Linear scaling

The technique of linear scaling can be used to convert real numbers in the range \([a, b]\) to real numbers in the range \([A, B]\) whenever \(b > a\). The transformation is:

\[ x \rightarrow \frac{(x - a)(B - A)}{b - a} + A \]

This is the unique linear transformation that maps \(a\) to \(A\) and \(b\) to \(B\).

When linear scaling is applied to gray-level images the value of \(A\) is taken as 0 and the value of \(B\) is taken as 255. The values of \(a\) and \(b\) are computed from the image as the minimum and the maximum gray level of the given image.