

Homework-2 Report

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We used two different strategies while applying Selective search segmentation on the images provided. For each image we analyze and compare the proposals made by ‘color’ strategy and the proposals made by ‘all’ strategy that takes all four similarities into consideration (color, texture, size and fill).

The blue boxes show the ground truth. The red boxes in the first image show the proposals made by the Selective search and in the second image show the proposal boxes that have $\text{IoU} \geq \text{Threshold}$. If a ground truth has more than 1 box that have $\text{IoU} \geq \text{Threshold}$ we choose the box with highest IoU. Here the threshold is set to 0.5.

Overall, the ‘all’ strategy created better segments for the images provided than the ‘color’ strategy.

Image 1: (Strategy – ‘Color’)

Recall value - recall 0.5714285714285714

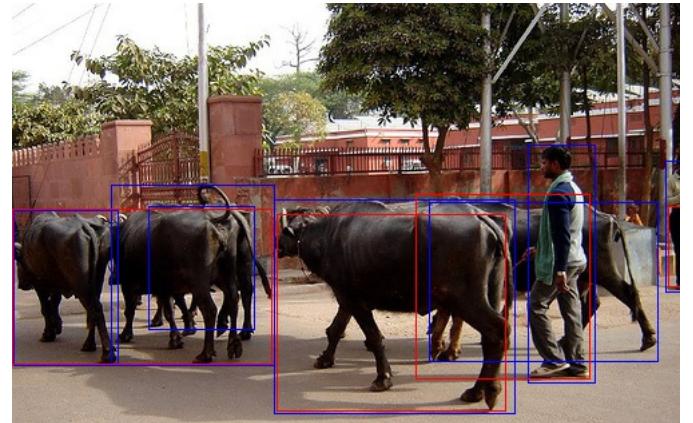
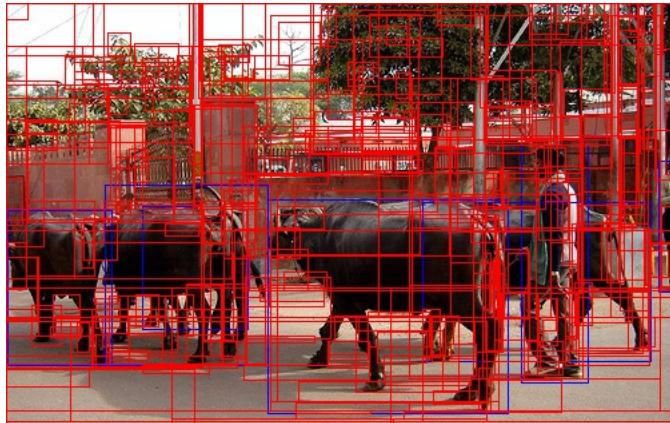
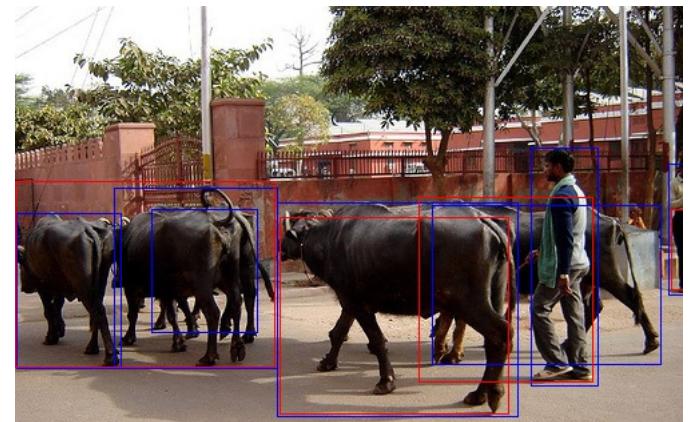
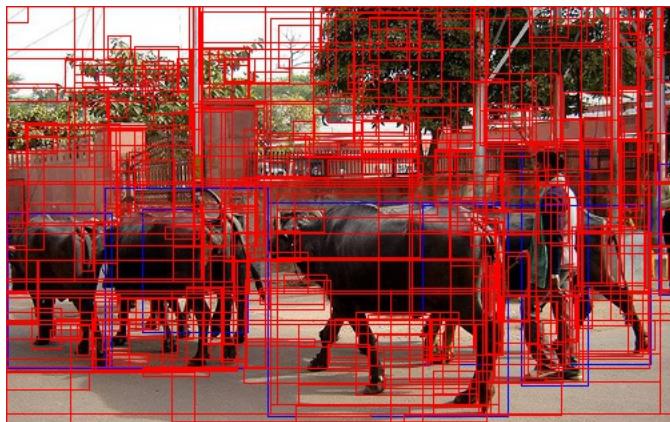


Image 1: (Strategy – ‘All’)

Recall value - recall 0.5714285714285714



Both the ‘color’ and ‘all’ strategy show similar performance for this image. The recall is quite low, it could be because of the overlapping objects with similar color and texture. For the two buffaloes in the left the color strategy proposed a box that is quite intact with minimal background, it partly cut the tail of the second buffalo. The ‘all’ strategy however included the tail considering the similarity in texture and fill. Both strategies failed to detect the human in the picture.

Image 2: (Strategy – ‘Color’)

Recall value - recall 0.4

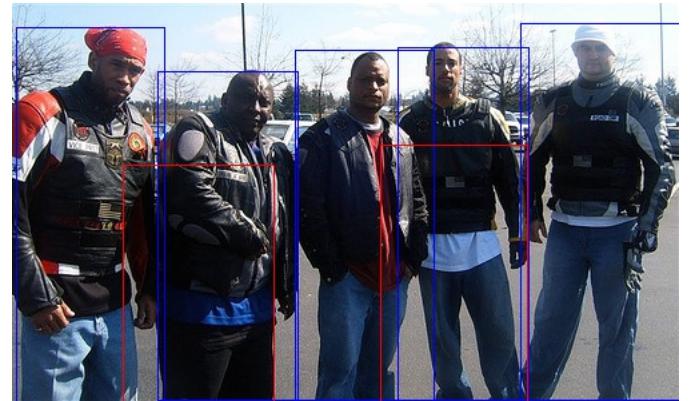
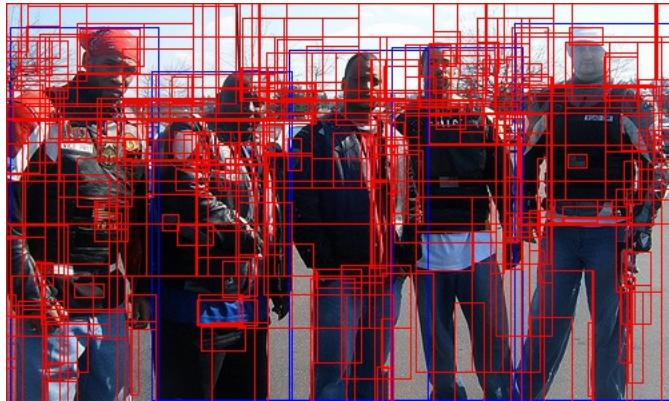
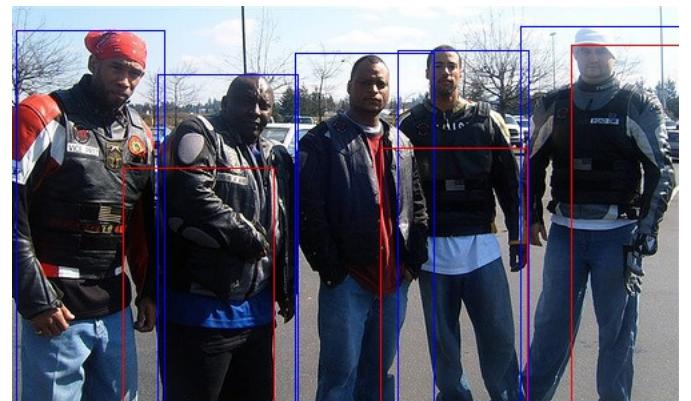
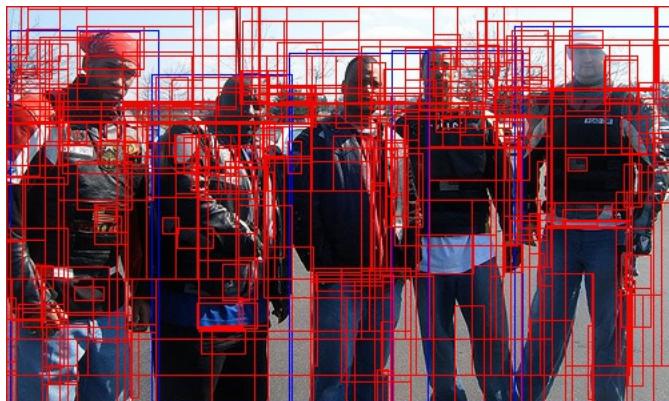


Image 2: (Strategy – ‘All’)

Recall value - recall 0.6



The ‘all’ strategy performed better on this image. It could detect the person in the right corner. The image settings are not favorable. The background is too bright compared to the foreground. The foreground color palette is minimal. The objects are also overlapping so the proposed boxes could probably not capture the objects individually because of these factors.

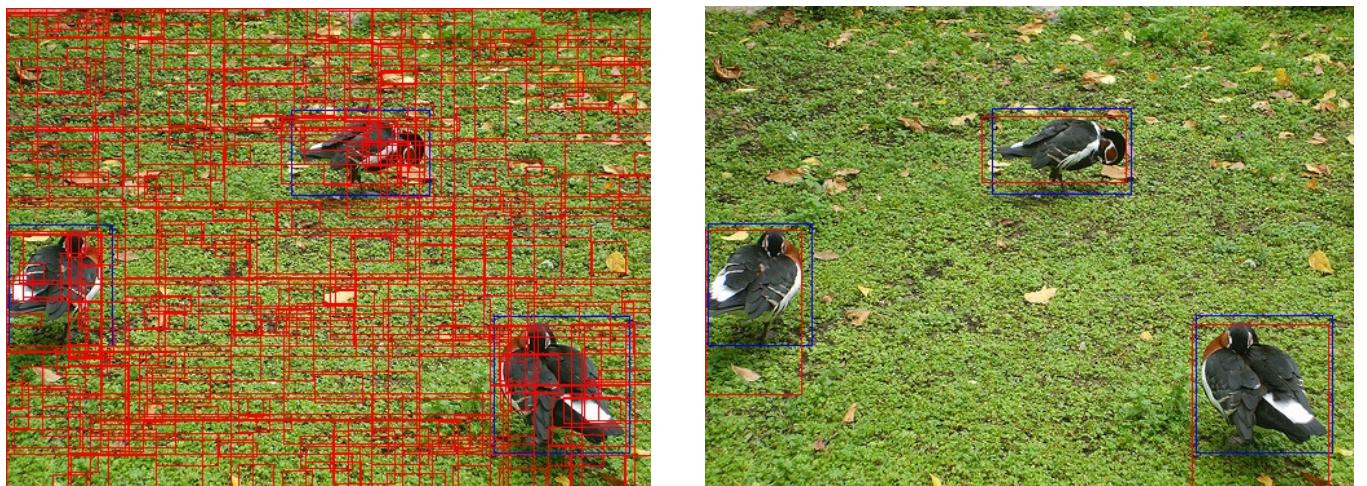
Image 3: (Strategy – ‘Color’)

Recall value - recall 1.0



Image 3: (Strategy – ‘All’)

Recall value - recall 1.0



Both the strategies provided the same recall and both proposed boxes that are very close to the ground truth. The ‘all’ strategy produced better quality of segmentation. The color strategy cut the head of the center bird because of the variation in color, the ‘all’ strategy however recognizes the head as a part of the bird’s body. Since the objects of interest are far away from each other and the texture of the objects are different from that of the background’s we could get good proposal boxes.