Superpixel Sizes using Topology Preserved Regular Superpixel Algorithm and their Impacts on Interactive Segmentation

ABSTRACT

Interactive Image Segmentation is a type of semiautomated segmentation that uses user input to extract the object of interest. It is possible to speed up and improve the end result of segmentation by using pre-processing steps. The use of superpixels is an example of a pre-processing step. A superpixel is a collection of pixels with similar properties such as texture and colour. Previous research was conducted to assess the impact of the number of superpixels (based on SEEDS superpixel aglorithms) required to achieve the best segmentation results. The study, however, only examined one type of input (strokes) and a small number of images. As a result, the goal of this study is to extend previous work by performing interactive segmentation with input strokes and a combination of bounding box and strokes on images from Grabcut image data sets generated by Topology preserved regular superpixel (TPRS). Based on our findings, an image with 1000 to 2500 superpixels and a combination of bounding box and strokes will help the interactive segmentation algorithm produce a good segmentation result. Finally, the size of the superpixels would influence the final segmentation results as well as the input type.