

Read A non-ocal altorithm for image denoising

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This article present a new way to judge the effect of image denoising algorithm, and present a new algorithm called non-local denoise.

First, the new way to judge image denoising effect is subtract denoised image with corrupttted image, get what the algorithm removed. A good denoising algorithm should only remove noise and do not change texture.

Second, non-local algorithm is as follows: using a defined patch size and search window, 1. for every pixel, crop the patch whose center is this pixel, in the search window search all patches that is similar to this patch. The similarity is measured by Euclidean distance $|P_i - P_j|_2^2$, then the weight of each pixel j for calculate pixel i $w(i, j) = \frac{1}{Z(i)} * e^{-\frac{|p_i - p_j|_2^2}{h^2}}$ and $Z(i) = \sum_j e^{-\frac{|p_i - p_j|_2^2}{h^2}}$ the final pixel is $f(i) = w(i, j) * f(j)$