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RESEARCH ARTICLE

Multiple Description Coding Based on Hadamard Transform

S. Radhakrishnan[1], G.Jameena[2], M. Mohamed Sathik[3]

[1, 2] Kamaraj College of Engineering & Technology & Anna university, India

[3]Sadakathullah Appa College, M.S. University, India

[1] radhakrishnanit@kcetvnr.org; [2] jameenait@kcetvnr.org; [3] mmdsadiq@gmail.com

Abstract - Multiple description coding is one of the coding techniques used in the non-prioritized networks to transmit image. In this coding method, the image is split into two or more descriptions and compressed with a controlled level of redundancy. Because of the introduced controlled redundancy the image can be recovered from the other descriptions. Due to this there is a slight degradation in the recovered image. A previous paper used Hadamard transform to compress the image in progressive coding. It is an iterative process in which Hadamard transform is used iteratively to produce the compressed image. By this 25% of the pixels are sent as it is. From the two system parameters M and Δ, the value temp is calculated. 75% of the image is Hadamard transformed, divided by temp and quantized by the system parameter, M. This yields $\lceil \log M \rceil$ ***bits per pixel. Thus the compressed file has the size 0.25*8+0.75**** $\lceil \log M \rceil$***. This gives a compression ratio of 8/(0.25*8+0.75**** $\lceil \log M \rceil$***). By the virtue of the Hadamard transform in this paper 75% of the image has a compression ratio of 8/*** $\lceil \log M \rceil$***. This is further split into two descriptions along with the remaining 25% of the image which is compressed with DCT2 transform and split into two descriptions. A good compression ratio per description and PSNR after decompression is achieved by using this proposed algorithm.***

Keywords - Hadamard transform; Multiple Description Coding; Pairwise Correlating Transform; Index Assignment; Progressive Coding

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