Università degli Studi di Brescia

Multimedia Information Coding and Description
Lab experience n. 2

1 Contrast Sensitivity Function

Create a synthetic image as the one attached below. This is a locally sinusoidal function whose frequency increases from left to right and whose amplitude increases from top to bottom. Use a logarithmic scale both for frequencies and for amplitudes, for example

$$u(x, y) = a + b\alpha^x \sin(\beta\gamma^y), \tag{1}$$

for appropriately tuned parameters $a, b, \alpha, \beta\gamma$. (Hint: use the command **ndgrid** to create a 2D domain).

Check your own sensitivity to spatial frequencies and draw a qualitative plot of your contrast sensitivity function. Try to check its consistency by changing the distance from the monitor. Create similar images to check your contrast sensitivity to red, green and blue components.

2 Spatio-Temporal sensitivity

Use the commands **im2frame** and **movie** to create videos with pulsating sinusoids of the form

$$u(x, y, t) = L + \frac{\Delta}{2}(1 + \cos(2\pi f_t t)) \cos(2\pi f_x x + 2\pi f_y y). \tag{2}$$

Test your sensitivity to different combinations of L, Δ, f_t, f_x and f_y.