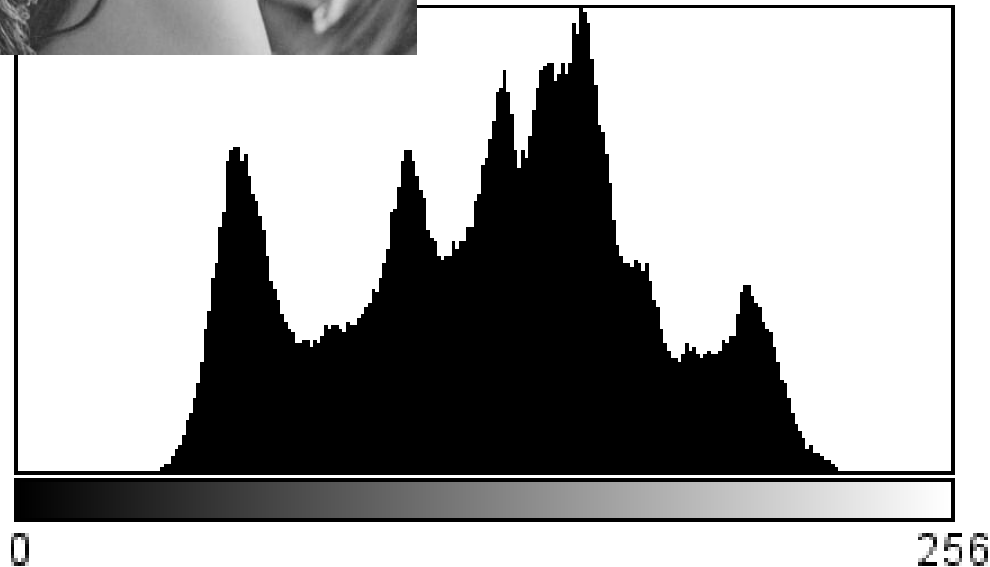


Image Histograms

Histogram

A distribution showing how often each intensity occurs in the image.



Count: 262144
Mean: 128.214
StdDev: 42.895

Min: 31
Max: 233
Mode: 154 (3202)

Dynamic Range

Dynamic Range = the number of distinct pixel values in the image.
(More=Better)

Poor exposure during image capture results in irreversible data loss.

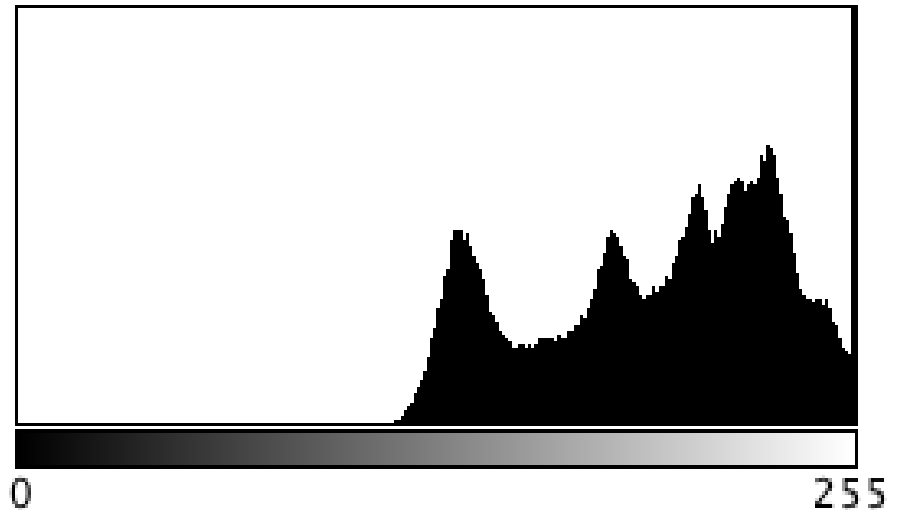
A "good" image varies across disciplines, but usually uses most/all of the available intensity range, and is centered in that range.

An image with good dynamic range is desirable because it suffers less image degradation during image processing.

Overexposed



The histogram is shifted to the right



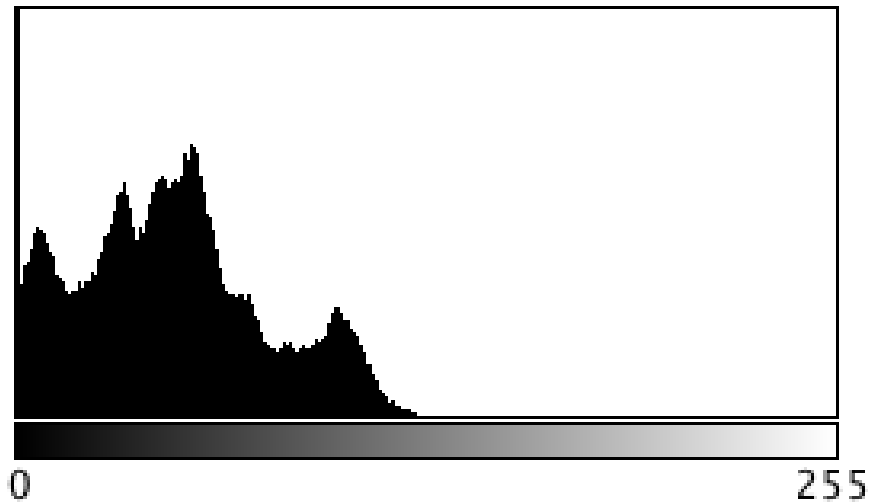
Count: 262144
Mean: 201.142
StdDev: 39.665

Min: 106
Max: 255
Mode: 255 (31493)

Underexposed



The histogram is shifted to the left.



Count: 262144

Min: 0

Mean: 35.812

Max: 133

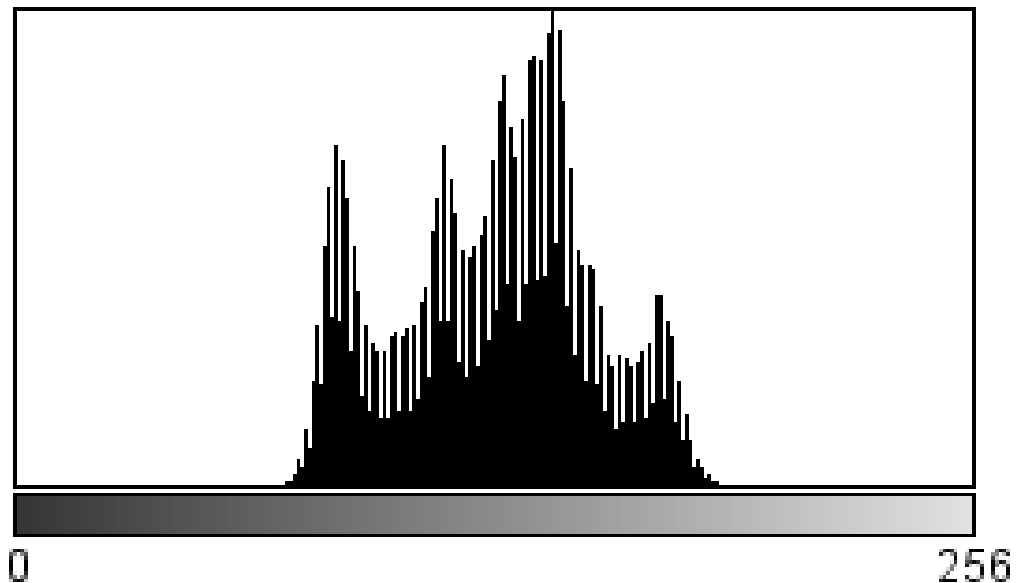
StdDev: 32.761

Mode: 0 (69648)

Contrast -



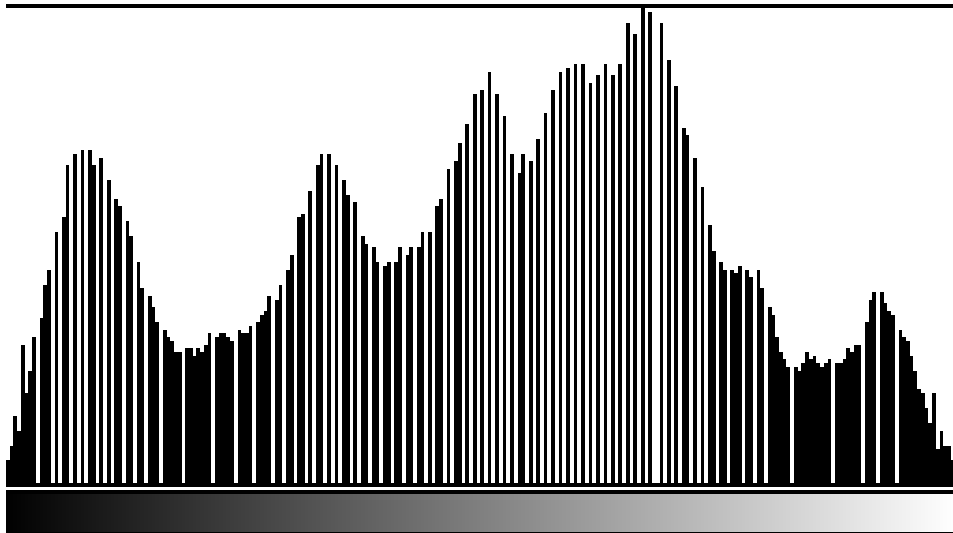
The range of values is reduced, but centered



Count: 262144
Mean: 127.439
StdDev: 26.494

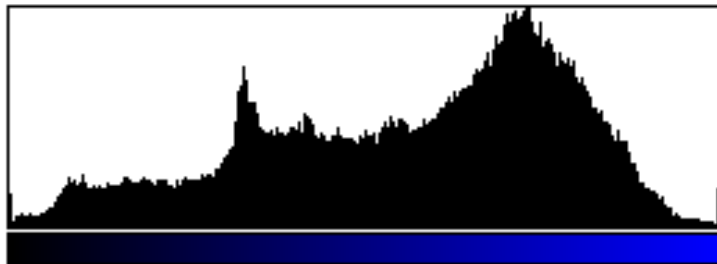
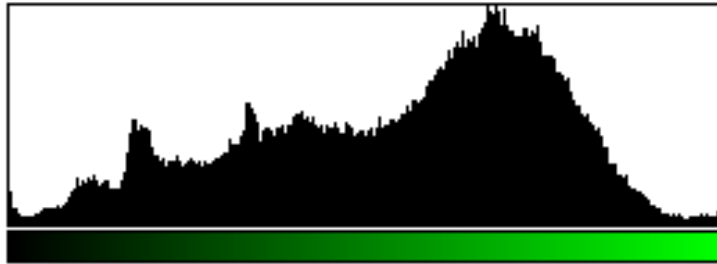
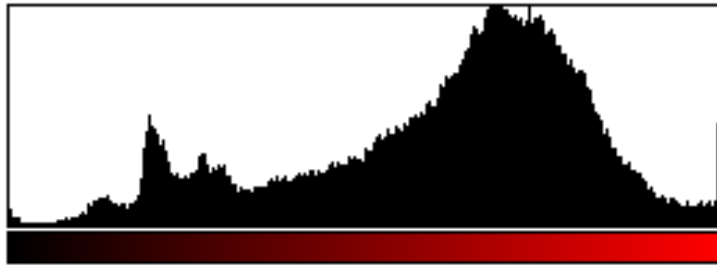
Min: 67
Max: 192
Mode: 143 (6213)

Contrast +



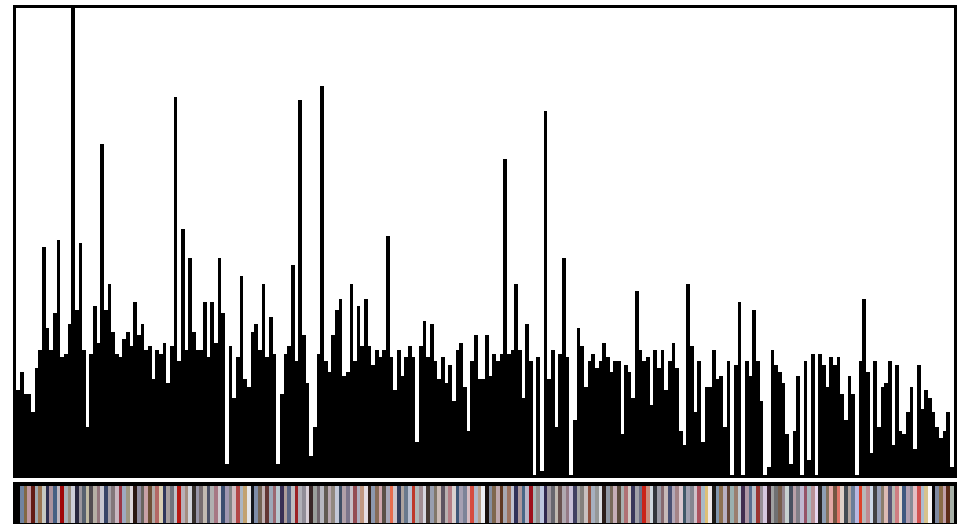
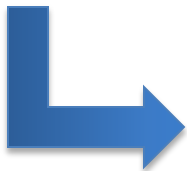
When contrast is increased in post processing, it artificially increases dynamic range. Because the original image did not contain enough range to support this, gaps appear in the histogram.

Color quantization →
histogram gaps,
e.g., 24 bit image → 8
bits. (such as
conversion to gif)



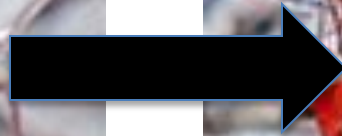
0 255

Count: 130968
rMean: 154.64 rSD: 53.37 rMode: 175
gMean: 138.90 gSD: 55.35 gMode: 172
bMean: 143.97 bSD: 56.71 bMode: 187



0

255



Summary

- A histogram gives you a quick impression of image quality.
- Poor exposure is immediately visible.
- In addition, processing steps like artificial contrast enhancement or color quantization are easily visible.