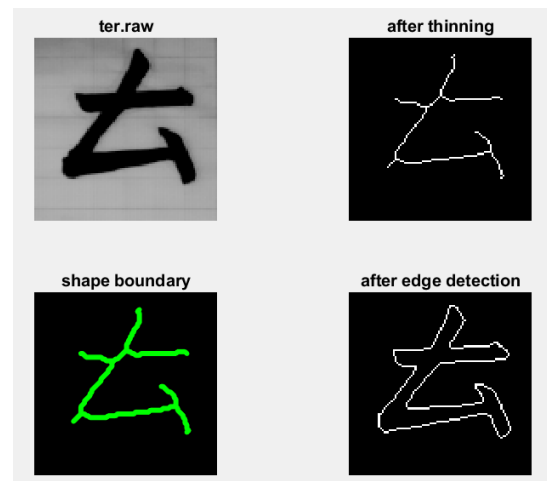
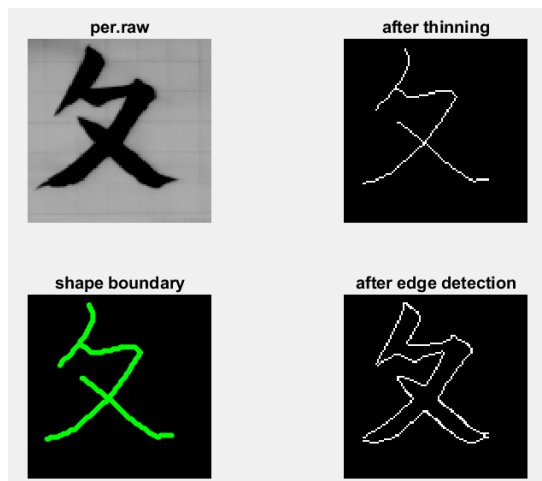
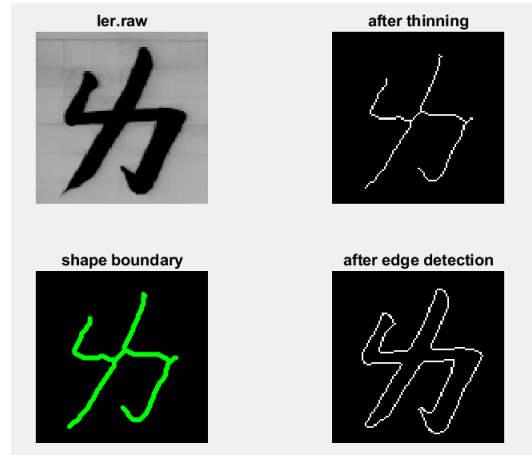
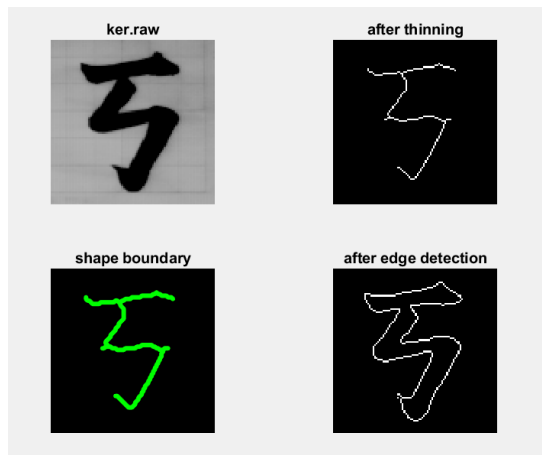


影像處理簡介 Hw5

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For (i)~(iv) images:

```
m=100; n=100;
fin=fopen('ter.raw','r');
X=fread(fin,m*n,'uint8=>uint8'); fclose(fin);
Y=reshape(X,m,n);
Raw = Y ;
Raw=rot90(Raw,3);
Raw=fliplr(Raw);

figure;
subplot(2,2,1);
imshow( Raw );
title('ter.raw');

%把黑變成白 灰變成黑
for i=1:100
    for j=1:100
        if Raw(i,j)>0
            Raw(i,j)=0;
        elseif Raw(i,j)==0
            Raw(i,j)=256;
        end
    end
end

I = bwmorph(Raw, 'thin',100);
subplot(2,2,2);
imshow( I );
title('after thinning');

dim = size(I)
col = round(dim(2)/2);
row = min(find(I(:,col)))
boundary = bwtraceboundary(I,[row, col],'N');
subplot(2,2,3);
imshow(I)
hold on;
plot(boundary(:,2),boundary(:,1),'g','LineWidth',3);
title('shape boundary');

BWI = edge(Raw,'sobel');
subplot(2,2,4);
imshow(BWI)
title('after edge detection');
```

for lenna.raw:

```
m=512; n=512;
fin=fopen('lenna.raw','r');
X=fread(fin,m*n,'uint8=>uint8'); fclose(fin);
Y=reshape(X,m,n);
Y=rot90(Y,3);
Y=fliplr(Y);
im=im2double(Y);
%smoothing the image with a filter
gfilter= [0 0 1 0 0;
          0 1 2 1 0;
          1 2 -16 2 1;
          0 1 2 1 0;
          0 0 1 0 0];

smim=conv2(im,gfilter);
% finding the zero crossings
[rr,cc]=size(smim);
zc=zeros([rr,cc]);

for i=2:rr-1
    for j=2:cc-1
        if (smim(i,j)>0)
            if (smim(i,j+1)>=0 && smim(i,j-1)<0) || (smim(i,j+1)<0 && smim(i,j-1)>=0)
                zc(i,j)= smim(i,j+1);
            elseif (smim(i+1,j)>=0 && smim(i-1,j)<0) || (smim(i+1,j)<0 && smim(i-1,j)>=0)
                zc(i,j)= smim(i,j+1);
            elseif (smim(i+1,j+1)>=0 && smim(i-1,j-1)<0) || (smim(i+1,j+1)<0 && smim(i-1,j-1)>=0)
                zc(i,j)= smim(i,j+1);
            elseif (smim(i-1,j+1)>=0 && smim(i+1,j-1)<0) || (smim(i-1,j+1)<0 && smim(i+1,j-1)>=0)
                zc(i,j)=smim(i,j+1);
            end
        end
    end
end

otpt=im2uint8(zc);
% thresholding
otpth= otpt>105;

% final result
figure;
subplot(1,2,1);imshow(im);title('lenna.raw');
subplot(1,2,2);imshow(otpth);title('after edge detection');
```