Multichannel Data Compression using Wavelet Subbands Arranging Technique

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Abstract

To reduce the amount of data and preserve necessary signal quality for multichannel data transmission in many applications such as meteorology, or telemedicine, a new technique called WSAT is presented. The proposed technique is designed to deal with the large amount of multichannel data for transmission, and real-time analysis. The proposed approach has exact control on the bit rate in order to achieve the required quality. For different applications, the proposed method is tested. For telemedicine, the method is employed on selected records from the MIT-BIH arrhythmia database. For meteorology, climate data from Nevada climate change database is utilized. From the obtained results, it is concluded that the proposed technique is an appropriate approach to simultaneously compress multichannel data with significant low compressed data rate at low error. As an example, APRD values for multichannel ECG compression is mostly less than 5% which is recommended by the American Heart Association for routine visual readings of compressed and reconstructed ECG signals.
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Index Terms

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Keywords

Meteorology Multichannel compression Telemedicine Wavelet WSAT.