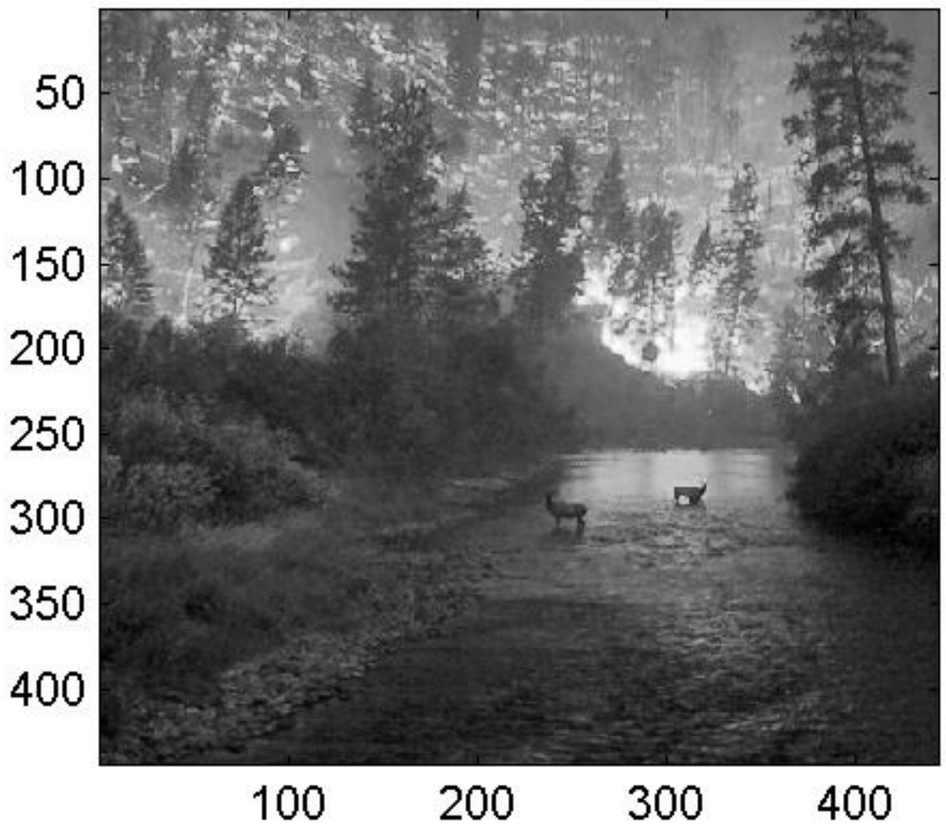
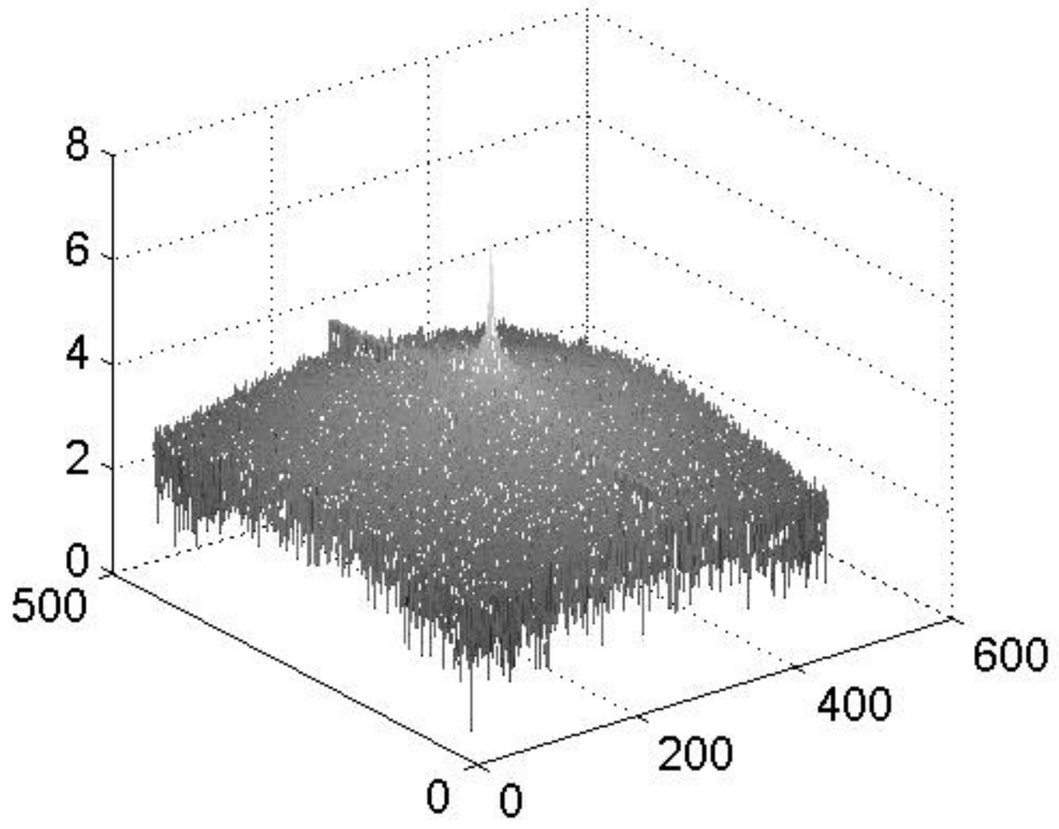
```
%Pset #3
%problem #4
%Brian Anthony
%
%load

clr = imread('f:\downloads\pics\elkfire2.jpg','jpg');
bw = (double(clr(:,:,1)) + double(clr(:,:,2)) + double(clr(:,:,3))) / 3;

%reduce
[r,c] = size(bw);
bwr = bw(:,138:(137+444));

%ORIGINAL IMAGE
figure(1)
subplot 321
imagesc(bwr)
colormap(gray)
title('orig')

%fft
g = fft2(bwr);
subplot 322
mesh(log10(abs(fftshift(g))))
title('log (mag(fft))')

%mask 1
%high frequencies
w = 20;
m1 = ones(r,r);
m1((floor(r/2)-w):(ceil(r/2)+w),(floor(r/2)-w):(ceil(r/2)+w)) = 0;

%high freq
bwr1 = ifft2((fftshift(g).*m1));
subplot 323
imagesc(abs(bwr1))
colormap(gray)
title('high pass image')

subplot 324
imagesc(log10(abs((fftshift(g).*m1))))
title('high pass fft')

%mask 2
%low frequencies
m2 = 1-m1;
%low freq
bwr2 = ifft2((fftshift(g).*m2));
subplot 325
imagesc(abs(bwr2))
colormap(gray)
title('low pass image')


subplot 326
imagesc(log10(abs((fftshift(g).*m2))))
title('low pass fft')


%reality check
if(0)
   orig = (ifft2(fftshift(g)));
   imagesc(abs(orig))
   colormap(gray)
end
```

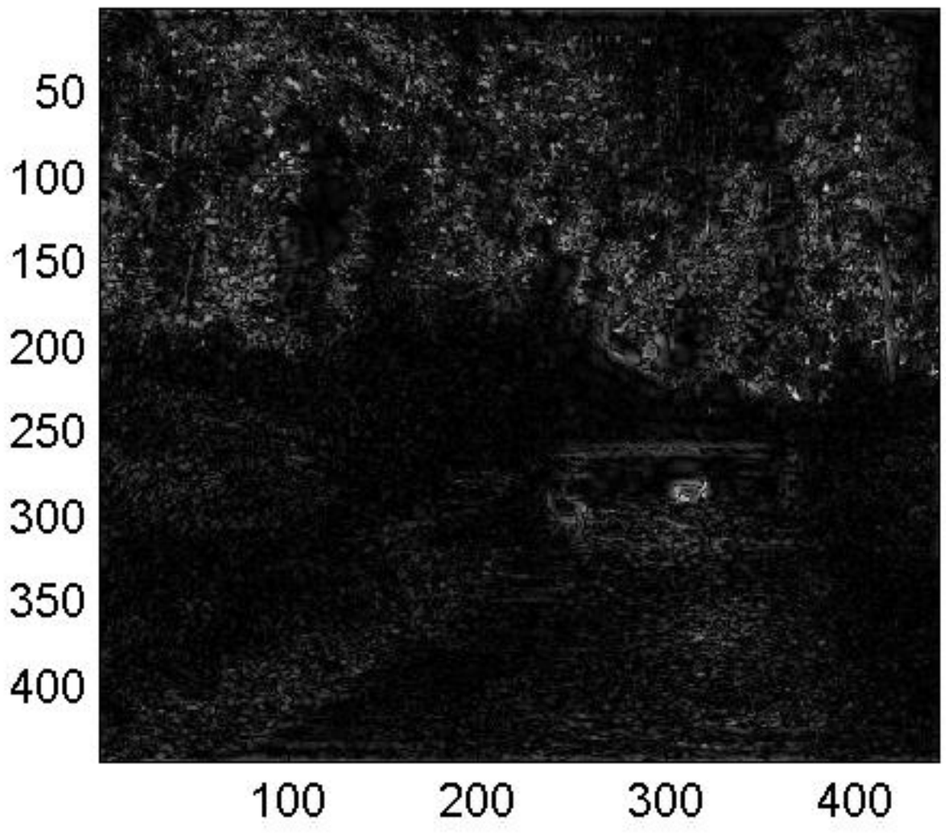
orig



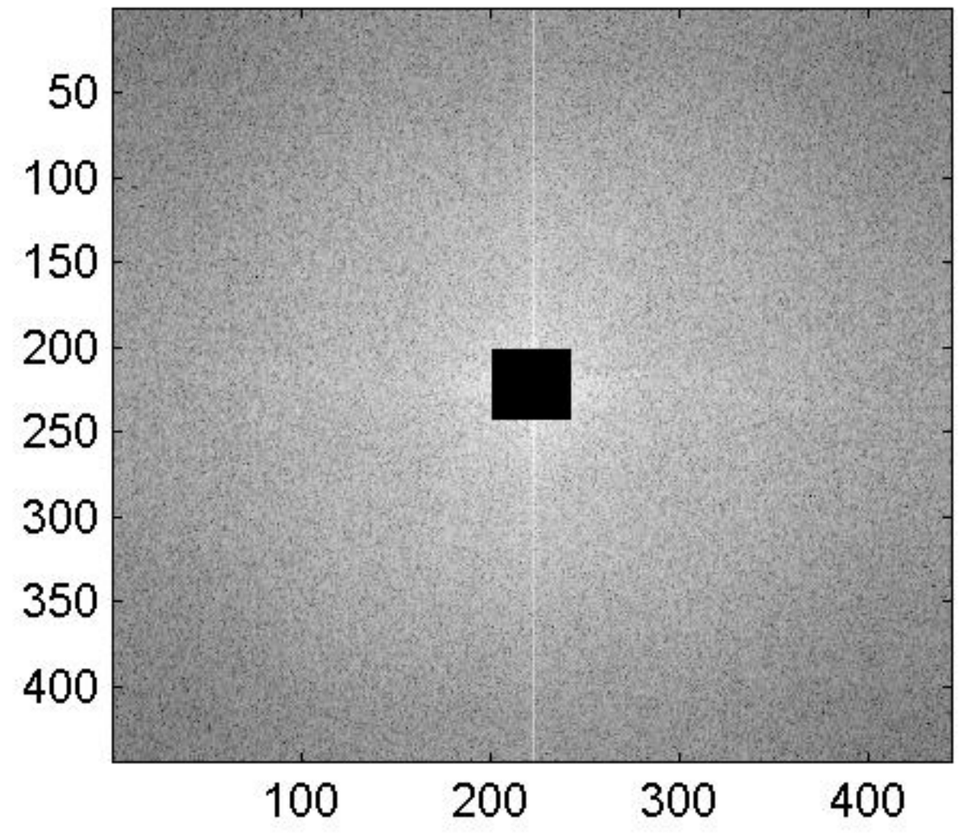
log (mag(fft))



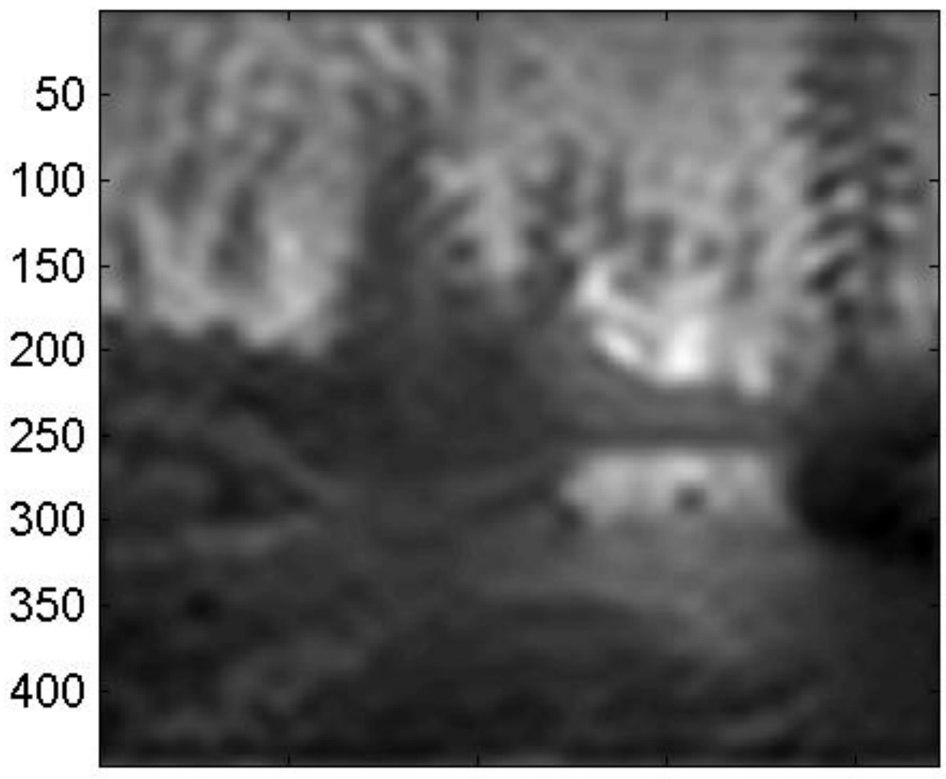
high pass image



high pass fft



low pass image



low pass fft