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| Abstract |  |
| In today’s communicative and multimedia computing world, JPEG images play a vast consequential role. The JPEG images have been able to satisfy the users by fulfilling their demand of preserving numerous digital images within considerably less storage space. Although the JPEG standard offers four different sorts of compression mechanism, among them the Baseline JPEG or Lossy Sequential DCT Mode of JPEG is most popular since it can store a digital image by temporarily removing its psychovisual redundancy and thereby offering a very less storage space for a large image. Again, the computational complexity of Baseline JPEG is also consider- ably less as compression takes place in Discrete Cosine Transform domain. Therefore, Baseline JPEG is substantially useful while storing, sharing and transmitting digital images. Despite removing a large amount of psychovisual redundancy, the Baseline JPEG still contains redundant data in DCT domain. This paper explores the fact and introduces an improved technique that modifies the Base- line JPEG algorithm. It describes a way to further compress a JPEG image without any additional loss while achieving a better compression ratio than that is achievable by Baseline JPEG. The contribution of this work is to incorporate a simple mathematical series with Baseline JPEG before applying optimal encoding and perform a Selective Quantization that essentially does not loss any information after decompression but reduces the redundant data in DCT domain. The proposed technique is tested on over 200 textbook images that are extensively used for testing standard Image Processing and Computer Vision algorithms. The experimental results show that our proposed approach achieves 2.15% and 14.10% better compression ratio than that is achieved by Baseline JPEG on an average for gray-scale and true-color images respectively. | |