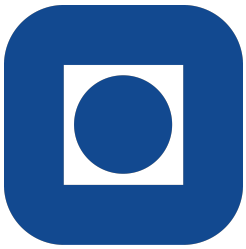

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Robotvision

Hyperspectral imaging

Mads Formo

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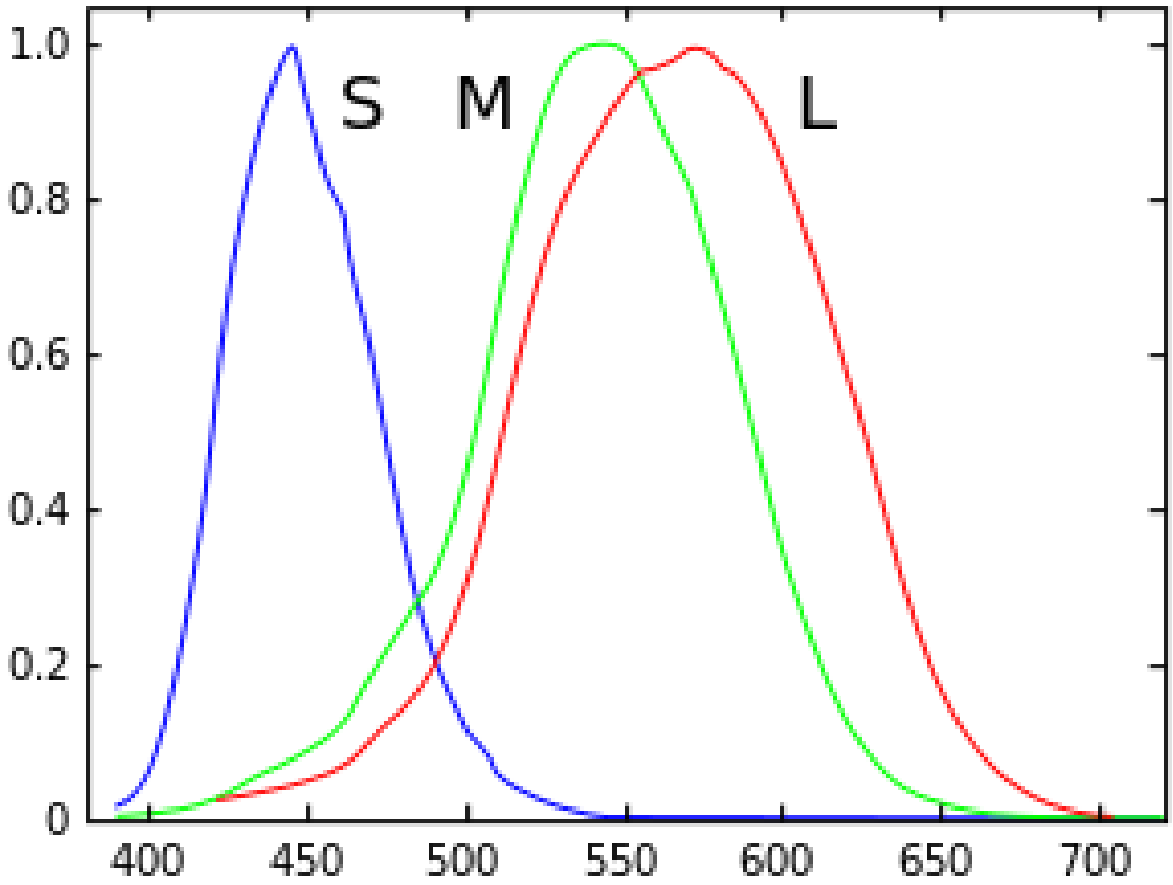

Figure 1: Graph for the human color sensitivity curves, according to Wikipedia [1]

1 Getting familiar with the data

1.1 Finding the spectral resolution

To find the spectral resoulution of the dataset, we load the *hico_wl* array, which contains the wavelength corresponding to band i. We loop through the array and compare each wavelength i with the the previous wavelenght *i-1* and we find that the average distance between the wavelengths is $5.728nm$, which seems to be constant between all wavelengths.

1.2 Relation to human color perception

The color sensitivity of the human eye is shown in fig. 1. As we can see, blue color has a peak around $445nm$ (S-curve), green peaks at $535nm$ (M-curve), and red at $575nm$ (L-curve).

1.3 Create a pseudo RGB image from the hyperspectral bands

From the *hico_wl* array, we find that Blue (445nm) is located at index $i = 7$, green (535nm) at $i = 23$, and finally red (575nm) at $i = 30$. We combine these indices from the HICO dataset and show it as an image to create a pseudo RGB image, shown in fig. 2.

Fix image

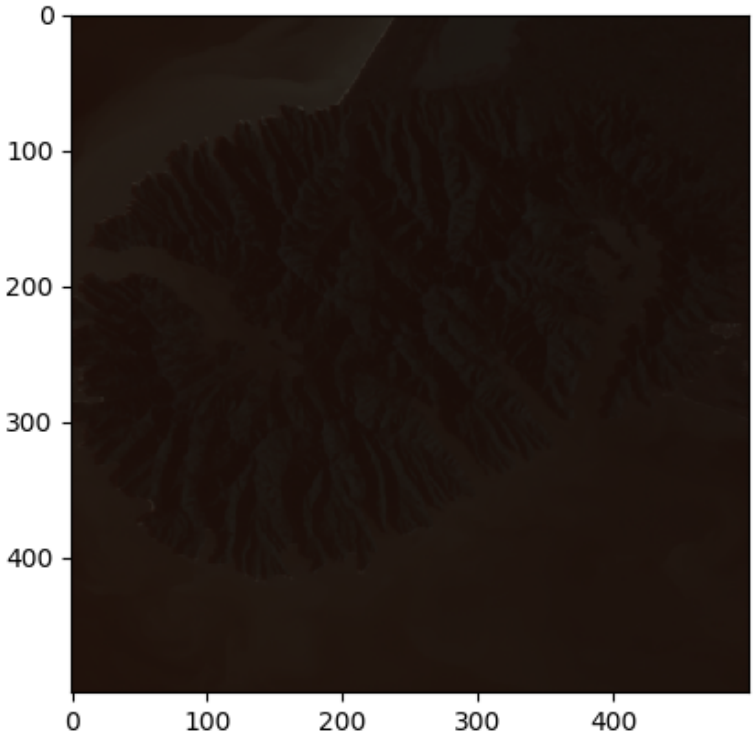

Figure 2: Pseudo RGB image

References

[1] Wikipedia. *Spectral sensitivity*. Jan. 2020. URL: https://en.wikipedia.org/wiki/Spectral_sensitivity.