

## 基于Contourlet的改进双线性插值图像超分辨率算法

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摘要:

为了尽可能的保持CCD图像的基本信息, 提高图像的视觉效果和空间分辨率, 本文提出一种基于Contourlet与改进双线性插值算法。该算法增加双线性插值的误差补偿项。利用sobel算子设定插值点的边缘方向, 得到初始放大图像。利用Contourlet提取高频成份, 原始图像幅值增强充当低频部分, 再经过Contourlet逆变换得到高分辨率图像。实验结果表明, 相对于传统的图像放大算法, 该算法考虑到全局相关性, 得到更加清晰的边缘信息。

关键词: 图像放大; 超分辨; Contourlet变换; 误差补偿

## Using improved bilinear interpolation and Contourlet transformation to zoom images for super-resolution

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**Abstract:**

In order to preserve the basic information of CCD images and to improve their visual effect and space resolution, a novel image zooming algorithm is proposed by using improved bilinear interpolation and Contourlet transformation. The proposed algorithm incorporates the error-amended part into the bilinear interpolation algorithm. Directions of the interpolation points are determined by the Sobel operator, then we get a preliminary zoomed image. High-frequency components are got by a Contourlet transformation, and low-frequency components are replaced by the enhanced amplitude of the original image. A high-resolution image is achieved by inverse Contourlet transformation. The experimental results indicate that, compared with traditional image zooming algorithms, this algorithm can get clearer and sharper edges due to considerations of global pixels correlation of the original image.

**Keywords:** image zooming; super-resolution; Contourlet transformation; error-amended sharp edge scheme

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