

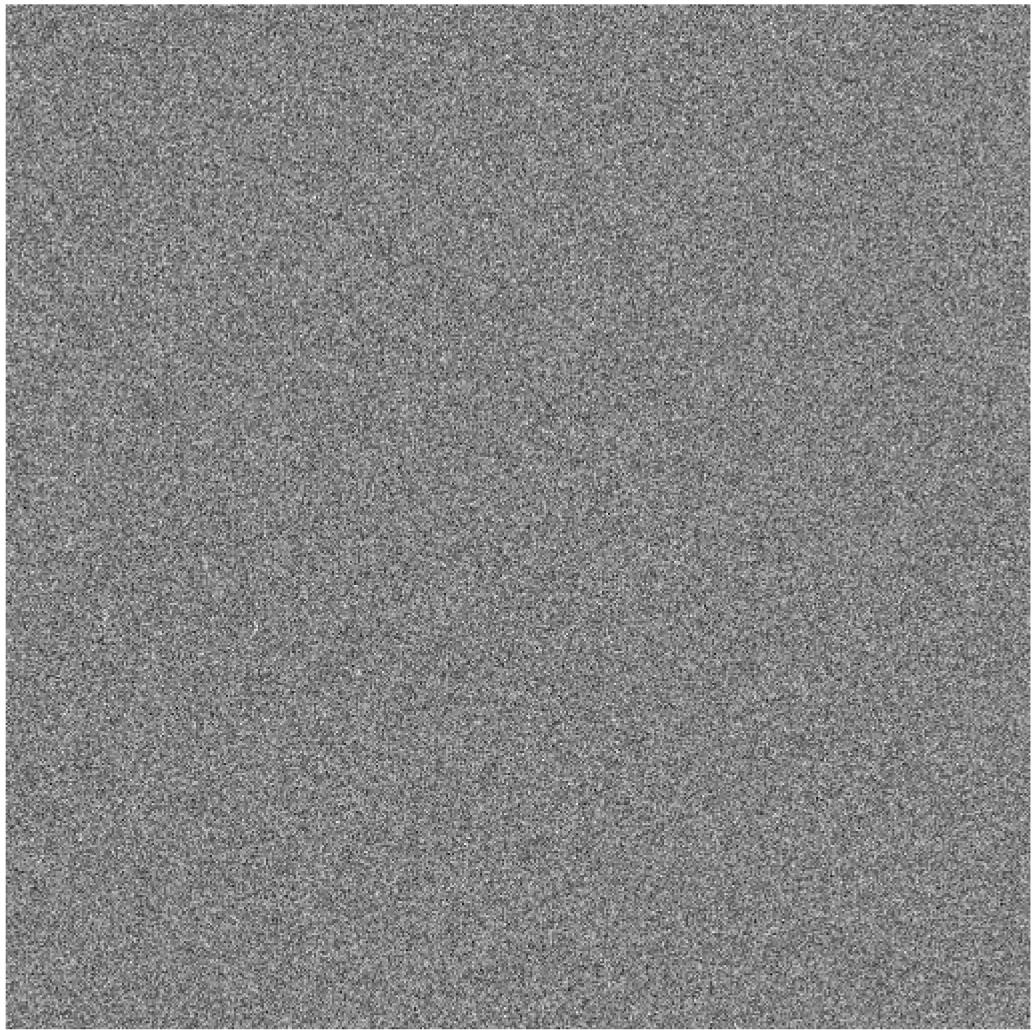
E2

Gaussian

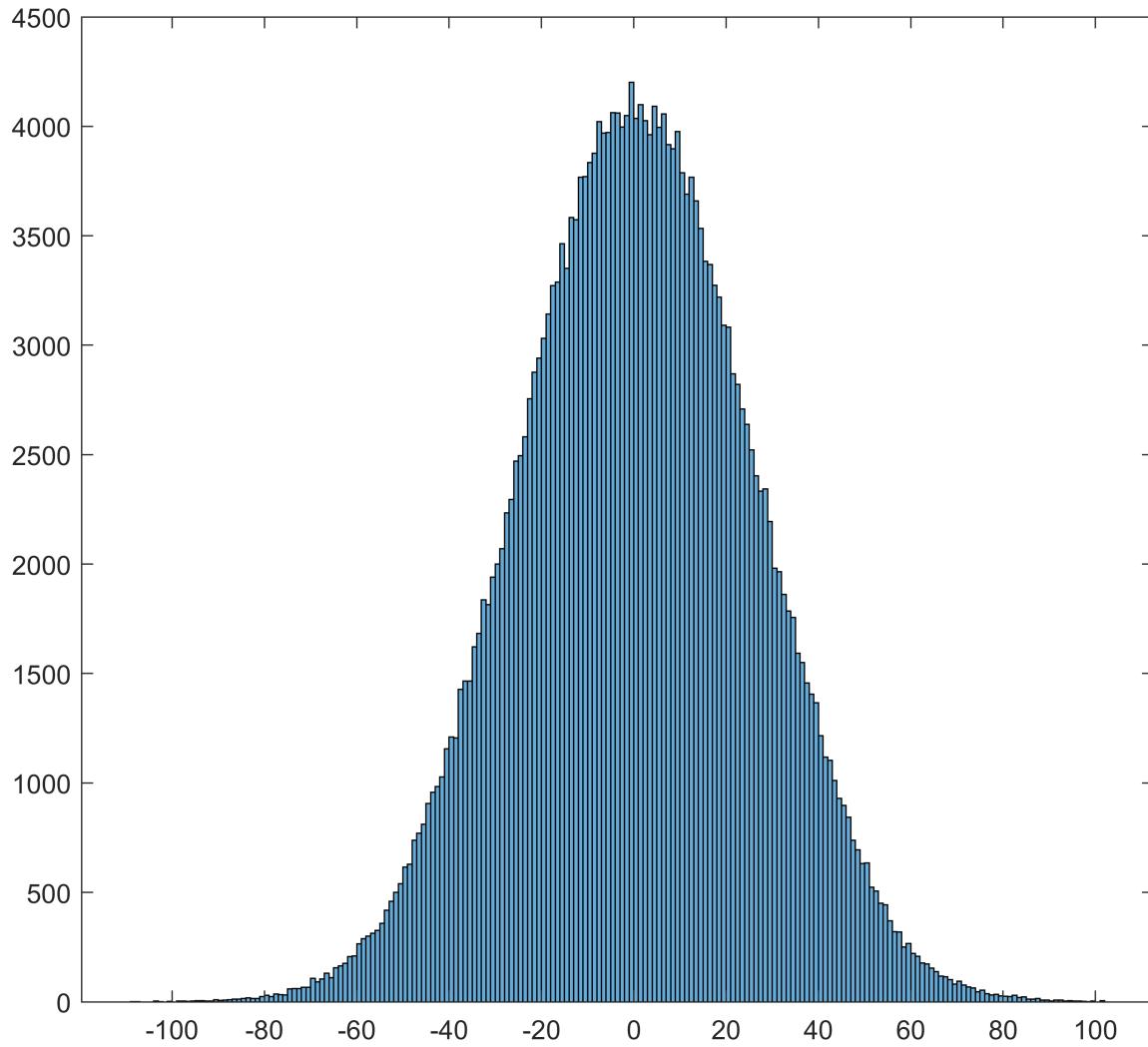
```
I = imread('lena_gray_512.tif');
J = imnoise(I,"gaussian",0,0.01);
montage({I,J});
```



```
R = double(I) - double(J);
imshow(R,[ ]);
```



```
histogram(R);
```

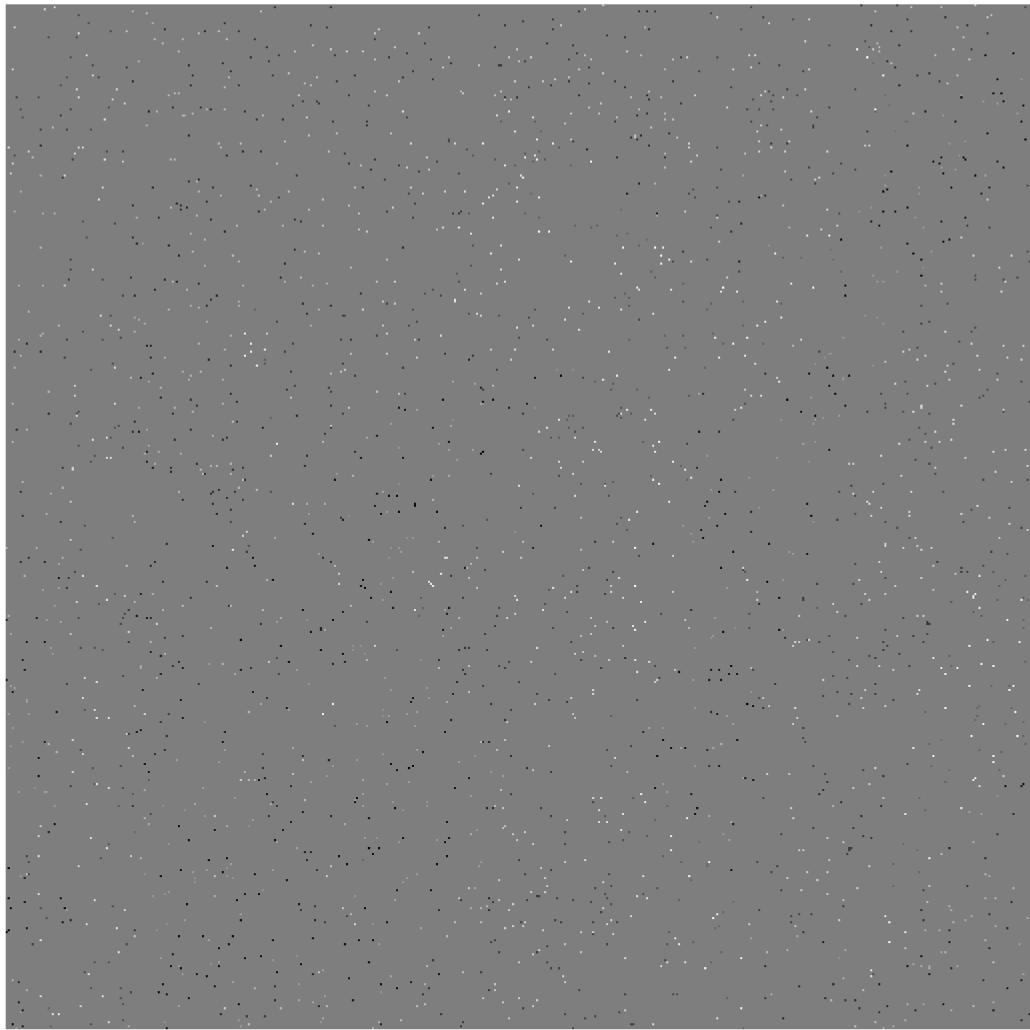


Salt & pepper

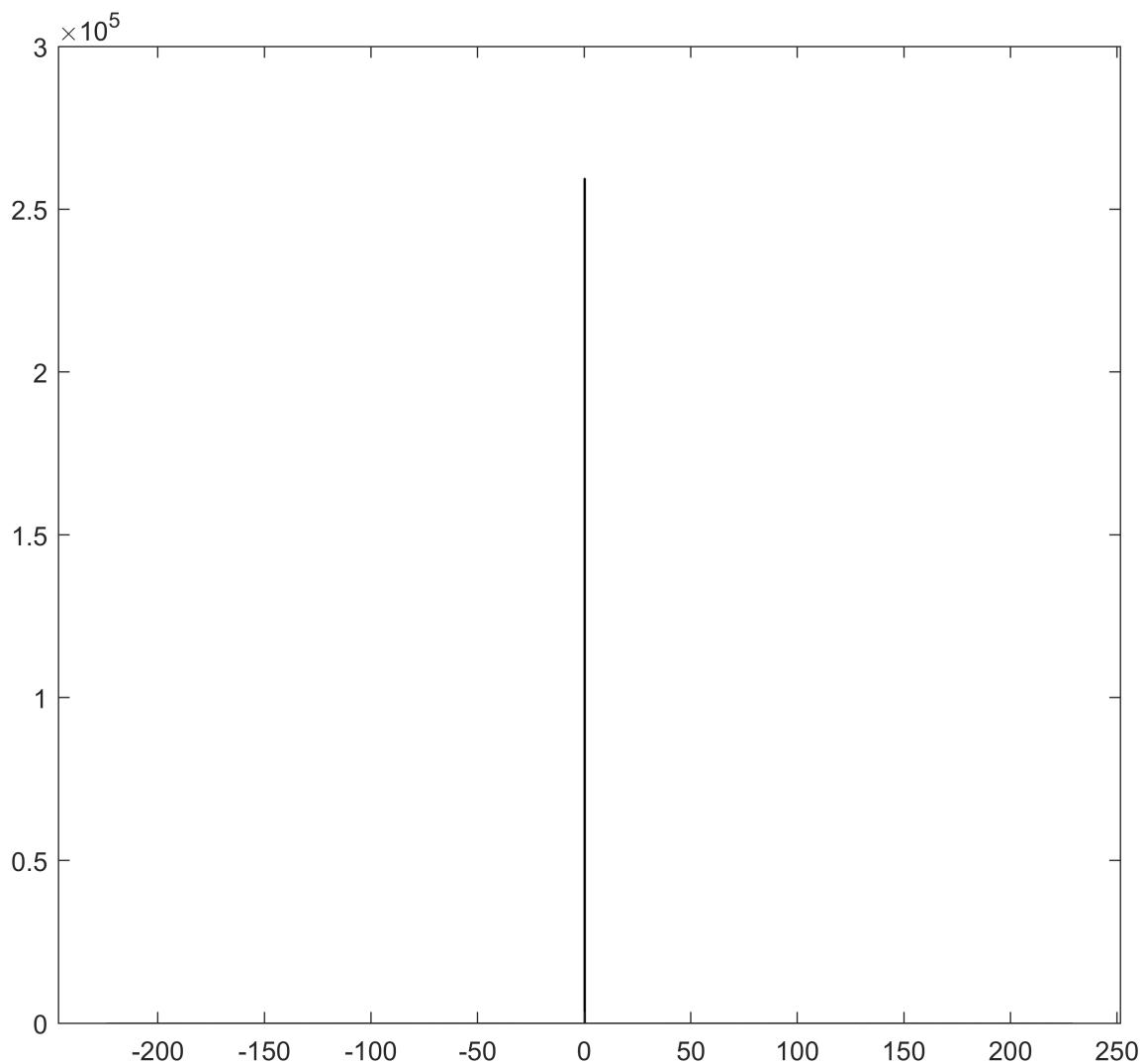
```
I = imread('lena_gray_512.tif');
J = imnoise(I,"salt & pepper",0.01);
montage({I,J});
```



```
R = double(I) - double(J);
imshow(R,[ ]);
```



```
histogram(R);
```



Resize

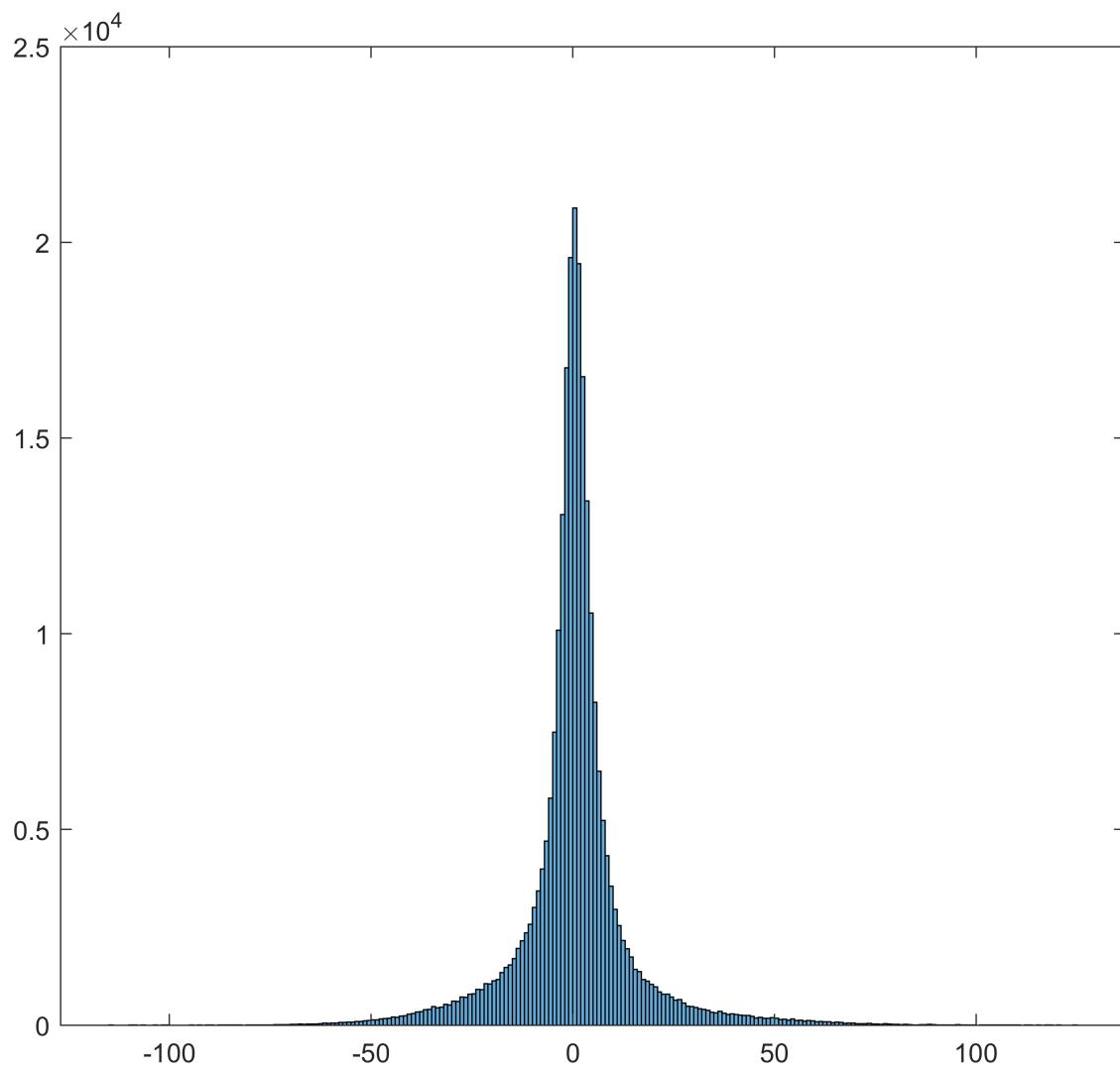
```
I = imread('lena_gray_512.tif');
J = imresize(I,[64 64]);
J = imresize(J,[512 512]);
montage({I,J});
```



```
R = double(I) - double(J);
imshow(R,[ ]);
```



```
histogram(R);
```



Processat de la imatge

Augmentar il·luminació

```
I = imread('lena_gray_512.tif');
J = I + 64; % il·luminació, però no augmenta el contrast
montage({I,J});
```

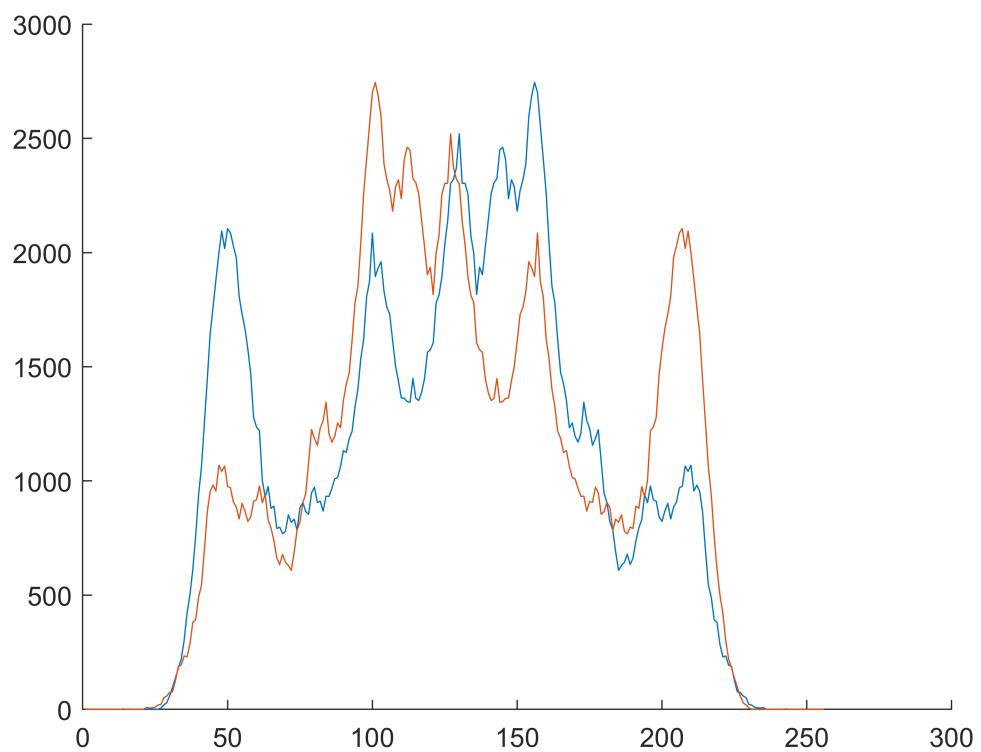


Invertir il·luminació

```
close all
I = imread('lena_gray_512.tif');
HI = imhist(I);
J = 255 - I; % invertir
HJ = imhist(J);
montage({I,J});
```



```
figure  
hold on  
plot(HI);  
plot(HJ);
```



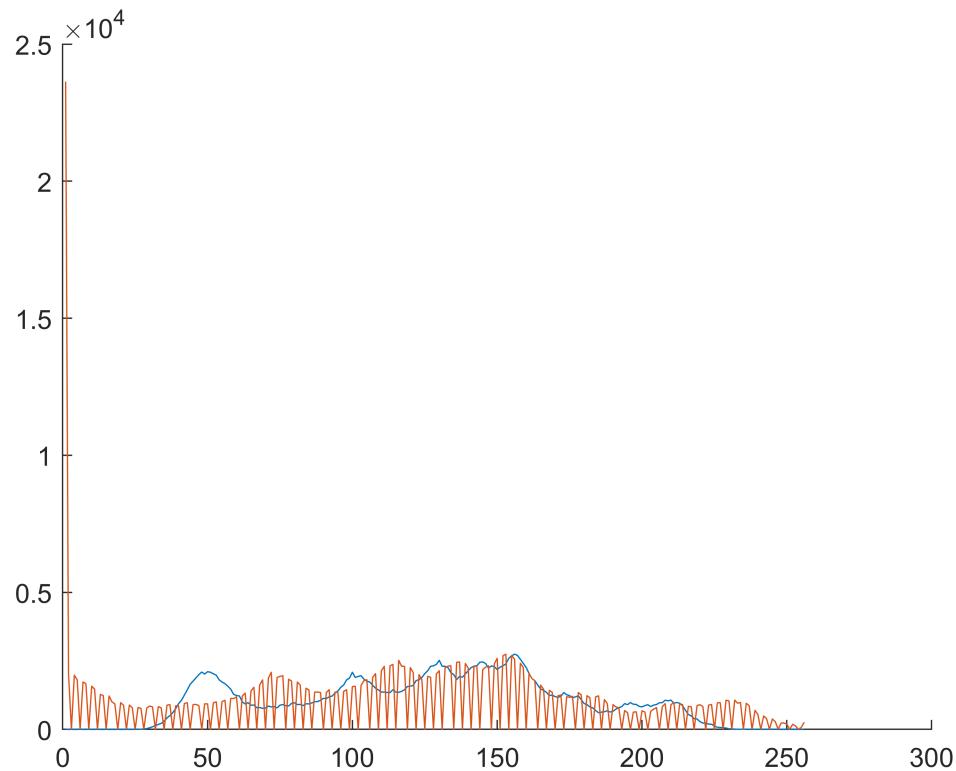
Reescalar

```
close all
I = imread('lena_gray_512.tif');
HI = imhist(I);
J = uint8(1.45*(I-50));
HJ = imhist(J);
Q = imadjust(I);
montage({I,J,Q});
```



```
figure
hold on
```

```
plot(HI);
plot(HJ);
```



Equalització de l'histograma

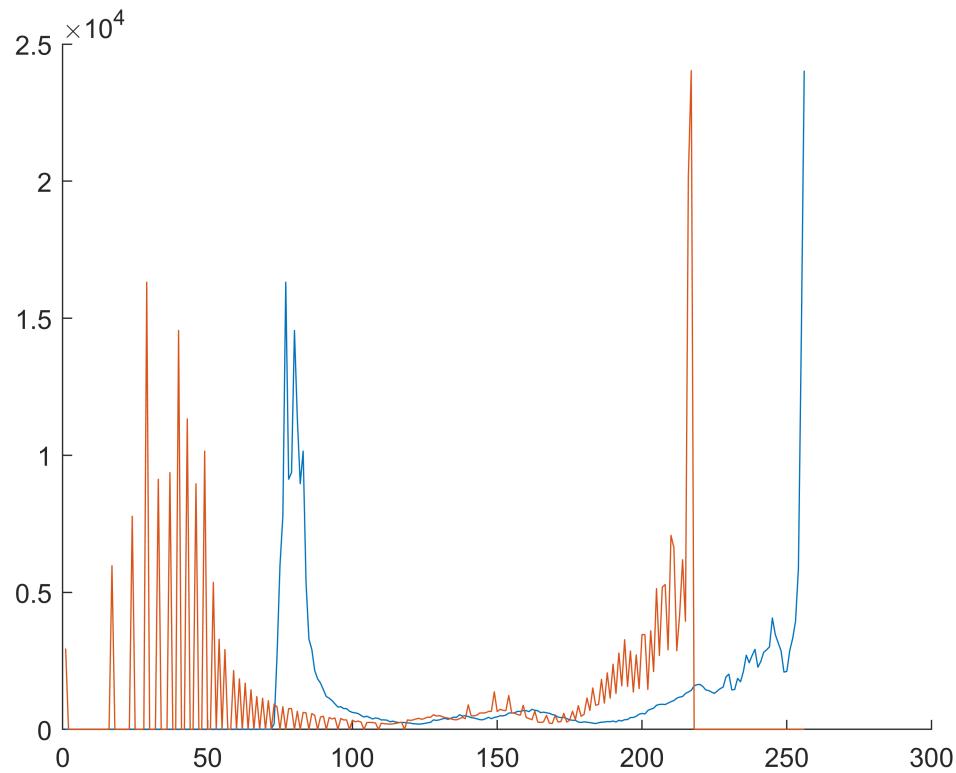
```
close all
I = rgb2gray(imread('bad_contrast.jpg'));
HI = imhist(I);
J = arrayfun(@myfunction2,I);
HJ = imhist(J);

Q = histeq(I);

montage({I,J,Q});
```



```
figure  
hold on  
plot(HI);  
plot(HJ);
```



Transformacions a l'espai

```
hold off
I = imread("bigben.png");
imshow(I);
[x, y] = getpts
```

```
x = 4x1
380.0000
379.0000
405.0000
401.0000
```

```
y = 4x1
165
221
248
191
```

```
[i, j] = getpts
```



```
i = 4x1
 5.0000
 9.0000
626.0000
624.0000
j = 4x1
 9.0000
466.0000
472.0000
 21.0000
```

```
tform = fitgeotrans([x,y],[i,j],'projective');
J = imwarp(I,tform,'Outputview',imref2d(size(I)));
montage({I,J});
```

