Image Restoration using 3-Dimensional Discrete Cosine Transform

Abstract

Image restoration is one of the major issues in the field of image processing. Generally, images are corrupted due to the ageing effect. The previous techniques are based on only single domain i.e., either local domain or non-local domain. This paper presents a new technique called “Image restoration using 3-dimensional discrete cosine transform” which comprises of two domains. Initially, smoothing of image is performed with the help of horizontal and vertical difference operators in the local domain and then synthesizes the textures with the help of discrete cosine transform in non-local domain. A split bregman iterative algorithm is developed to make these two domains more tractable and robust. In this paper, the problem of removing text in an image and filling the corrupted regions is dealt with the help of proposed technique. The proposed method achieves significant performance improvements over the existing state-of-art schemes.

References
1. “Image Inpainting-Automatic Detection and Removal of Text From Images” by Uday Modha and Preeti Dave
2. “Region filling and Object Removal by Exemplar-Based Image Inpainting” by A. Criminisi, P. P’erez and K. Toyama
5. “Point wise shape-adaptive DCT for high quality denoising and deblocking of grayscale and color images” by V.Katkovnik, A.Foi and K.Egiazarian.
12. R.Fergus and D.Krishnan “Fast image deconvolution using hyper laplacian priors”.
15. “3D data denoising and inpainting with the fast curvelet transform” by A. Woiselle, J. L. Starck, and M. J. Fadili.
22. Image sharpening using un-sharp filters

Index Terms

Computer Science Image Processing
Keywords

Discrete cosine transform, ageing effect, Split-bregman algorithm