使用線性估測與去雜訊法的半色調影像還原技術

井明智、張世旭

E-mail: 9607684@mail.dyu.edu.tw

摘 要

本論文提出以線性估測法將半色調影像還原為灰階影像。所提出的方法步驟為：（1）輸入一張灰階訓練影像與其半色調影像，將半色調影像各像素分類，共分成18類；（2）以線性估測法（linear estimation）估測各類像素的最佳權重遮罩濾波器；（3）輸入測試半色調影像，將各像素分類；（4）各類像素運行該類的最佳權重遮罩濾波器，得到還原的逆半色調影像；（5） 結合WInHD方法，最後得到還原影像。分類的方法是將半色調影像使用高斯平滑濾波器處理得到一灰階影像，再對影像運行Canny邊緣（edge）法處理，得到二值的邊緣影像，考慮像素的鄰近25點邊緣情形分成18類。 實驗結果證明，所提出方法其重建影像的PSNR品質平均比WInHD及ELUT高約0.55dB，以Lena影像為例，所提出方法之逆半色調影像的PSNR為32.80dB。

關鍵詞 : 逆半色調 ; 誤差擴散 ; 小波轉換 ; 溫納濾波器 ; 高斯濾波 ; 線性估測

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