

MixedDomainFilter (by Xianying Li)

This is the C++ implementation for the paper “Mixed-domain Edge-aware Image manipulation” on the CPU. It relies on the FFTW 3.3 library and the OpenCV library.

It has been tested successfully on a Windows 7 platform.

Interface

Function: `void manipulationRGB(string xFileName, string yFileName, double alpha, double beta, double sigma, double lambda = 1.0, int level = -1);`

This function manipulates the detailed/overall appearance of an input image (in RGB space).

xFileName is the file name for the input image.

yFileName is the file name for the output image.

alpha, beta, sigma, lambda are the parameters of the algorithm (refer to the paper).

Setting **level=-1** means to process the whole pyramid, while setting **level>0** means to process a fixed number of levels of the pyramid (may cause halo artifacts).

Function: `void HDRCompression(string xFileName, string yFileName, double alpha, double beta, double sigma, double lambda = 1.0, int level = -1, double percentile = 0.5);`

This function compresses an input HDR image to an LDR image.

xFileName is the file name for the input HDR image.

yFileName is the file name for the output LDR image.

alpha, beta, sigma, lambda are the parameters of the algorithm (refer to the paper).

Typically set $\alpha=1.0$, $\beta=0.1$, $\sigma=\ln(2.5)$, $\lambda=1.0$ for ‘photorealistic’ effect.

Function: `void NPRProcess(string xFileName, string yFileName, double sigma, double lambda = 1.0, int level = -1);`

This function computes an abstraction-style image of an input image.

xFileName is the file name for the input image.

yFileName is the file name for the output image.

sigma, lambda are the parameters of the algorithm (refer to the paper).

Typically set $\sigma=0.15$, $\lambda=1.0$.

Function: `void deHaze(string xFileName, string yFileName, double Rat = 1.0, double RatE = 1.0, double RatL = 0.9, int level = -1);`

This function automatically dehaze an input image.

xFileName is the file name for the input image.

yFileName is the file name for the output image.

Examples of using these functions can be found in “Main.cpp”.