

Pseudo Code:

- 1) Get RGB as an array
- 2) Convert RGB to grey-scale using W3C luminance
- 3) Normalize data
- 4) Perform an accurate 2D correlation

Relative Luminance

Relative Luminance is the relative brightness of any point in a colorspace where 0=black and 1=white

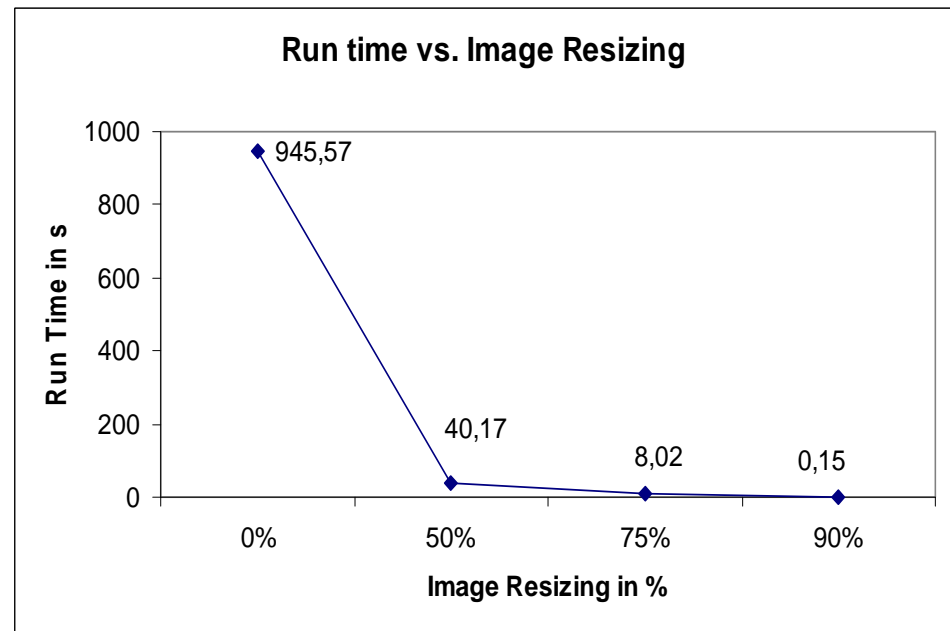
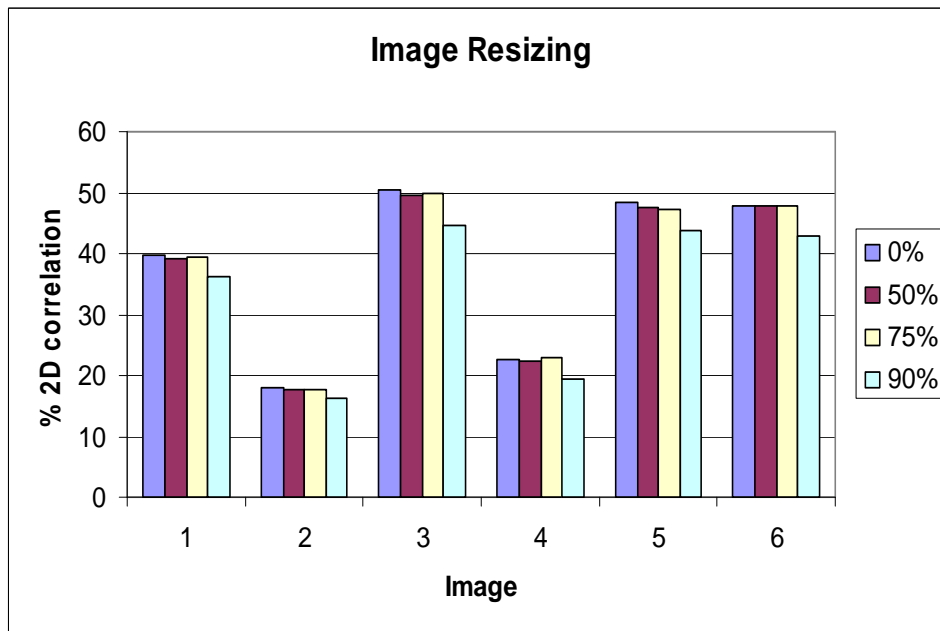
$$E'Y = 0,299 * E'R + 0,587 * E'G + 0,114 * E'B$$

Normalization

`data - data.mean() / data.std()`

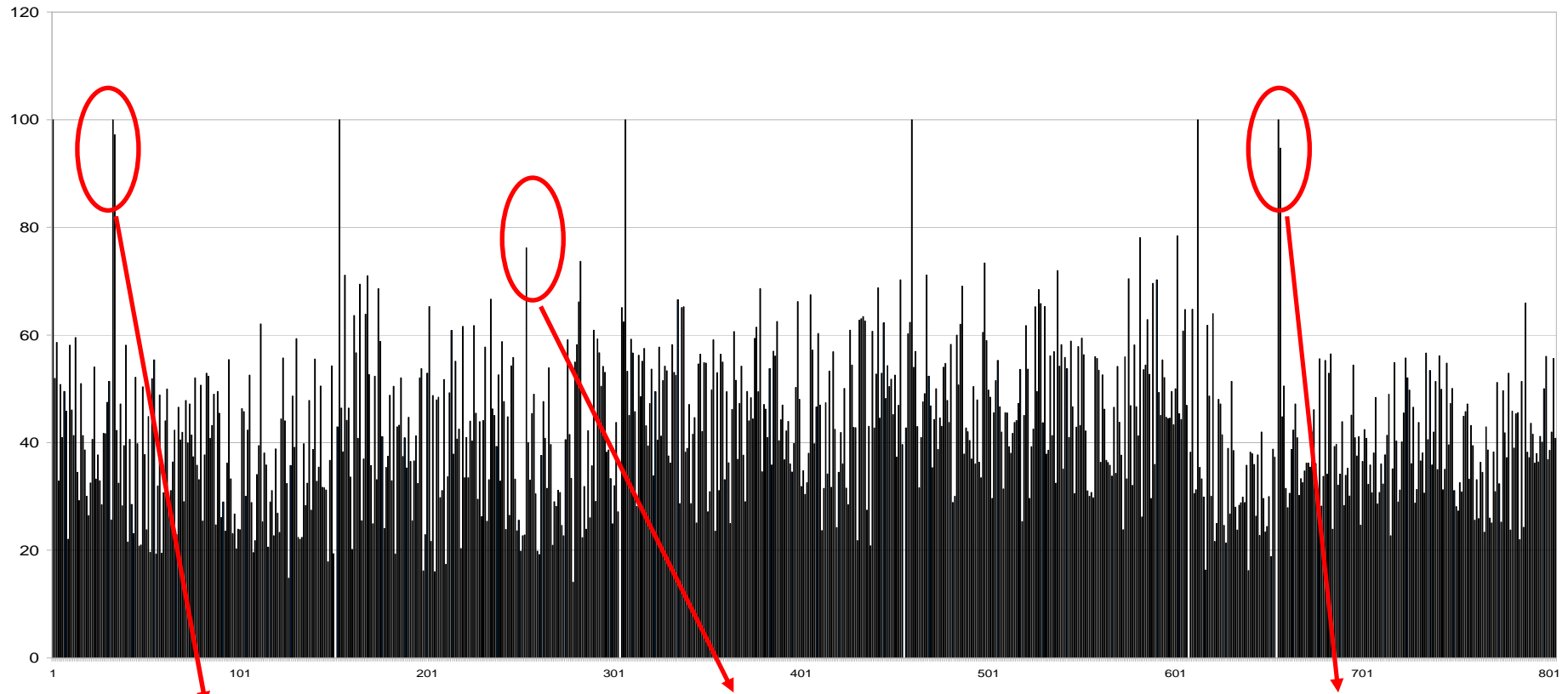
2D correlation

The 2D Correlation performs 2D correlation on two input matrices. Both linear and circular correlation can be computed. Two computation methods are available: a fast algorithm based on FFT and an accurate method based on shift accumulation. With a normalized result, it is easier to tell the degree to which the two input signals are correlated.



For speeding up:
 Prescreen with 90 % resizing
 Main screen with 75 % resizing

Image comparison by cross correlation



100 % + 97 % for same images but with different expose

76 % for similar looking images, they are not recognized as false positive (unlike FFT)

100% + 95 % for shifted images, they are not recognized as false negative (unlike FFT, Pearson, histogram comparison et al.)

