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Multi-Objective Optimization for Image Denoising

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1 Introduction

Image denoising is the proccess which consists in removing noise from digital images. There are several factors that make images susceptible to noise. It is possible to model a degradation function and a noise term $\eta(x, y)$ that operates over an input image $f(x, y)$ and a degraded image is obtained as a result [2]:

$$g(x, y) = H[f(x, y)] + \eta(x, y) \tag{1}$$

Based on $g(x, y)$ it is necessary to obtain an estimate $f'(x, y)$ of the original image.

A well-known technique for image denoising is Non-Local Means denoising algorithm [1], which is combined with Multi-Objective optimization, in order to obtain series of images with different compromise rates of denoising. Denoised images are evaluated using well-known metrics for denoising, which make this implementation suitable.

2 Preliminary Results

3 Preliminary Conclusions

Em linhas gerais, as principais conclusões do trabalho, se possível (é facultativo!).

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0.3
(a)
b

Figura 1: A gull

0.3
(a)
b

Figura 2: A tiger

0.3
(a)
b

Figura 3: A mouse

Figura 4: Pictures of animals

Referências

[1] Antoni Buades, Bartomeu Coll, and Jean-Michel Morel. Non-local means denoising. *Image Processing On Line*, 1:208–212, 2011.

[2] Rafael C. Gonzalez, Richard E. Woods, and Steven L. Eddins. *Digital Image Processing Using MATLAB*. Prentice-Hall, Inc., Upper Saddle River, NJ, USA, 2003.