

Weekly Report

Adviser: Prof. Yang Wen

Student: Cheng Wensheng

Period: 2018.9.30-10.7

Abstract—This week I mainly put my effort on thinking about my paper’s idea and reading a new semantic segmentation paper of MIT researchers, which is accepted by SIGGRAPH 2018.

I. PAPER READING

THE paper’s title is *Semantic Soft Segmentation*. In this paper, they approach the problem of dealing with transition parts of image from a spectral segmentation angle and propose a graph structure that embeds texture and color features from the image as well as higher-level semantic information generated by a neural network.

In summary, the following points show their main contributions:

- They have proposed a method that generates soft segments that correspond to semantically meaningful regions in the image by fusing the high-level information from a neural network with low-level image features fully automatically.
- They have shown that by carefully defining affinities between different regions in the image, the soft segments with the semantic boundaries can be revealed by spectral analysis of the constructed Laplacian matrix. The proposed relaxed sparsification method for the soft segments can generate accurate soft transitions while also providing a sparse set of layers.
- They have demonstrated that while semantic segmentation and spectral soft segmentation methods fail to provide layers that are accurate enough for image editing tasks, our soft segments provide a convenient intermediate image representation that makes several targeted image editing tasks trivial, which otherwise require the manual labor of a skilled artist.

Fig. 1 is the overview of semantic soft segmentation. Fig. 2 is the result of foreground objects processing.

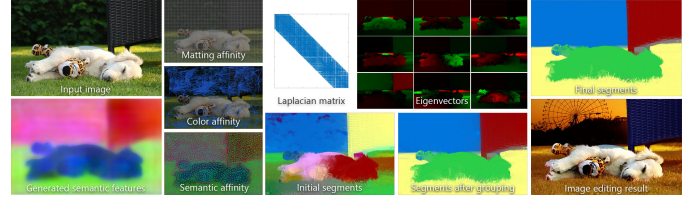


Fig. 1: Pipeline of semantic soft segmentation.

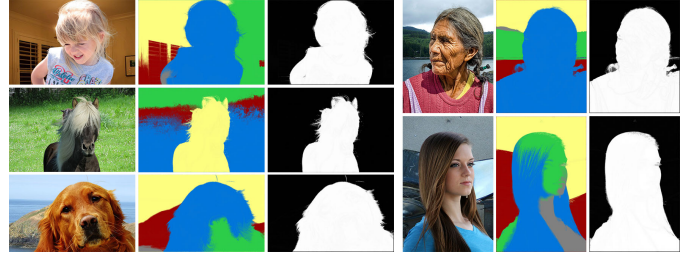


Fig. 2: Foreground objects processing result.