عنوان فارسی مقاله:
بررسی روش‌های تبدیل موجک برای افزایش وضوح تصویر

عنوان انگلیسی مقاله:
Wavelet Transform Techniques for Image Resolution Enhancement: A Study

توجه!
این فایل تنها قسمتی از ترجمه می‌باشد. برای تهیه مقاله ترجمه شده کامل با فرمت ورد (قابل ویرایش) همراه با نسخه انگلیسی مقاله، اینجا کلیک نمایید.
VII. IMAGE RESOLUTION ENHANCEMENT METHOD USING SWT AND DWT [7]

The main loss in image resolution enhancement by using interpolation is on its high frequency components (i.e., edges), which is due to the smoothing caused by interpolation. Edges play a very important role in image. To increase the quality of the super resolved image, it is essential to preserve all the edges in image. In [7] work, DWT has been employed in order to preserve the high frequency components of the image (i.e., edges). The redundancy and shifts invariance of the DWT mean that DWT coefficients are inherently interpolable. In this correspondence, one level DWT (with Daubechies 9/7 as wavelet function) is used to decompose an input image into different subband images. Three high frequency subbands (LH, HL, and HH) contain the high frequency components of the input image (i.e., edges). In this technique, bicubic interpolation with enlargement factor of 2 is applied to high frequency subband images. Information loss occurs due to downsampling in each of the DWT subbands caused in the respective subbands. That is why SWT (Stationary Wavelet Transform) is used to minimize this loss.

The robustness and sharpness of the super-resolved image are important factors. A new method is proposed to improve the quality of the superresolved image. This method is based on the use of SWT and DWT. The main idea is to preserve the edges in the super-resolved image. The SWT is used to decompose the input image into subbands. The high frequency subbands contain the edges. The DWT is used to preserve the high frequency components of the image. The redundancy and shifts invariance of the DWT mean that DWT coefficients are inherently interpolable. In this correspondence, one level DWT (with Daubechies 9/7 as wavelet function) is used to decompose an input image into different subband images. Three high frequency subbands (LH, HL, and HH) contain the high frequency components of the input image (i.e., edges). In this technique, bicubic interpolation with enlargement factor of 2 is applied to high frequency subband images. Information loss occurs due to downsampling in each of the DWT subbands caused in the respective subbands. That is why SWT (Stationary Wavelet Transform) is used to minimize this loss.