

【Experiment name】

Lab 3 image spatial filter

【Purpose】

Master the methods of image spatial domain filter and Laplacian filter design in digital image processing based on matlab .

【Experimental content】

Use the given image to complete the image spatial filter and Laplacian filter design .

PROJECT 03-07

task

Spatial Filtering

Write program to perform spatial filtering of an image "Fig_test_pattern_blurring_orig.tif". Change the size of the spatial mask at 3×3 , 5×5 , 9×9 , 15×15 , 35×35 and compare your results with the textbook

code

```
%% PROJECT 03-07
close all;
clear all;
%% read file
I = imread('Fig_test_pattern_blurring_orig.tif');
subplot(2,3,1);imshow(I);title('original');
%% declare variable
[m,n]=size(I);
x=uint8(zeros(m,n)); % x is used to reset xx and used for the next filtering task
xx=x; % xx is used to store the processed image
avg_st=double(0);
photo_place=1; % is used to set the image display position
%% Spatial filtering
for mask = [3,5,9,15,35] % filter size setting
% padding image generation
padding=uint8(zeros(m+(mask-1),n+(mask-1)));
for a=1:m
for b=1:n
```

```

padding(a+(mask-1)/2,b+(mask-1)/2)=I(a,b);
end
end
% filter and store
for a=1:m
for b=1:n
for i=a:a+mask-1
for j=b:b+mask-1
avg_st=avg_st+(double(padding(i,j))/double(mask*mask));
end % Temporary storage processing unit
end
xx(a,b)=uint8(avg_st); % store generated pixels
avg_st=0;
end
end
photo_place=photo_place+1;
subplot(2,3,photo_place);imshow(xx)
xx=x;
end

```

result

