in term of perceptual quality and according to SNR, PSNR and NRMSE and PESQ, the reconstructed speech signals obtained after compression/de-compression using the proposed technique, have a better perceptual qualities compared to those obtained from the application of the second compression technique. Moreover, in term of sizes of the reconstructed speech signals and Compression Ratios, the proposed technique permits to obtain better Compression Ratios compared to those obtained by the second technique. We have also evaluating the proposed technique by comparing it to a third speech compression technique based on Discrete Wavelet Transform (DWT) and VAD (Voice Activity Detection). This comparision is also in term of SNR, PSNR, NRMSE and CR and the obtained results show that the proposed technique outperforms the third technique based on DWT and VAD.

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