Name

RGB2Lab -- converts images in MATLAB from RGB to CIELAB color space

Lab2RGB -- converts CIELAB images in MATLAB to RGB

File Location (see below for C code)

RGB2Lab.m

Lab2RGB.m

Syntax

[L, a, b] = RGB2Lab(R, G, B)
[L, a, b] = RGB2Lab(I1)
I2 = RGB2Lab(R, G, B)
I2 = RGB2Lab(I1)

[R, G, B] = Lab2RGB(L, a, b)
[R, G, B] = Lab2RGB(I1)
I2 = Lab2RGB(L, a, b)
I2 = Lab2RGB(I1)

Description

These routines convert images back and forth from RGB to CIELAB color spaces. RGB values may be in the range from 0 to 255, or from 0 to 1. CIELAB values range as follows: L lies between 0 and 100, and a and b lie between -110 and 110. Output from Lab2RGB is always between 0 and 1. The white point for CIELAB is fixed at (0.9642, 1, 0.8249), which is the D65 standard. The input and output can be 3 separate matrices or a three-dimensional tensor.

Important Note

This transformation between the two spaces is not unique. Different people use slightly different coefficients in the matrix multiplication or a different white point, resulting in a space that is scaled differently than this one. The important fact to remember is that for these two routines, the transformation is invertible to 4 or 5 decimal places. Comparisons to other transformations (e.g. Adobe Photoshop) are not helpful.

This Code is Available

After 12 years, I finally decided to make the MATLAB code public (see the links at the top of the page). The **C code** that this code was based on is also available, just send me mail.

Go to the software index or my home page.