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Design and Implementation of Image Super-Resolution for Myocardial Image

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Abstract : Super-resolution is the technique of intelligently upscaling images, avoiding artifacts or blurring, and deals with the recovery of a high-resolution image from one or more low-resolution images. Single-image super-resolution is a process of obtaining a high-resolution image from a set of low-resolution observations by signal processing. While super-resolution has been demonstrated to improve image quality in scaled down images in the image domain, its effects on the Fourier-based technique remains unknown. Super-resolution substantially improved the spatial resolution of the patient LGE images by sharpening the edges of the heart and the scar. This paper aims at investigating the effects of single image super-resolution on Fourier-based and image based methods of scale-up. In this paper, first, generate a training phase of the low-resolution image and high-resolution image to obtain dictionary. In the test phase, first, generate a patch and then difference of high-resolution image and interpolation image from the low-resolution image. Next simulation of the image is obtained by applying convolution method to the dictionary creation image and patch extracted the image. Finally, super-resolution image is obtained by combining the fused image and difference of high-resolution and interpolated image. Super-resolution reduces image errors and improves the image quality.

Keywords : image dictionary creation, image super-resolution, LGE images, patch extraction
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