Abstract

Evolution of medical imaging has turned out as a boon for medical industry as it provides efficient diagnosis and monitoring of diseases. Compression of medical images helps accommodation of large medical data in limited storage space and fast transmission. The main aim of this paper is to compress medical images with no loss of clinical data using a lossless and adaptive prediction technique. The paper presents a prediction scheme adaptive to gradients defined in four directions. The proposed prediction scheme is based on the idea that the causal pixel in the direction of least gradient value contributes maximum in prediction. Before entropy encoding, the residual errors obtained are grouped on the basis of maxplane coding which further enhances coding efficiency. The proposed work is compared with basic DPCM technique and state-of-the-art CALIC scheme. Experimental results show compression ratio for proposed method for medical images on average is 9.65% and 30.38% better than the CALIC scheme and basic DPCM method respectively while bit rates for proposed method is 6.51% and 30.86% better than CALIC scheme and DPCM method respectively.
References


Index Terms

Computer Science  Image Processing

Keywords

adaptive prediction, bit rate, compression ratio, gradient estimation.