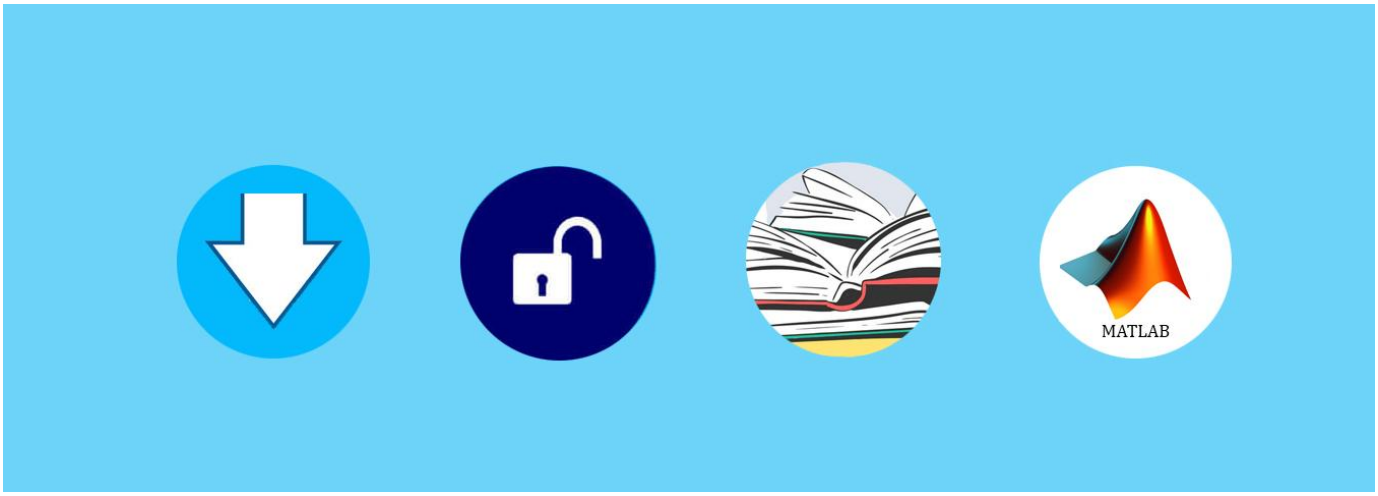


Ressources BPMNP

This page contains a database of hyperspectral images.

Most existing hyperspectral database are mainly outdoor scenes with limited field-of-view (FOV), or pictures of specific objects. Our will is to make available, to the lighting and color community, a database of high spatial and spectral resolution images with large FOV.

Natural and man-made built environments available in the database were acquired using a VNIR4 SPECIM (sCMOS-50-V10E model) hyperspectral camera attached to a SPECIM rotating scanner. A 18.5mm lens (f/2.4 fixed aperture) was mounted on the camera which is equipped with a sCMOS sensor (14.2mm width, x-y spatial resolution is 2160*1080 pixels).

The resulting vertical FOV is 42° (the horizontal FOV depends on the rotation of the camera). The camera spectral range is 400-1000nm. Its spectral resolution FWHM is 2.9nm (30microm slit). Spectral sampling varies between 0.63 and 5.07nm

according to the binning. The signal-to-noise ratio (peak) is 170:1 (no binning).

For reducing file size, data were acquired with a 2-by-2 binning resulting in a vertical spatial resolution of 1080 pixels and 480 spectral bands with a width between 1.22nm (at 394.6nm) and 1.34nm (at 1007.00nm). Dark noise correction and radiometric calibration were done in AizaTools Version 4.3 vs2008 producing two ENVI files: a binary file (.dat), and a header file (.hdr) containing the metadata associated with the binary file. The Matlab multibandread command can then be used to load ENVI files and produce hyperspectral cubes (radiances are in µW/cm^2.sr per nm).

/// Hyperspectral Database

>> Lab scenes

LIGHTBOOTH_001

LED lighting @2700K, 3000K, 4000K, 5000K, 6500K

Original capture: 3214-by-1080 pixels

LIGHTBOOTH_002

LED lighting @5400K, incandescent lighting @5050K and 2550K

Original capture: 2078-by-1080 pixels

>> Urban scenes

URBAN_001

Original capture: 1948-by-1080 pixels

URBAN_002

Original capture: 1652-by-1080 pixels

URBAN_003

Original capture: 2152-by-1080 pixels

URBAN_004

Original capture: 3177-by-1080 pixels

>> Outdoor

OUTDOOR_001

Original capture: 3162-by-1080 pixels

OUTDOOR_002

Original capture: 3636-by-1080 pixels

OUTDOOR_003

Original capture: 3377-by-1080 pixels

OUTDOOR_004

Original capture: 3074-by-1080 pixels

OUTDOOR_005

Original capture: 2729-by-1080 pixels

>> Flowers

FLOWERS_001

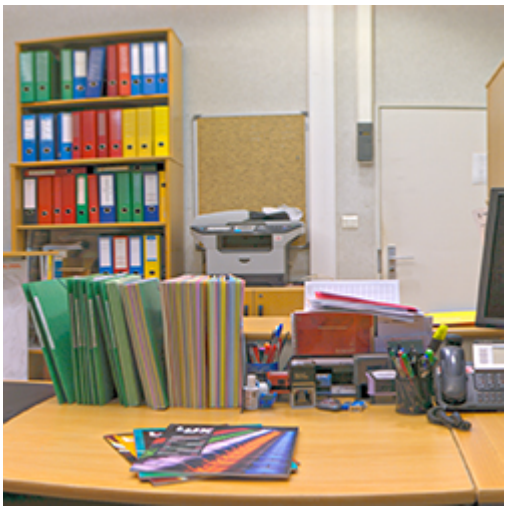
Original capture: 2598-by-1080 pixels

>> Indoor scenes

INDOOR_001

Mixed lighting (fluo+daylight)

Original capture: 1256-by-1080 pixels



INDOOR_002

Mixed lighting (fluo+daylight), artificial lighting (fluo)

Original capture: 2572-by-1080 pixels

CONTACT

For more information, contact Sophie Jost (sophie.jost@entpe.fr).

To access the database, send an email to Sophie Jost (sophie.jost@entpe.fr) in specifying the image(s) and if applicable the light source(s) you want to download.

If you use images from our database, please cite this publication: Cauwerts C. & Jost S. (2019). Color rendering of window glass: analysis of landscape content with hyperspectral imaging. Proceedings of the International Colour Association (AIC) Conference 2019, Buenos Aires, Argentina, October 14-17.