Sample 3-4

平滑化／先鋭化処理
順序統計フィルタ

画像処理特論

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動作確認: MATLAB R2020a

Image smoothing/sharpening

Oder statistic filter

Advanced Topics in Image Processing

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Verified: MATLAB R2020a

サンプル画像の準備
(Preparation of sample image)

```
close
% Reading original image
I = im2double(imread('cameraman.tif'));
figure(1)
imshow(I)
title('Original')
```


Original

ゴマ塩ノイズ画像の準備
(Preparation of a contaminated image with salt & pepper noise)

```
% Density
d = 0.05;
% Add noise
J = imnoise(I,'salt & pepper',d);
```

```
% Show the result
figure(2)
imshow(J)
title('Contaminated image')
```

Contaminated image

中央値フィルタ
(Median filter)

```
% Domain size setting
hsize = 3
```

```
hsize = 3
```

```
% Median fltering
K = medfilt2(J,[hsize hsize]);

% Show the result
figure(3)
imshow(K)
title('Median filter')
```

Median filter

最大値フィルタ
(Maximum filter)

```
% Domain setting
```

```
hsize = 3;
domain = ones(hsize);

% Maximum filtering
L = ordfilt2(J,nnz(domain),domain);

% Show the result
figure(4)
imshow(L)
title('Maximum filter')
```


Maximum filter

最小値フィルタ
(Minumum filter)

```
% Domain setting
hsize = 3;
domain = ones(hsize);

% Minimum filtering
M = ordfilt2(J,1,domain);

% Show the result
figure(5)
imshow(M)
title('Minimum filter')
```


Minimum filter