CSCI 677: Advanced Computer Vision
Assignment 2

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Ankit Bhawsar
USC ID: 4889451132
abhawsar@usc.edu

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1 Selective Search with Strategy: Color only

Recall values for images:

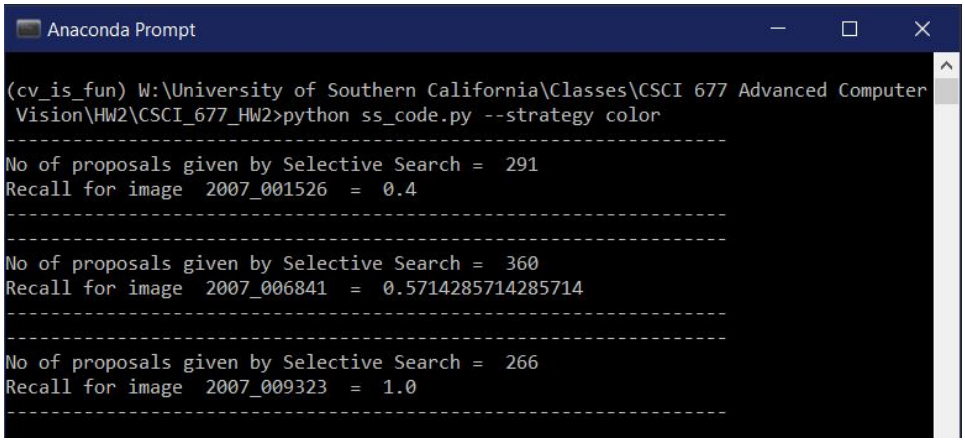

Figure 1: Recall Values

Ground Truth Boxes (Blue) and All Proposal Boxes(Red):

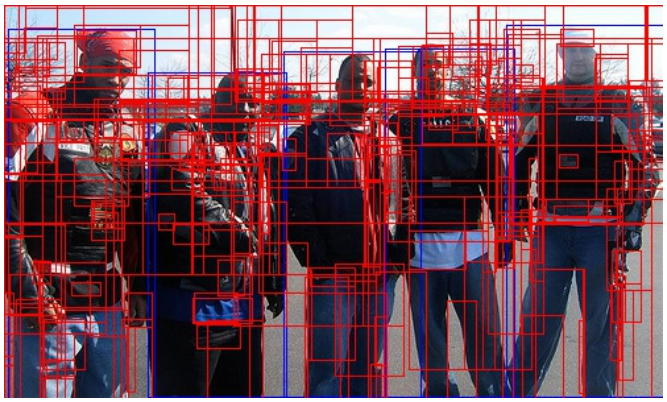

Image 2007_001526

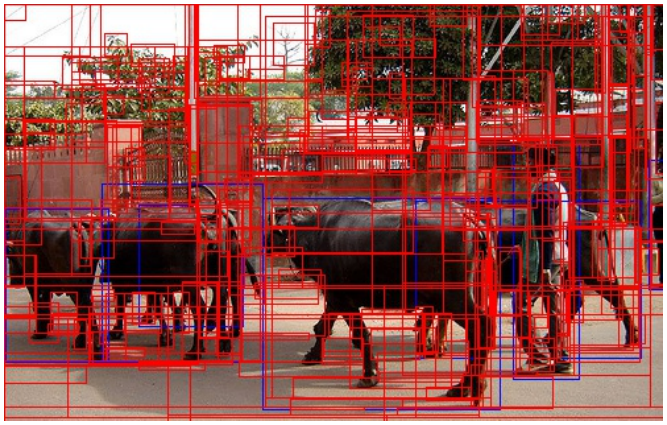

Image 2007_006841

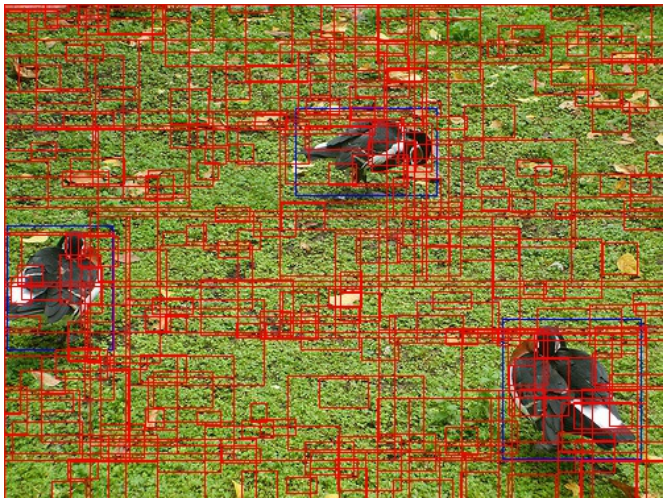

Image 2007_009323

Ground Truth Boxes (Blue) and Proposal Boxes(Red) with IoU $\geq$ 0.5 :

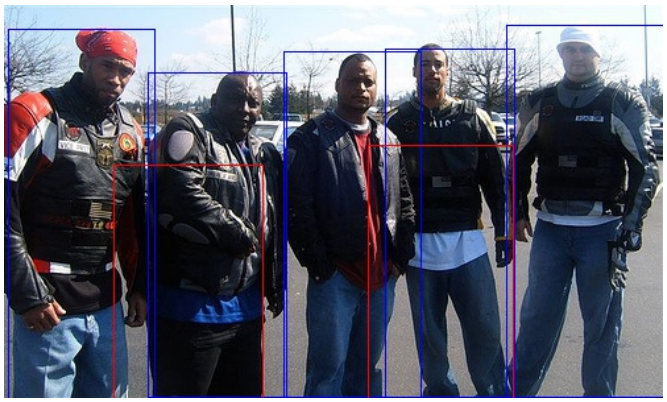

Image 2007_001526

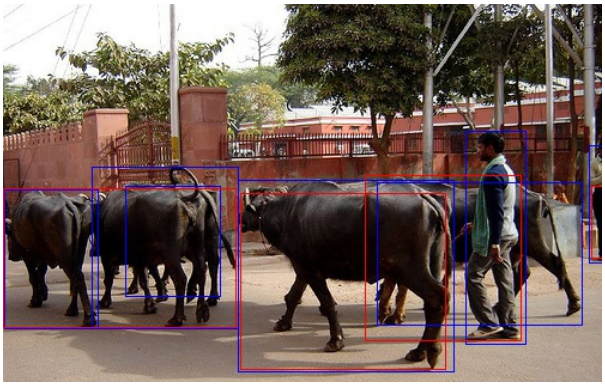

Image 2007_006841

Image 2007_009323

2 Selective Search with Strategy: Color, Texture, Size, Fill

Recall values for images:

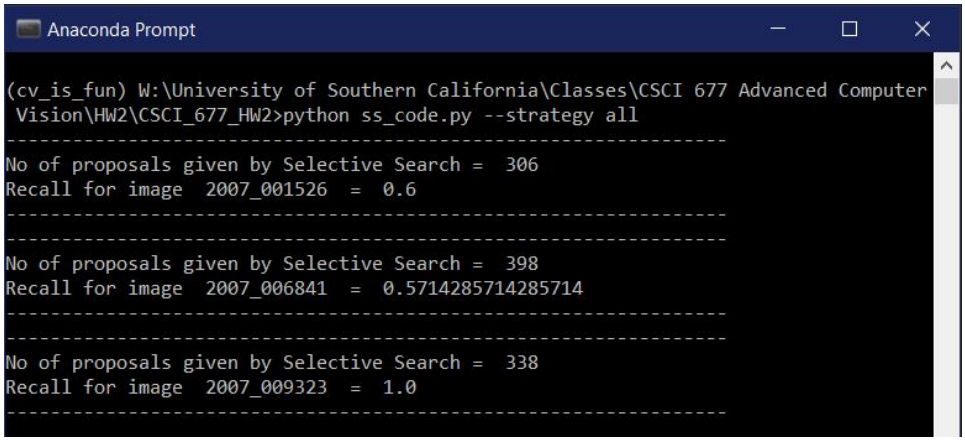

Figure 2: Recall Values

Ground Truth Boxes (Blue) and All Proposal Boxes(Red):

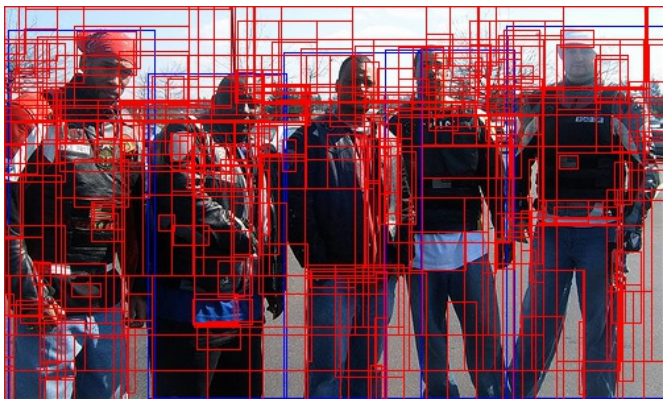

Image 2007_001526

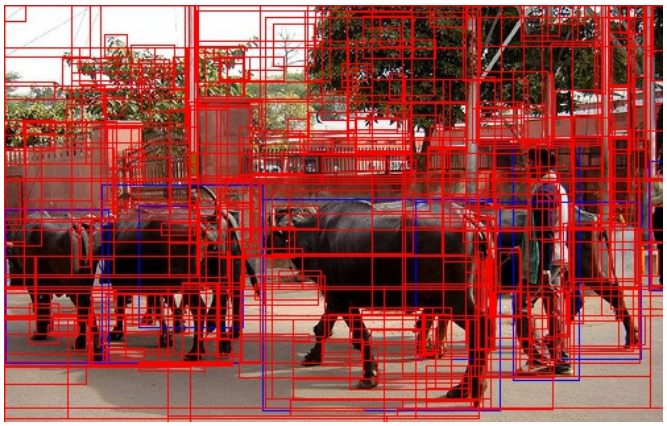

Image 2007_006841

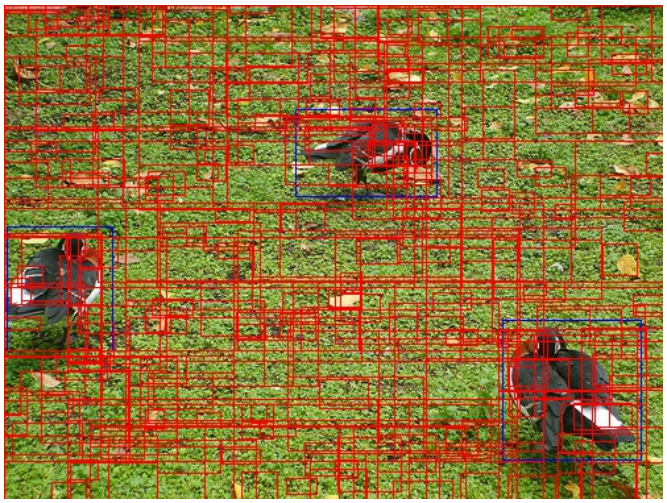

Image 2007_009323

Ground Truth Boxes (Blue) and Proposal Boxes(Red) with IoU $\geq$ 0.5 :

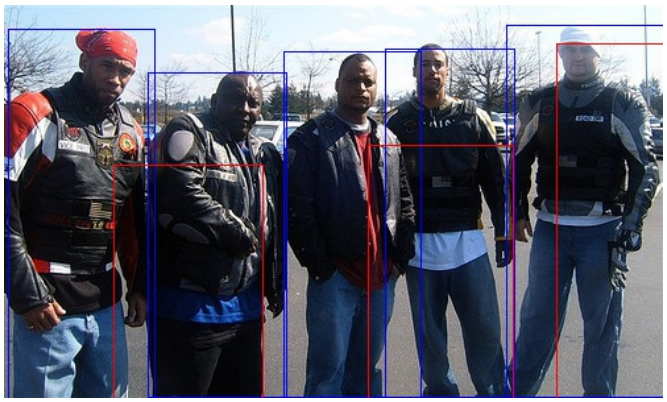

Image 2007_001526

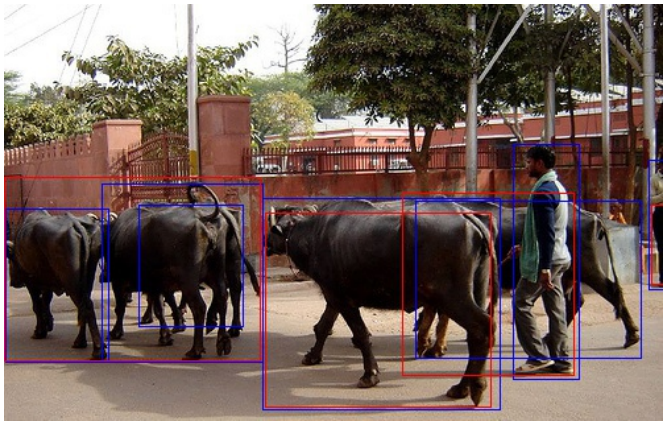

Image 2007_006841

Image 2007_009323

3 Conclusions

- Taking a look at the recall values of ground truth boxes, we can observe how good of a job the selective search algorithm is doing.
- In the first image, when we use the 'Only-Color' strategy, we can see that the selective search algorithm provides 2 proposal boxes similar to our 5 ground truth boxes. But using the 'All' strategy, we get another proposal box with a high IoU. This can be attributed to the fact that the new box on the right side contains a multitude of colors and such a box can only be found using a combination of strategies (color, texture, size, fill), not just color.
- In the second image, both strategies give us the same recall, i.e. same number of proposals similar to ground truth boxes. But these proposals vary slightly. The 'All' strategy for example includes a larger area in the left proposal box, since it has similar texture to the ground truth.
- The third image produces almost similar results on both strategies, this may be because color criteria itself is enough to distinguish the objects from their surroundings. In both strategies, the selective search provides perfect recall values.
- In general, when we use multiple strategies, we get more proposal boxes to process, but it also increases our chances to find ground truth boxes, and increase our recall value.