WS-PSNR manual

Yule Sun, Zhejiang University, [sunyule@zju.edu.cn](mailto:sunyule@zju.edu.cn)



**Figure 1. Quality evaluation framework of WS-PSNR**

WS-PSNR is a metric to evaluate the difference (quality) between two video clips in spherical domain. Here WS-PSNR is utilized as the objective quality metrics between the reference video X and the test video X’. WS-PSNR supports evaluating the quality of omnidirectional video in the meaning of sphere. Currently, it only supports video with YUV4:2:0 format and original and reconstructed videos shares the same format and resolution, as show in Figure 1, in which Video X’ means Video X with some distortion but the format of X’ and X is same. And we will release new versions of software to support more general cases. The source code is available on https://github.com/Rouen007/WS-PSNR

* Input parameters

(If you add the parameter “-help”: It will give you a hint how to use the software)

Mandatory:

-w: Video width

-h : Video height

-n : Number of frames

-o : Original file

-r: Reconstructed file

Optional:

-x: Index of Image colorspace default: Index=1 (8bit/sample)

(Index=1: 8bit/sample Index=2:10bit/sample)

-f: Index of video format default: Index=0 (Equirectangular)

(See Table below)

|  |  |  |  |
| --- | --- | --- | --- |
| Index | Format | Diagram | Width/Height |
| 0 | Equirectangular |  | 2:1 |
| 1 | Cubic with 3\*2 type |  | 3:2 |
| 2 | Cubic with 2\*3 type |  | 2:3 |
| 3 | Cubic with 6\*1 type |  | 6:1 |
| 4 | Cubic with 1\*6 type |  | 1:6 |
| 5 | Cubic with T type |  | 4:3 |
| 6 | Icosahedron |  | recommend  88:42 |
| 7 | Octahedron |  | recommend  224:97 |
| 8 | ……. |  |  |

* Example

1. Calcultate WS-PSNR of original video A and reconstructed B with equirectangular format (4096\*2048) for 100 frames (YUV420 8bit/sample)

**-w 4096 -h 2048 -n 100 –o A.yuv -r B.yuv**

1. Calcultate WS-PSNR of original video C and reconstructed D with Cubic with 2\*3 type format (2048\*3072) for 300 frames (YUV420 10bit/sample)

**-w 2048 -h 3072 -n 300 –x 2 -f 2 –o C.yuv –r D.yuv**

* Remarks

Other formats can also be added to be evaluated using WS-PSNR if needed.