Manual for Edge Preserving Smoothing 9 (EPS9)

Ugo Capeto*

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EPS9 is an implementation of the edge preserving filter described in [1] that is used for smoothing depths/disparities of occluded pixels. Here, it is used to smooth a depth map while preserving the edges of a reference/guide image. EPS9 is a variant of the bilateral filter [2].

Assuming you have a reference image and a depth map stored in a directory somewhere on your computer, the files `eps9.bat` and `eps9_input.txt` must be copied to that directory. These two files are provided in the directory `eps9_test` along with a set of sample input files. The file `eps9.bat` must be modified so that the path to `eps9.exe` is the correct one for your computer.

The format of `eps9_input.txt` is as follows:

```
Name of reference image (input)
Name of depth map to be smoothed (input)
Window radius
Sigma space
Sigma color
Name of smoothed depth map (output)
```

The file names cannot have spaces in them. I would not use a full path format like `C:\this_dir\that_dir\image.png` but simply `image.png`. I also wouldn't use a point in the body of the name (`image_ref.png` is ok but `image.ref.png` is not).

The supported image file formats are tiff, png, and jpeg.

Sigma space σ_s controls the weight of the spatial term in the bilateral filter.

Sigma color σ_c controls the weight of the color term in the bilateral filter.

At this point in time (this may change as the code is improved upon), it is not recommended to use images that are too big. I personally recommend images that are in the one to two megapixels range although one can certainly try with larger images and see what happens.

If you cannot scroll to the beginning of the command window (EPS9 prints out useful info as it runs), you need to increase the screen buffer size of the command window by doing the following: Right-click on the icon in the upper left and then click on Properties; Click on the Layout tab; Increase the Screen Buffer Size Height to the maximum, which is 9999; Click OK. You should now be able to get to the beginning of the printouts next time you run EPS9.

*e-mail: `ugocapetodifrancia3d@gmail.com`

References

[1] Pauline Tan and Pascal Monasse. Stereo disparity through cost aggregation with guided filter. *Image Processing On Line*, pages 252–275, 2014.

[2] Wikipedia. Bilateral filter. `https://en.wikipedia.org/wiki/Bilateral_filter`. Accessed December 5, 2015.