2^{nd} tutorial in IVP

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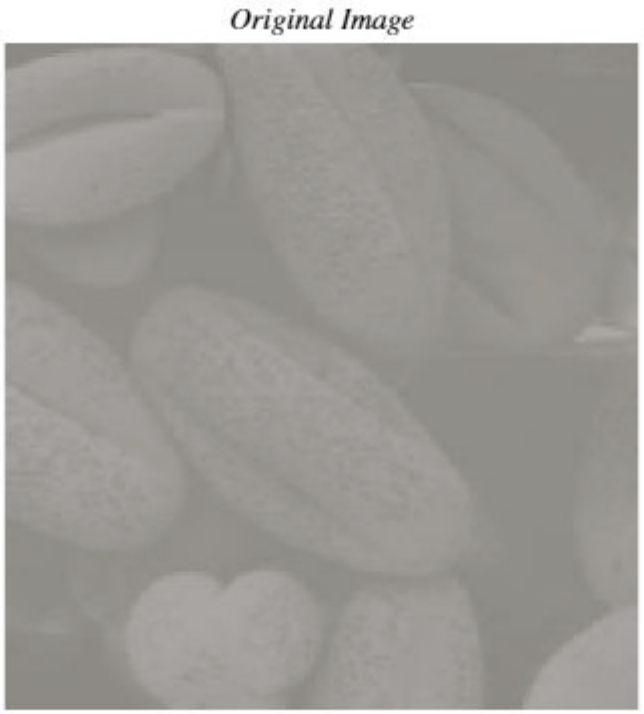
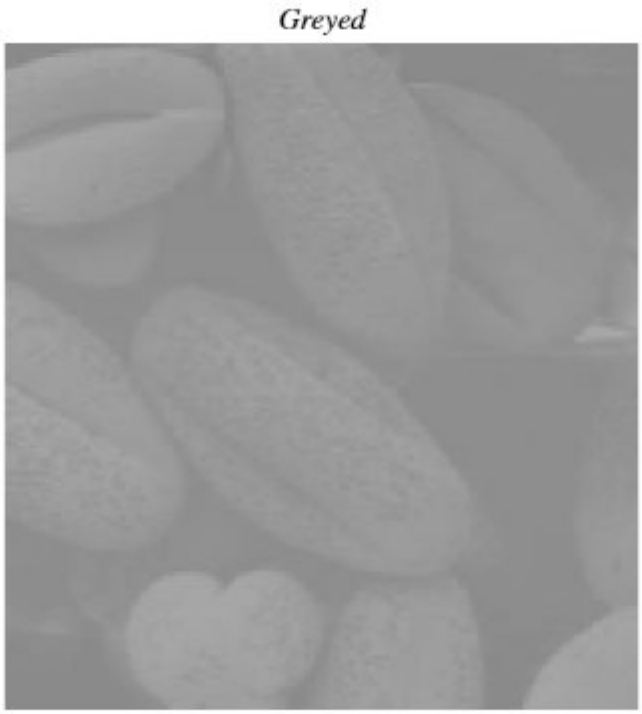
```
% input image
i = imread('Subs/IVP/unnamed.png'); imshow(i);
title('\it{Original Image}', 'interpreter', 'latex');
```



To grayscale the image.

```
g = rgb2gray(i); imshow(g);
title('\it{Greyed}','interpreter','latex');
```




```
max(g, [], 'all')
```

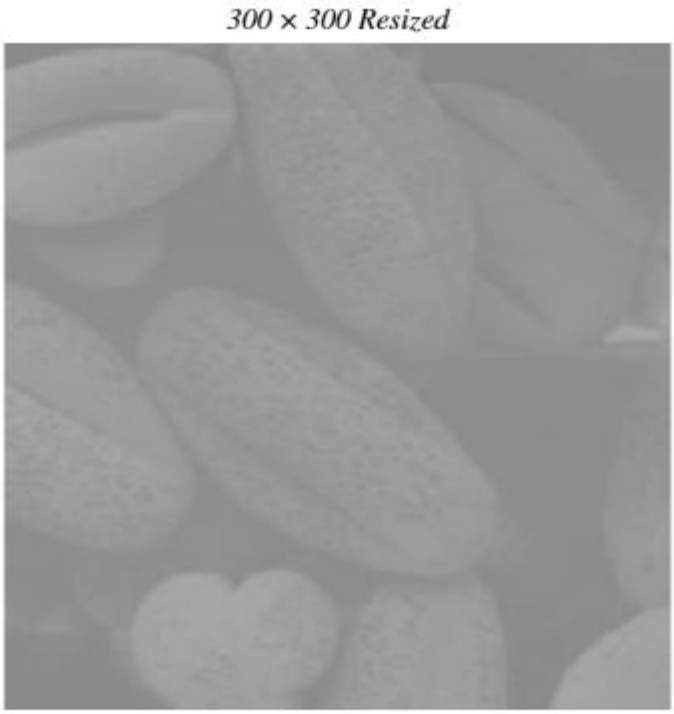
```
ans = uint8

    169
```

```
size(g)
```

```
ans = 1×2
   199   189
```

Resizing.

```
s = 300;
re = imresize(g , [1 1]*s); imshow(re);
title('\it{$300\times300$ Resized}', 'interpreter', ...
    'latex');
```



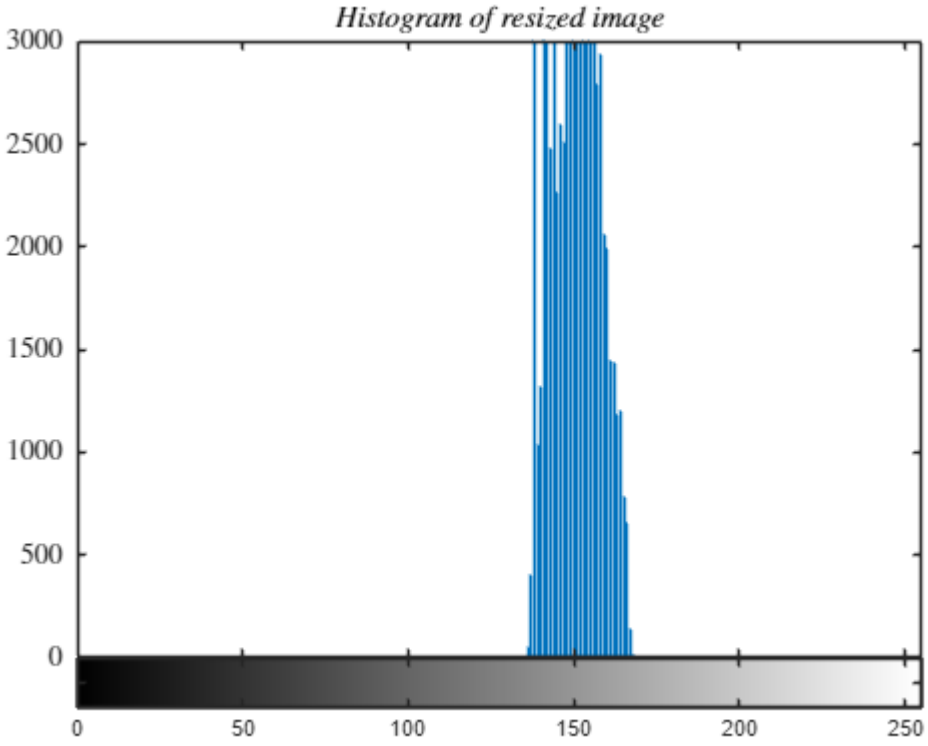

```
max(re, [], 'all')
```

```
ans = uint8

    169
```

```
size(re)
```

```
ans = 1×2
   300   300
```

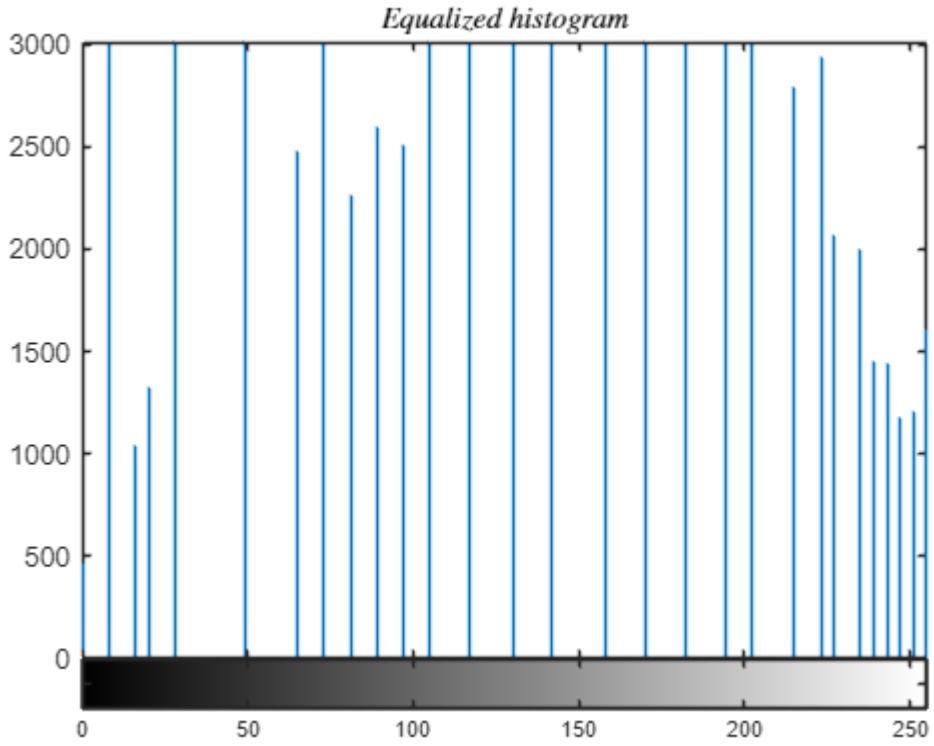
```
figure; imhist(re); axe()
title('\it{Histogram of resized image}', ...
    'interpreter', 'latex');
```




```
J = histeq(re); imshow(J)
title('\it{Matlab''s histogram equalized}', ...
    'interpreter', 'latex'); imhist(J)
```

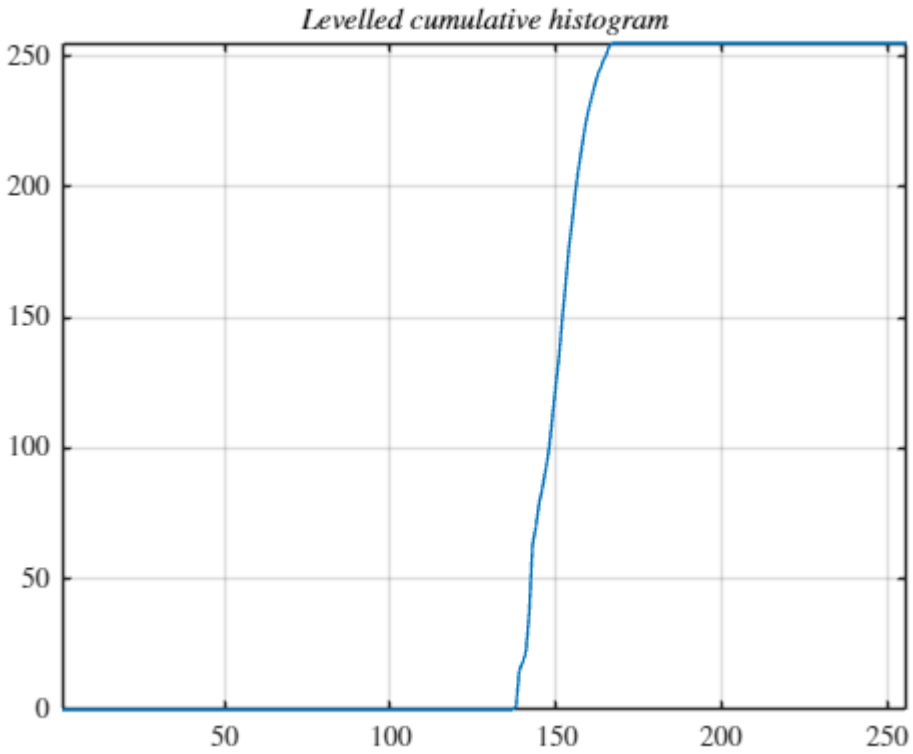
Matlab's histogram equalized

```
title('\it{Equalized histogram}', ...
    'interpreter', 'latex');
```

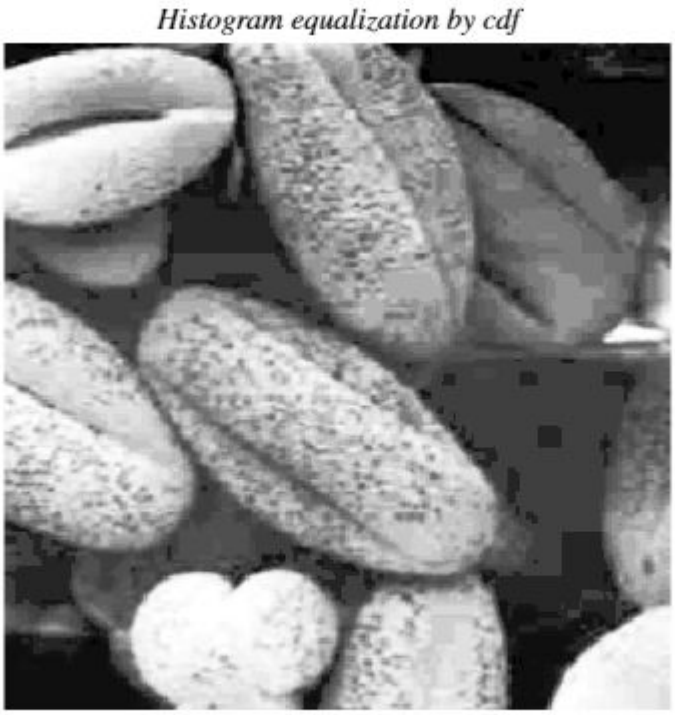


Histogram equalization by cdf histogram.

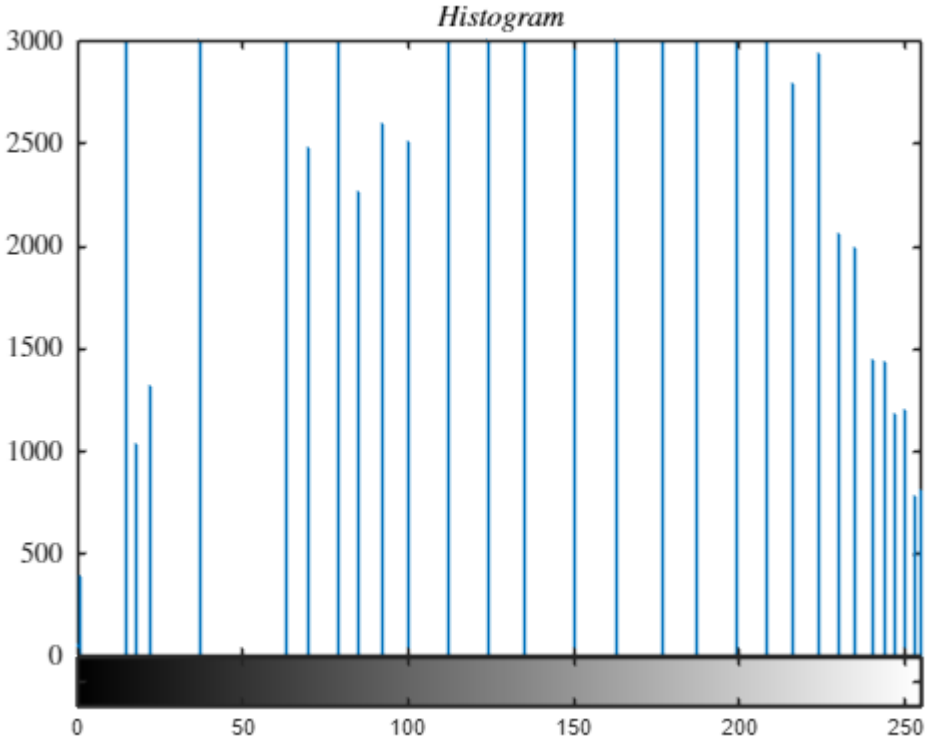
```
[fs,binLocations] = imhist(re);
c = round(cumsum(fs)*255/s^2);
f = uint8(c(re+1));
plot(c); axis tight; grid on; axe()
title('\it{Levelled cumulative histogram}', ...
    'interpreter', 'latex')
```




```
figure; imshow(f);
title('\it{Histogram equalization by cdf}', ...
    'interpreter', 'latex');
```

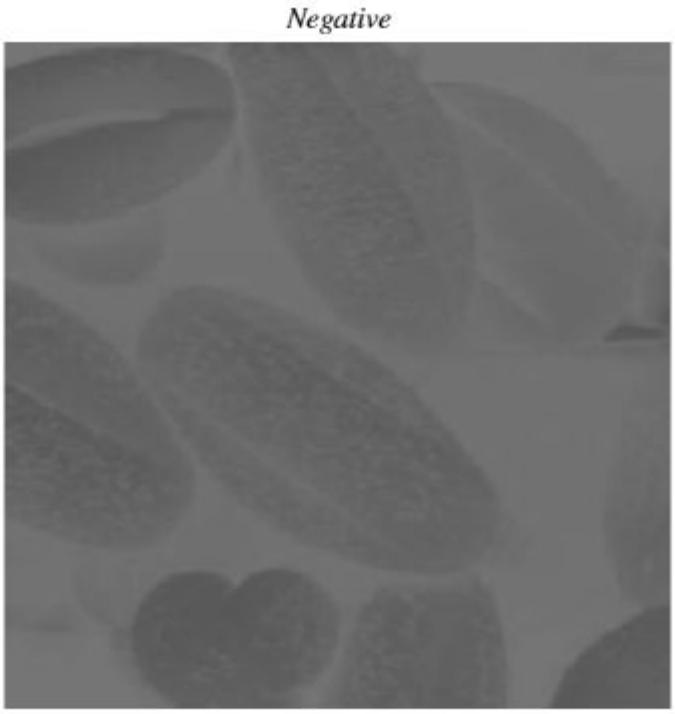



```
imhist(f); axe()
title('$Histogram$', 'interpreter', 'latex');
```

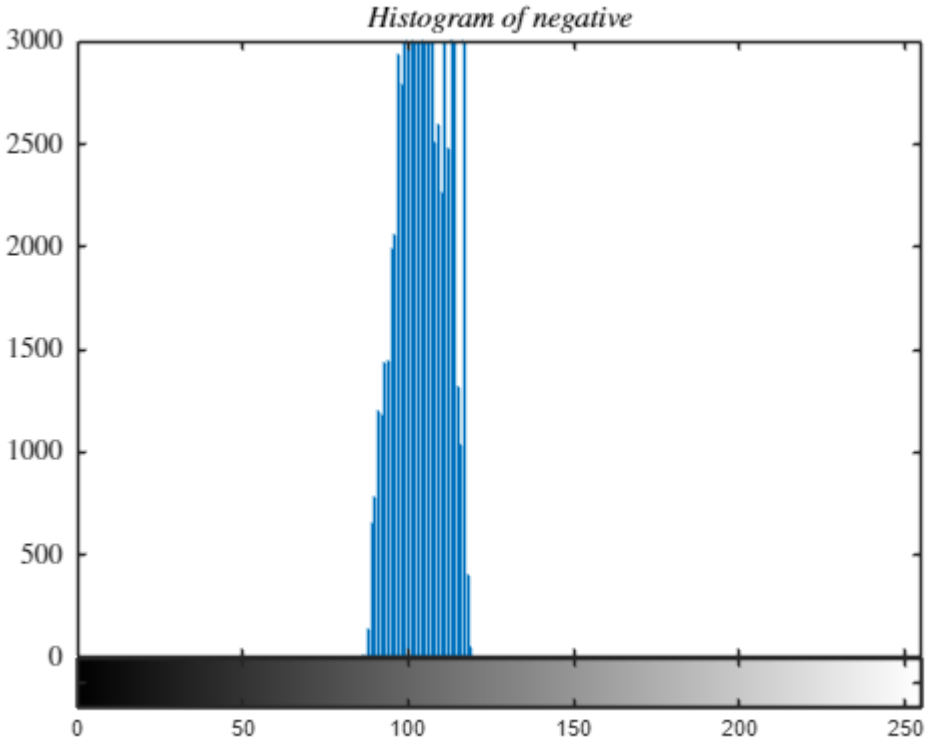


Negative Histogram.

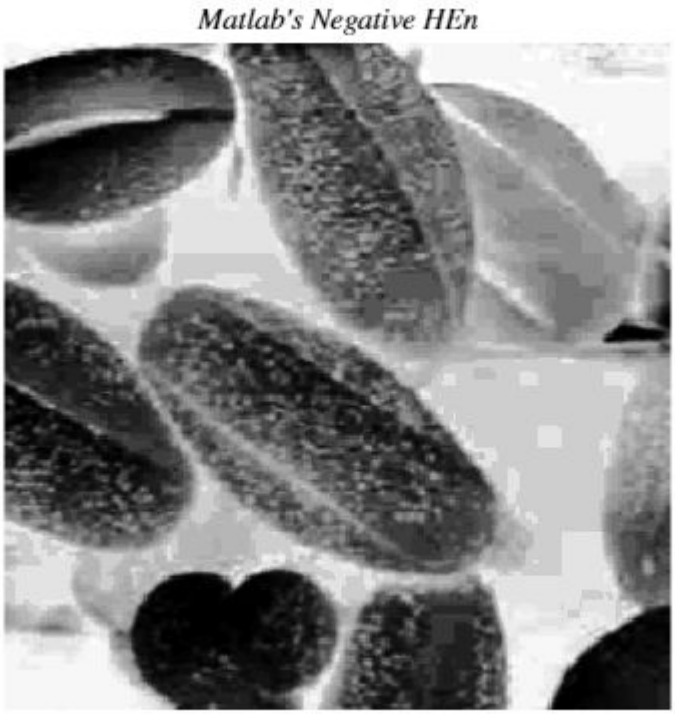
```
n = 255-re; imshow(n);
title('$Negative$', 'interpreter', 'latex');
```



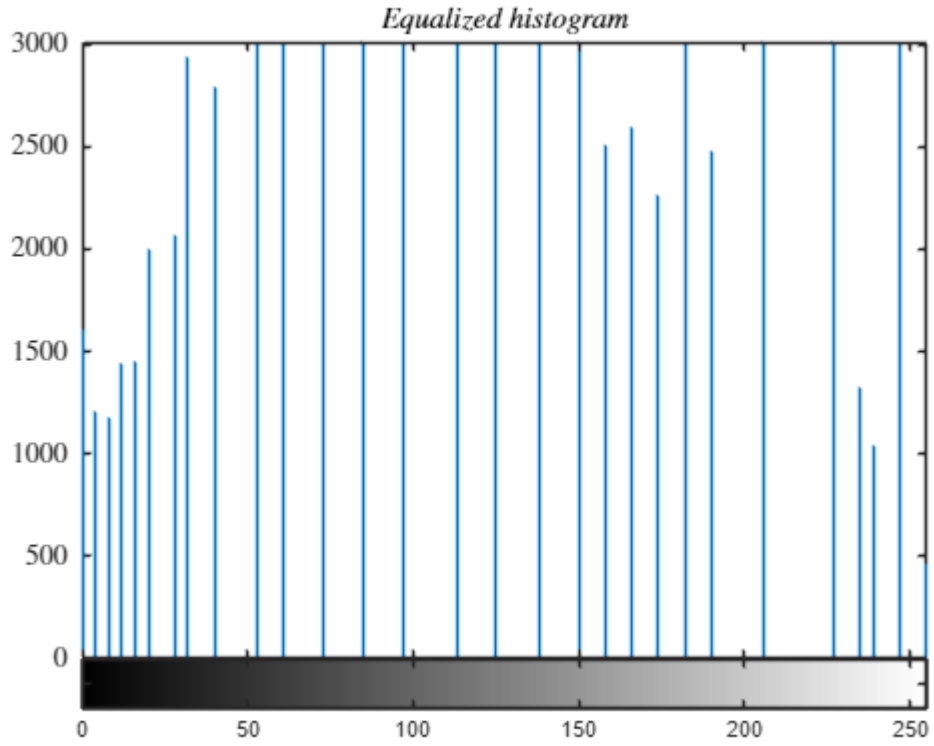

```
imhist(n); axe()
title('\it{Histogram of negative}', ...
    'interpreter', 'latex');
```



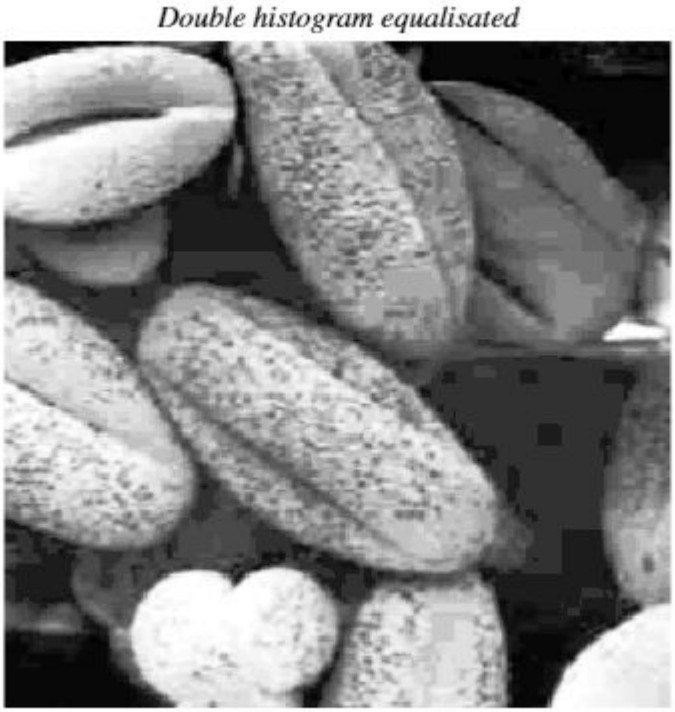

```
J = histeq(n); imshow(J)
title('\it{Matlab''s Negative HEn}', ...
    'interpreter', 'latex'); imhist(J)
```



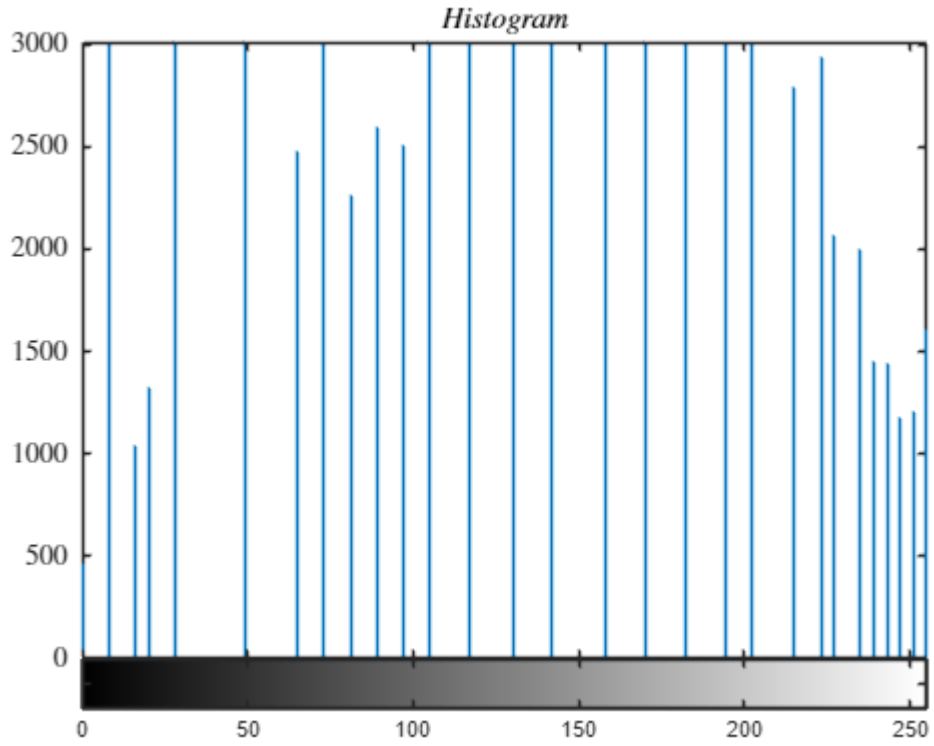
```
title('\it{Equalized histogram}', ...
    'interpreter', 'latex'); axe()
```




```
J = histeq(histeq(re)); imshow(J)
title('\it{Double histogram equalisated}', ...
    'interpreter', 'latex'); imhist(J)
```




```
title('\it{Histogram}', ...
    'interpreter', 'latex'); axe()
```



```
function axe()
    axes = gca;
    axes.XAxis.TickLabelInterpreter = 'latex';
    axes.YAxis.TickLabelInterpreter = 'latex';
end
```