# Matlab Code for Edge Detection Robert, Prewitt, Sobel

%%%% EDGE Detection

clc;

close all;

clear all;

a=imread('C:\Documents and Settings\student\Desktop\lenna1.bmp');

b=im2double(a);

[m,n]=size(a);

%ROBERT

L(1:m,1:n)=0

for i=1:m-2;

for j=1:m-2;

L(i,j)=-1\*b(i,j)+0+0+1\*b(i+1,j+1);

end;

end;

M(1:m,1:n)=0

for i=1:m-2;

for j=1:m-2;

M(i,j)=0-1\*b(i,j+1)+1\*b(i+1,j)+0;

end;

end;

figure;

subplot(2,2,1)

imshow(L)

title('Robert Gx');

subplot(2,2,2)

imshow(M)

title('Robert Gy');

N=M+L;

subplot(2,2,3)

imshow(N)

title('Robert Gx+Gy');

subplot(2,2,4)

imshow(b)

title('Original Image');

%PREWIT

N(1:m,1:n)=0

for i=1:m-2;

for j=1:m-2;

N(i,j)=-1\*b(i,j)-1\*b(i,j+1)-1\*b(i,j+2)+0+0+0+1\*b(i+2,j)+1\*b(i+2,j+1)+1\*b(i+2,j+2);

end;

end;

O(1:m,1:n)=0

for i=1:m-2;

for j=1:m-2;

O(i,j)=-1\*b(i,j)+0+1\*b(i,j+2)-1\*b(i+2,j)+0+1\*b(i+1,j+2)-1\*b(i+2,j)+0+1\*b(i+2,j+2);

end;

end;

figure;

subplot(2,2,1)

imshow(N)

title('Prewit Gx');

subplot(2,2,2)

imshow(O)

title('Prewit Gy');

Z=N+O;

subplot(2,2,3)

imshow(Z)

title('Prewit Gx+Gy');

subplot(2,2,4)

imshow(b)

title('Original Image');

%SOBEL

P(1:m,1:n)=0

for i=1:m-2;

for j=1:m-2;

P(i,j)=-1\*b(i,j)-2\*b(i,j+1)-1\*b(i,j+2)+0+0+0+1\*b(i+2,j)+2\*b(i+2,j+1)+1\*b(i+2,j+2);

end;

end;

R(1:m,1:n)=0

for i=1:m-2;

for j=1:m-2;

R(i,j)=-1\*b(i,j)+0+1\*b(i,j+2)-2\*b(i+1,j)+0+2\*b(i+1,j+2)-1\*b(i+2,j)+0+1\*b(i+2,j+2);

end;

end;

figure;

subplot(2,2,1)

imshow(P)

title('Sobel Gx');

subplot(2,2,2)

imshow(R)

title('Sobel Gy');

Y=P+R;

subplot(2,2,3)

imshow(Y)

title('Soble Gx+Gy');

subplot(2,2,4)

imshow(b)

title('Original Image');