BNR-Bayer Noise Reduce(上)

PCA、PCA on CFA、小波降噪

食鱼者

202111

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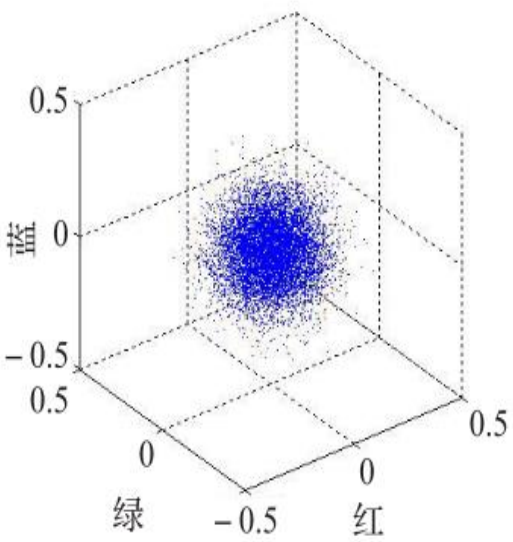
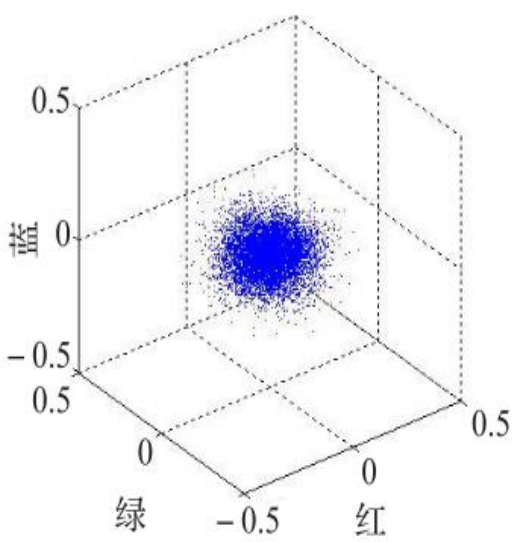
01 BNR意义

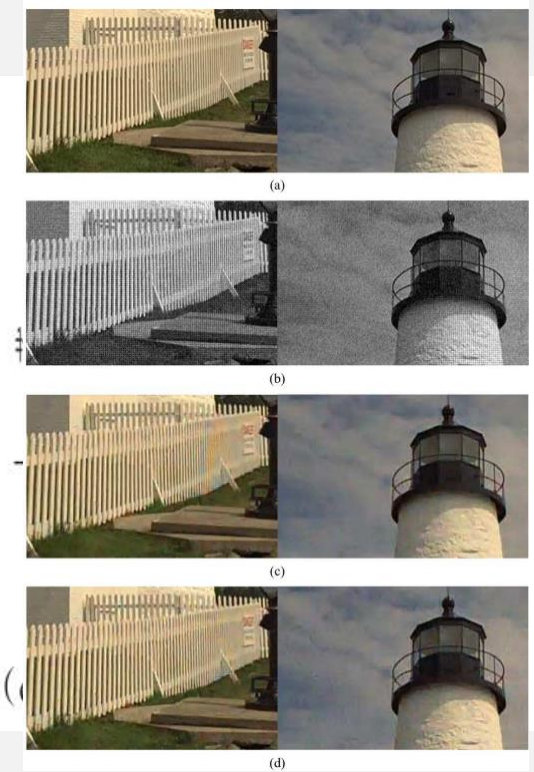
BNR意义



(a)原图像加噪后散点图

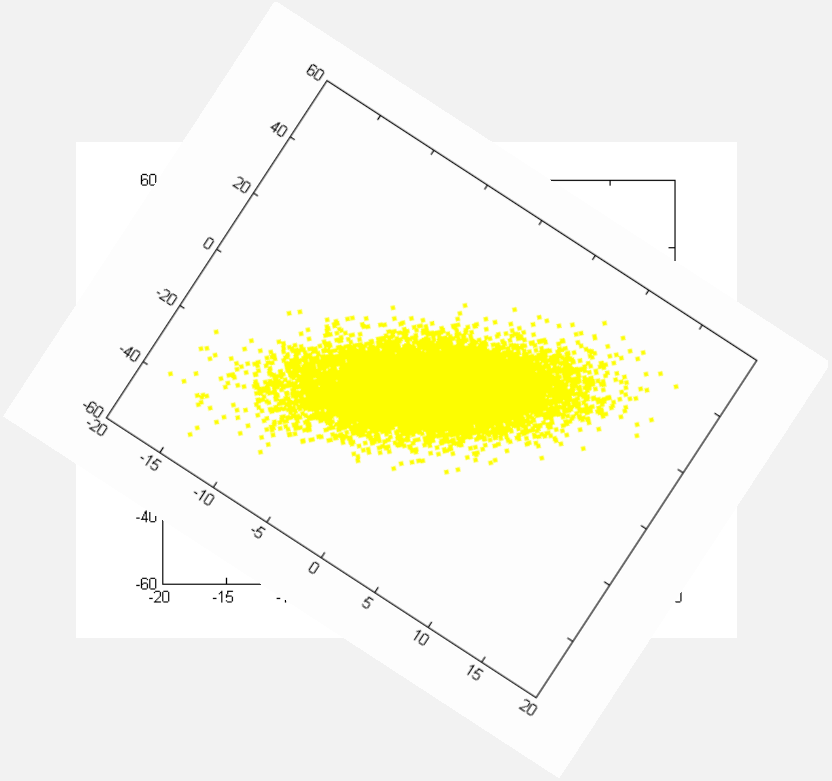


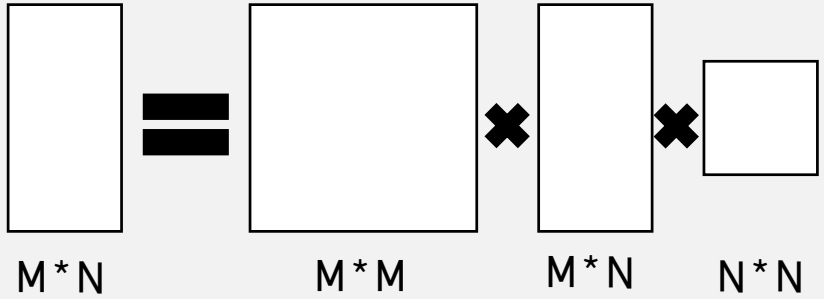
(b)双线性算法对应噪声散点图

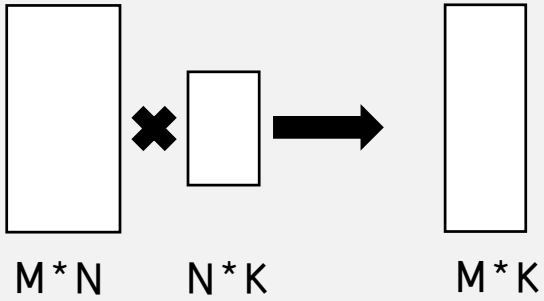


02 PCA简介

PCA简介

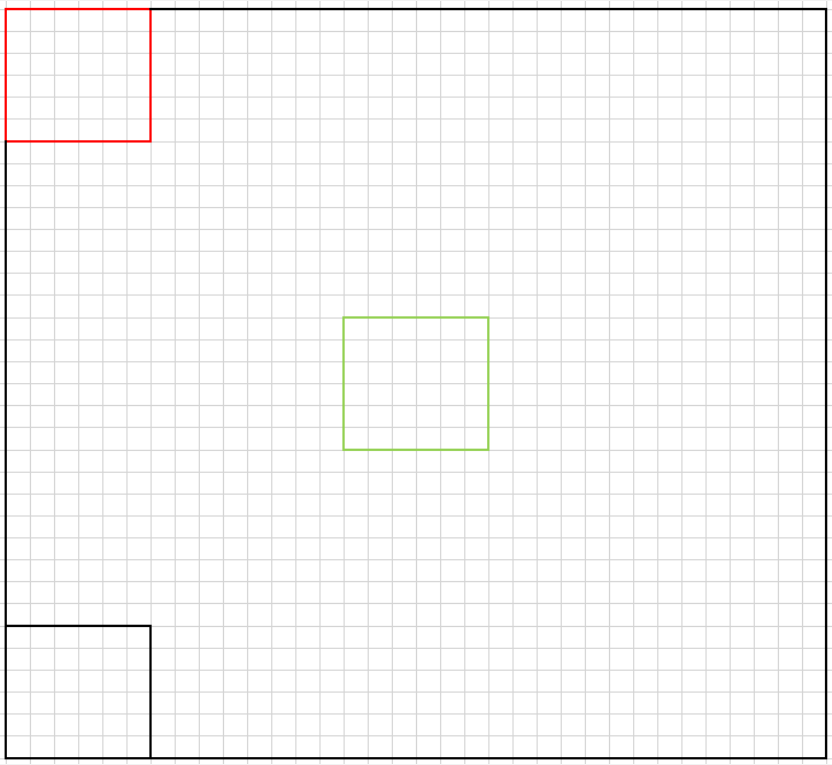




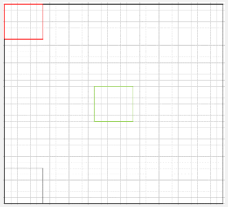


03 算法原理

算法原理

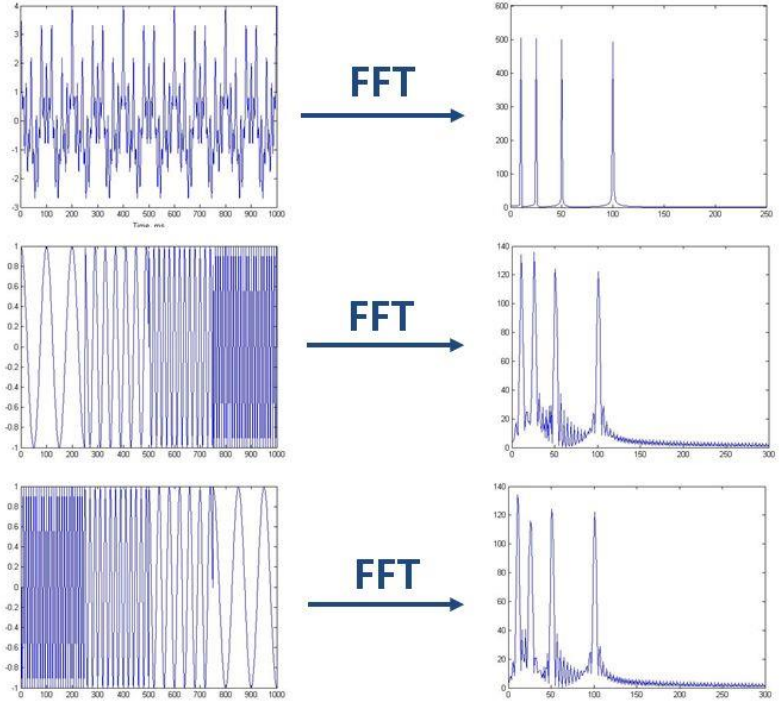


算法原理



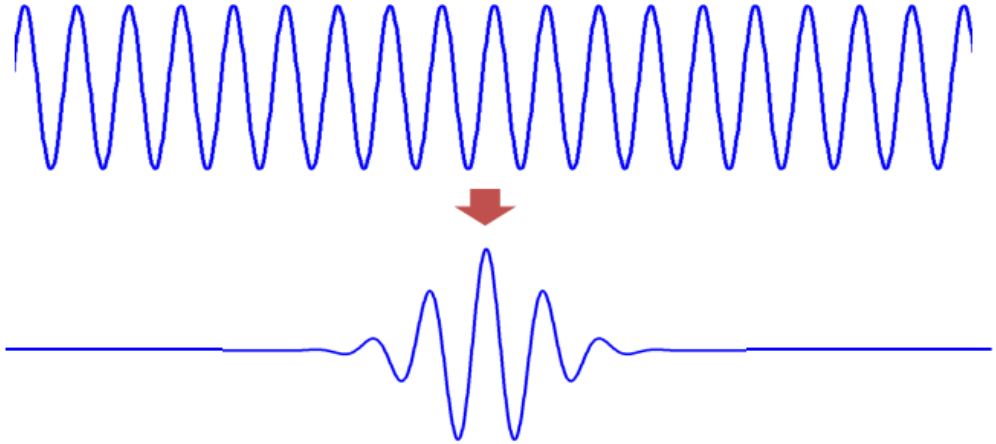
04 小波降噪

小波变换

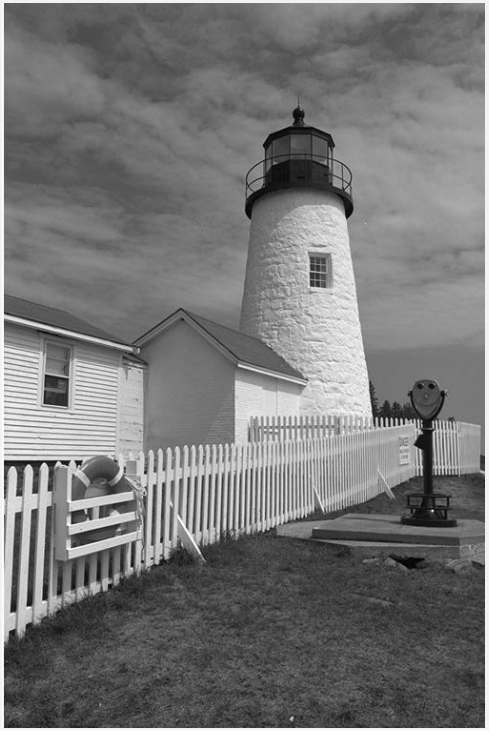


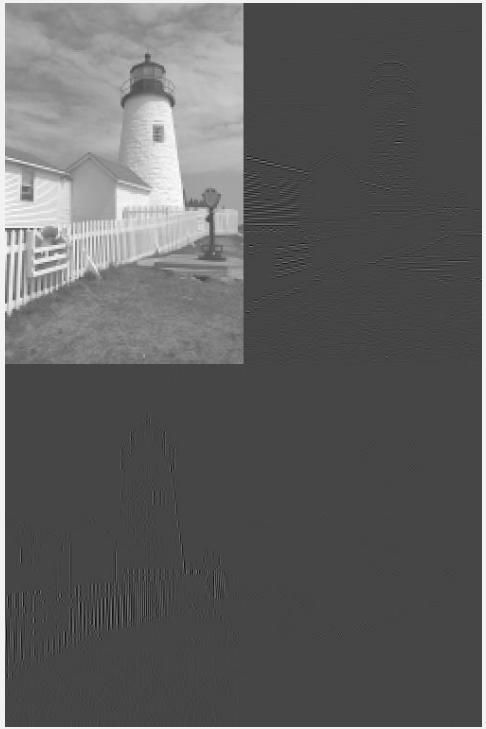
小波变换

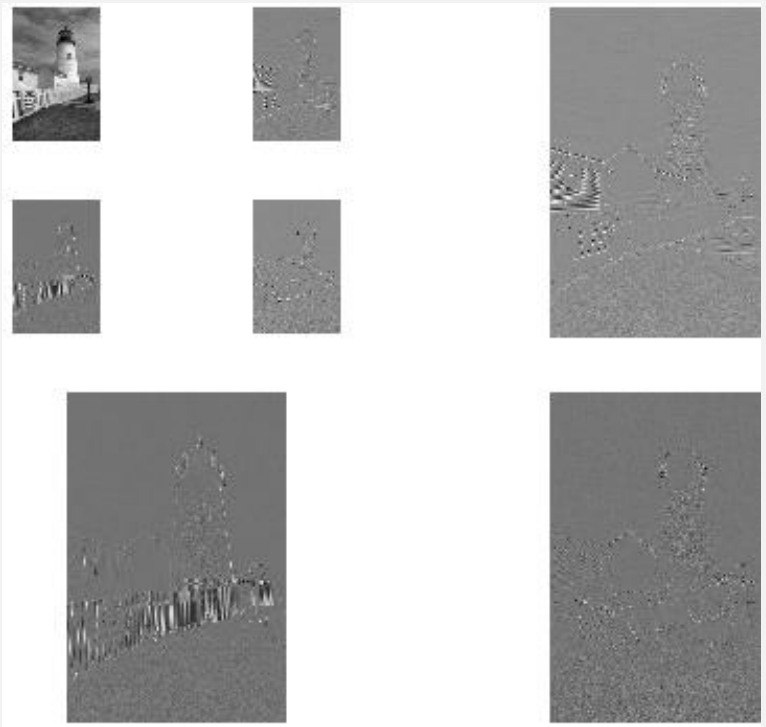
$$F(w) = \int_{-\infty}^{\infty} f(t) * e^{-iwt} dt \Rightarrow WT(a,\tau) = \frac{1}{\sqrt{a}} \int_{-\infty}^{\infty} f(t) * \psi(\frac{t-\tau}{a}) dt$$



小波图像降噪







小波图像降噪

降噪的理论依据：

- 图像的能量主要集中在低分辨率子带上，而噪声信号的能量主要分布在各个高频子带上

- 原始图像信息的小波系数绝对值较大，噪声信息小波系数的绝对值较小

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See You !