عنوان مقاله:

Image Quality Against Image Compression Ratio, DCT Based Image Compression Research with Genetic Algorithm

محل انتشار:

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خلاصه مقاله:

Image compression is one of the fundamental research filed in image processing which had a lot of well-known algorithms up today. All of them which have been made by modern and efficient methods like Webp, JPEG۲۰۰۰ and even HEVC have an intense competition over amount of compression versus change of information in the image. In this research the aim was to find the best optimum compression ratio of different grayscale pictures based on various parameters measured by the Genetic Algorithm (GA). For this aim, we had two different masks for removing the coefficients of Discrete Cosine Transform (DCT) of each image, the first was a diagonal mask ranging from ۵-۹۵% of the size of the picture and the second was a circular mask where its centre was at the bottom right of the DCT of each image (also raging ۵-۹۵% of the size of the picture). After multiplying these masks with the DCT of each image and performing Inverse DCT (IDCT) on all of them to take back the images to spatial domain. After using GA and computing image quality parameters (Mean Absolute Error (MAE), Mean Square Error (MSE), Peak Signal-to-Noise Ratio (PSNR), etc.) and comparing them for different values of masking, the best compression ratio was found. For the images used in this research, it was found that a diagonal mask was best suited for achieving the most compression ratio and the circular mask had less wasted information.

کلمات کلیدی:

Image compression, Discrete cosine transform (DCT), Genetic algorithm, Diagonal and circular mask, Image quality