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| D:\Homepage\snli\anaglyph\title.png  Image and Video Processing Lab, The Chinese University of Hong Kong  **1. Introduction**  Anaglyph is a traditional inexpensive 3D displaying technique. Like other 3D displaying techniques, anaglyph can provide a slightly different view to each of the two eyes, as shown in Figure 1. From the disparity between the two views and other visual cues, the human visual system can perceive 3D effect.    Figure 1. To perceive 3D, each eye should see a slightly different image.  An anaglyph image is formed by superimposing two views (i.e., left and right images of a stereo image pair) in different colors. When perceived through colored glasses, the two images will be separated from the composite one to feed each eye. The separation is based on color filtering, as illustrated in Figure 2.  D:\Studying\My papers\Anaglyph\Figures\1\fig1.jpg  Figure 2. How a simple anaglyph method delivers two different views to the eyes.  **2. Our Method**  Anaglyph images have deficiencies like color distortions, retinal rivalry, ghosting effect, and so on. We proposed a new anaglyph image generation method that tried to reduce these distortions. It works in the CIELAB color space, and aims to match perceptual color appearance attributes between the original stereo image pair and the perceived anaglyph image. The framework of this method is shown in Figure 3.    Figure 3. Framework of the proposed anaglyph image generation algorithm.  If you refer to our paper [1] for technical details, you may find Figure 3(b) a little difficult to understand, as pointed out by the reviewers when the paper is under revision. So an animation version of Figure 3(b) in [1] is given below to assist your reading.  D:\Homepage\snli\anaglyph\fig3b_animation.gif  Figure 4. A animation version of Figure 3(b) in our paper [1].  **3. Experiments**  Rather than evaluating the performance based on typically 3 to 5 images as in most prior studies, subjective tests have been conducted, involving 25 stereo image pairs and 20 subjects, to compare the overall performance of 4 anaglyph generation methods. 5 images are selected in another experiment to evaluate the image quality regarding specific distortions, e.g., chrominance accuracy, retinal rivalry, and ghosting effect. Figure 5 shows right images of the 25 stereo pairs used in the experiments. They are downloaded from these websites [2, 3].  D:\Studying\My papers\Anaglyph\5\Allarticle.cls\fig6.jpg  Figure 5. Right images of the 25 stereo pairs used in the subjective tests.  **4. Code and Experimental Data**  The MATLAB code of the proposed anaglyph image generation algorithm can be downloaded here. All the other experimental data, including the original stereo image pairs, anaglyph images generated by the 4 different methods and their subjective quality ratings, can be downloaded here.  **5. References**  [1] S. Li, L. Ma, K.N. Ngan, “Anaglyph Image Generation by Matching Color Appearance Attributes”, Signal Processing – Image Communication, accepted, 2013.  [2] 3D China, <http://www.china3-d.com/3dclub/>  [3] SWell3D, <http://www.swell3d.com/color-anaglyph-methods-compare.html> |
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