Machine Vision Homework#5

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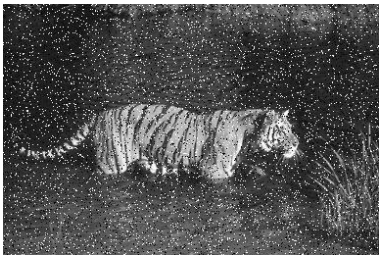
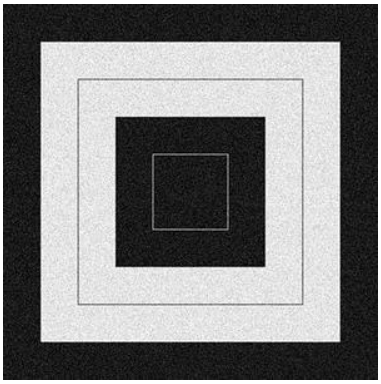
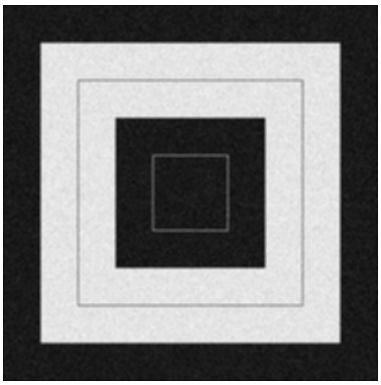
Original Image

1. Implement Mean Filter with 3*3 and 7*7 mask.

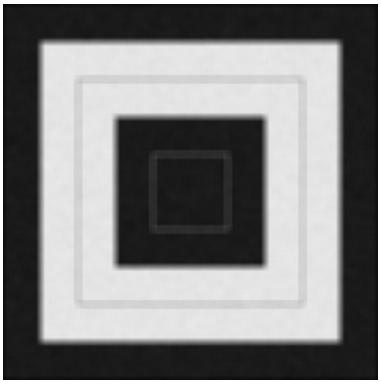
- 指定 kernel_size 的大小，將範圍內的值全部加總起來，再除以 kenel 的大小，得到的值就是新的 pixel 值
- 3x3(kernel_size=3)





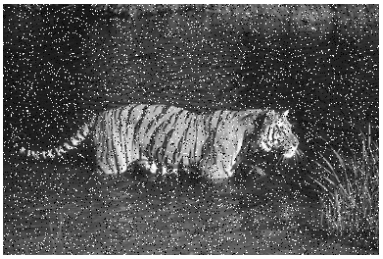
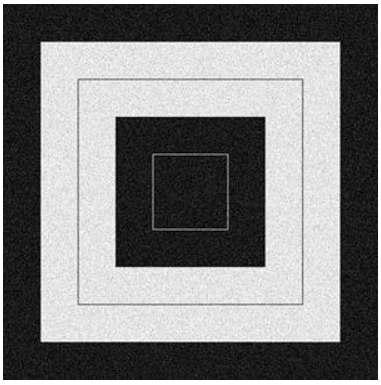
- 7x7(kernel_size=7)



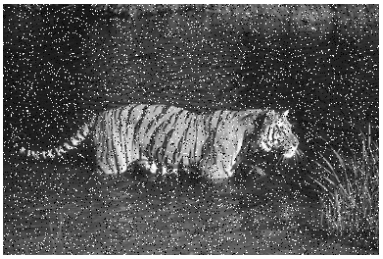
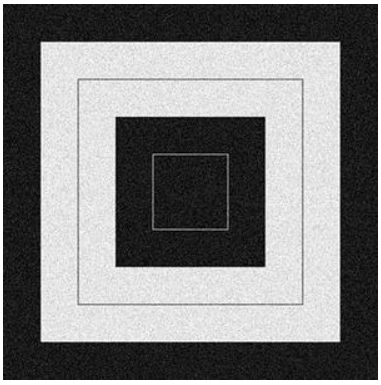


2. Implement Median Filter with 3*3 and 7*7 mask.

- 指定 kernel_size 的大小，將範圍內的值排序，index 在正中間的數值作為新的 pixel 值
- 3x3 (kernel_size=3)

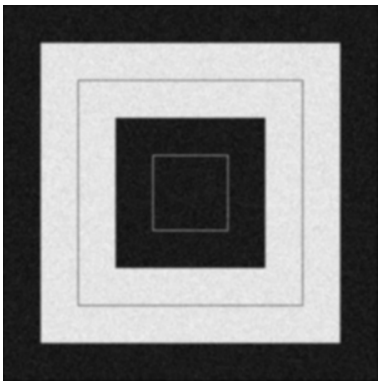
- 7x7 (kernel_size=7)

3. Implement Gaussian 2D Filter with 5*5 mask.

$\sigma = 1$,, kernel size = 5x5

- 透過 gaussian(kernel_size=5)來生成 gaussian kernel 並進行正規化
- 將 kernel 與 image 進行相乘後加總，得到新的 pixel 值

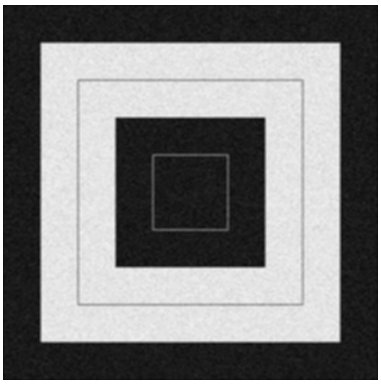


DLC

Merge Gaussian and Median Filter

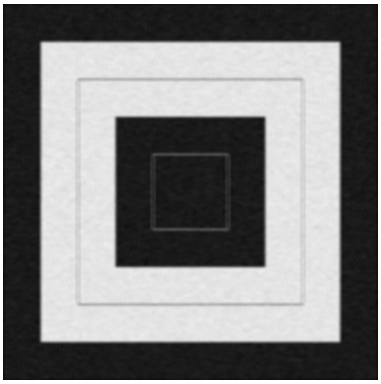
- 對 image 進行 Gaussian Filter 之前先將數字進行排序，在進行 Gaussian Filter
- 3x3





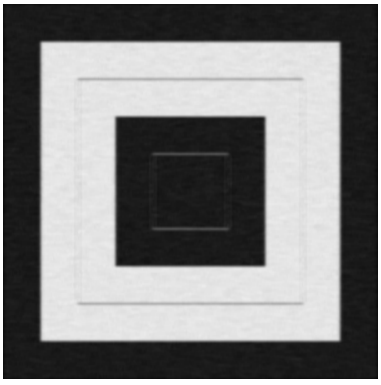
- 5x5





- 7x7





Compare

- Mean Filter

整體而言把圖片變得模糊，且對於邊緣的部分會有模糊的效果 kernel size 越大，模糊的效果越明顯

- Median Filter