Table of Contents

Project 4: Image Segmentation

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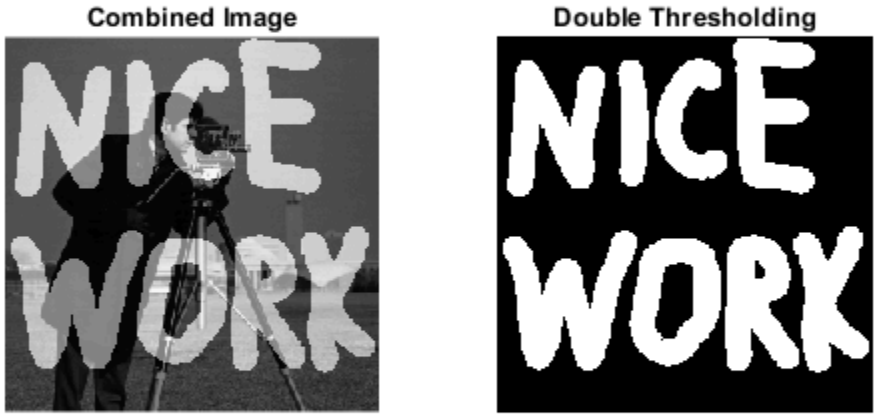
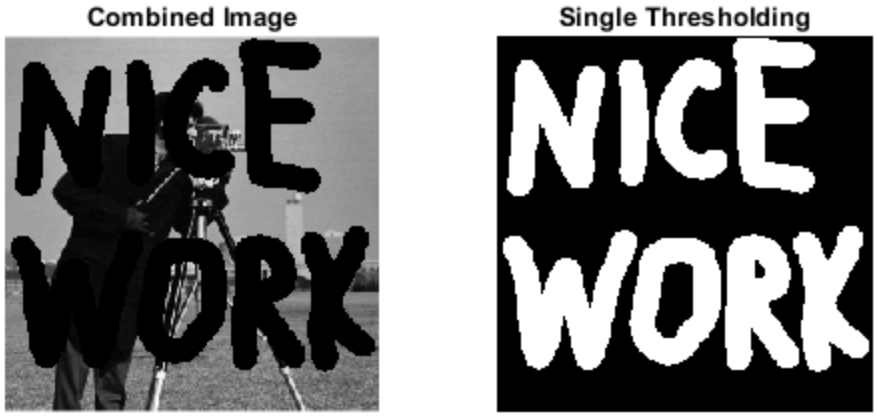
Ch 9: Problem 5,6 & 7

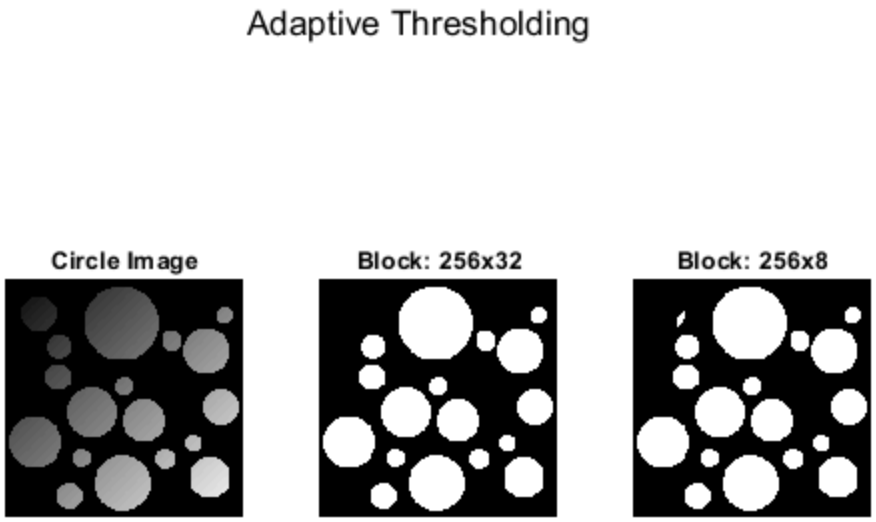
```
clear;clc;close all;

n = im2uint8(imread('nicework.png'));
c = imread('cameraman.png');
m = imlincomb(0.5,c,0.5,n);
% imtool(m)
t = m>130 & m<250;
subplot(1,2,1); imshow(m); title('Combined Image');
subplot(1,2,2);imshow(t); title('Double Thresholding');
```



```
m = im2double(c).*(im2double(n)==0);
% imtool(m)
t = m<0.01;
subplot(1,2,1); imshow(m); title('Combined Image');
subplot(1,2,2);imshow(t); title('Single Thresholding');
```

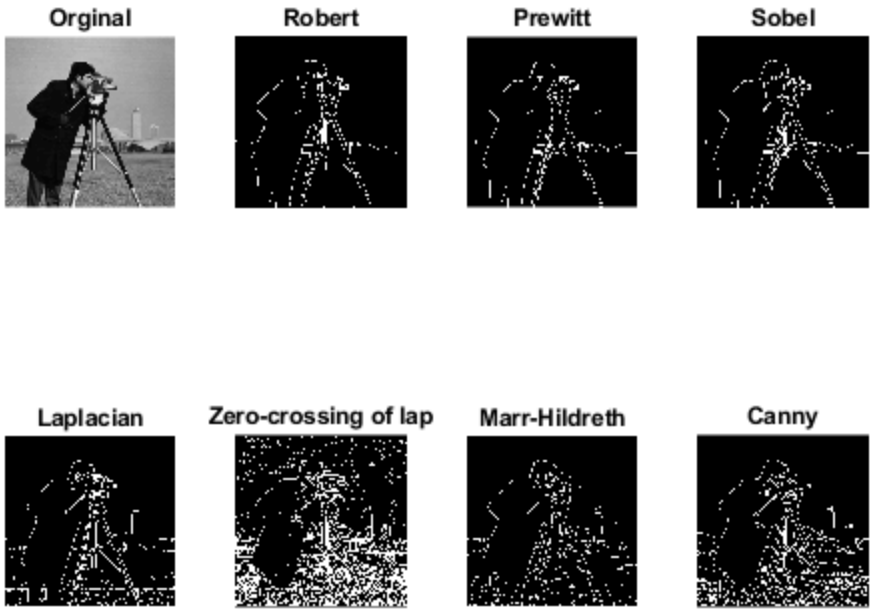



```
t = imread('circles.png');
[x,y] = meshgrid(1:256,1:256);
t2 = double(t).*(x+y)/512;
t3 = im2uint8(t2);
%imtool(t3)
[r,c] = size(t3);
thresh = @(z) im2bw(z.data,graythresh(z.data));
out = blockproc(t3,[r,c/32],thresh);
out1 = blockproc(t3,[r,c/8],thresh);
sgtitle('Adaptive Thresholding');
subplot(1,3,1); imshow(t3); title('Circle Image');
subplot(1,3,2); imshow(out1); title('Block: 256x32');
subplot(1,3,3);imshow(out); title('Block: 256x8');
```



Ch 9: Problem 10

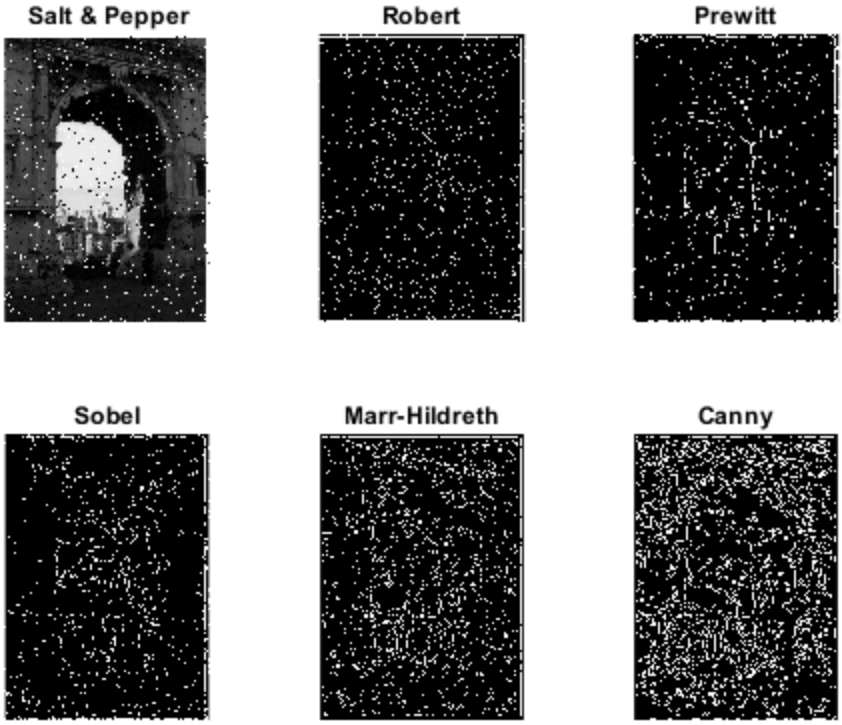
```
clear;clc;close all;
c = imread('cameraman.png');
lap = fspecial('laplacian',1);
log = fspecial('log',13,2);

r = edge(c,'roberts');
p = edge(c,'prewitt');
s = edge(c,'sobel');
l = imbinarize(imfilter((c),lap));
z = edge(c,'zerocross',[],lap);
m = edge(c,'zerocross',[],log);
ca = edge(c,'Canny');
subplot(2,4,1); imshow(c); title('Orginal');
subplot(2,4,2); imshow(r); title('Robert');
subplot(2,4,3); imshow(p); title('Prewitt');
subplot(2,4,4); imshow(s); title('Sobel');
subplot(2,4,5); imshow(l); title('Laplacian');
subplot(2,4,6); imshow(z); title('Zero-crossing of lap');
subplot(2,4,7); imshow(m); title('Marr-Hildreth');
subplot(2,4,8); imshow(ca); title('Canny');
```

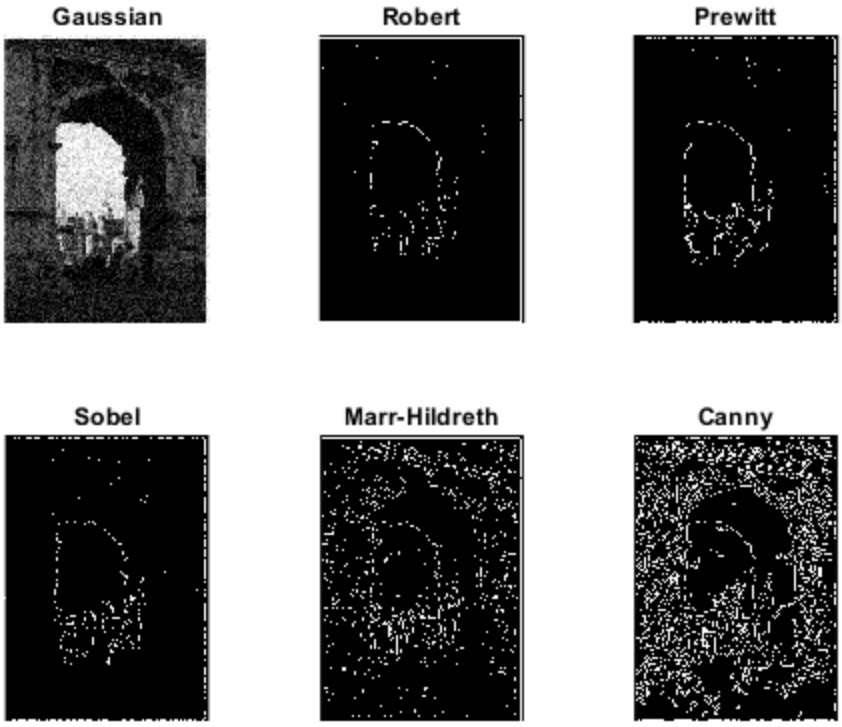


Ch 9: Problem 13

```
clear;clc;close all;
c = imread('arch.png');
c1 = imnoise(c,'salt & pepper');
c2 = imnoise(c,'gaussian');
log = fspecial('log',13,2);

r1 = edge(c1,'roberts');
p1 = edge(c1,'prewitt');
s1 = edge(c1,'sobel');
m1 = edge(c1,'zerocross',[],log);
ca1 = edge(c1,'Canny');

r2 = edge(c2,'roberts');
p2 = edge(c2,'prewitt');
s2 = edge(c2,'sobel');
m2 = edge(c2,'zerocross',[],log);
ca2 = edge(c2,'Canny');

figure(1);
subplot(2,3,1); imshow(c1); title('Salt & Pepper');
subplot(2,3,2); imshow(r1); title('Robert');
subplot(2,3,3); imshow(p1); title('Prewitt');
subplot(2,3,4); imshow(s1); title('Sobel');
```

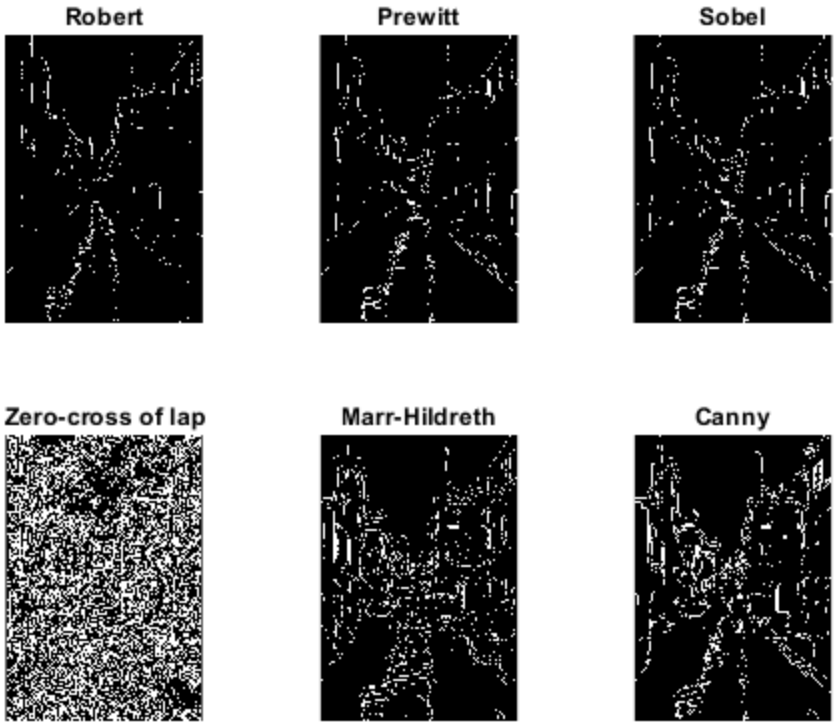
```
subplot(2,3,5); imshow(m1); title('Marr-Hildreth');
subplot(2,3,6); imshow(ca1); title('Canny');

figure(2);
subplot(2,3,1); imshow(c2); title('Gaussian');
subplot(2,3,2); imshow(r2); title('Robert');
subplot(2,3,3); imshow(p2); title('Prewitt');
subplot(2,3,4); imshow(s2); title('Sobel');
subplot(2,3,5); imshow(m2); title('Marr-Hildreth');
subplot(2,3,6); imshow(ca2); title('Canny');
```





Ch 13: Problem 9

```
clear;clc;close all;

v = imread('venice.png');
lap = fspecial('laplacian',0);
log = fspecial('log',13,2);
ic = rgb2gray(v);

r = edge(ic,'roberts');
p = edge(ic,'prewitt');
s = edge(ic,'sobel');
z = edge(ic,'zerocross',[],lap);
m = edge(ic,'zerocross',[],log);
ca = edge(ic,'Canny',[0.1 0.2],0.5);

figure(1)
subplot(2,3,1); imshow(r); title('Robert');
subplot(2,3,2); imshow(p); title('Prewitt');
subplot(2,3,3); imshow(s); title('Sobel');
subplot(2,3,4); imshow(z); title('Zero-cross of lap');
subplot(2,3,5); imshow(m); title('Marr-Hildreth');
subplot(2,3,6); imshow(ca); title('Canny');
```



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