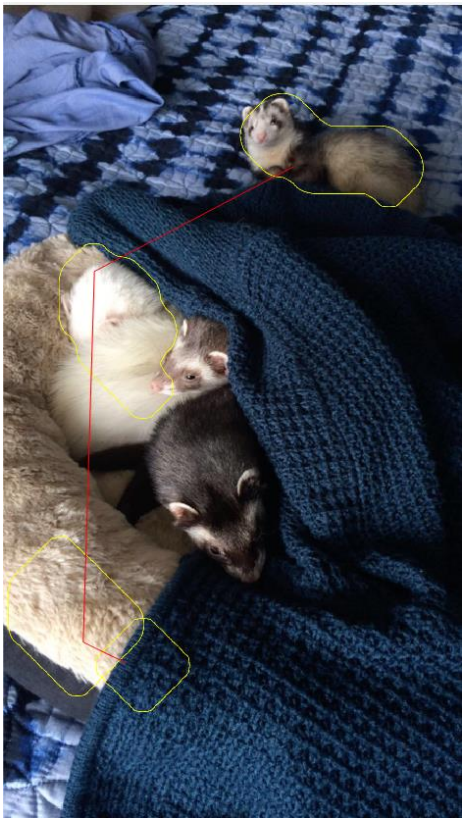
Gerom Pagaduan
CS390S
Homework 5
17 November, 2019

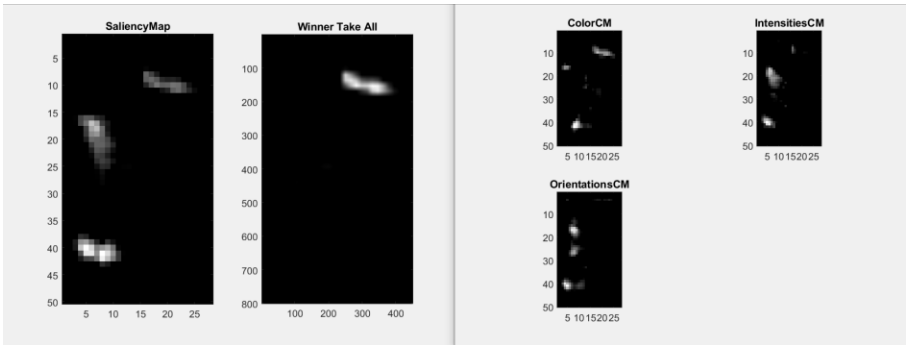
Homework 5 Report

I used SaliencyTool2 for this assignment.

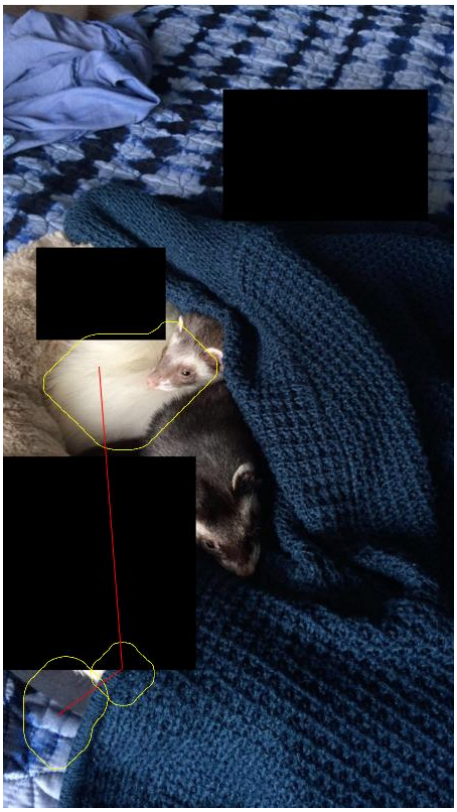
Three areas of saliency for the original image (Image 1):



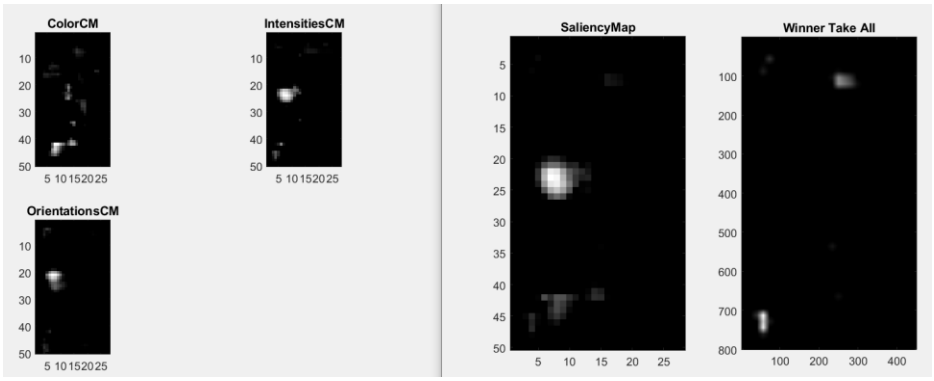
Saliency Maps for the original image:



Distorted Image's Areas of Saliency (Image 2):

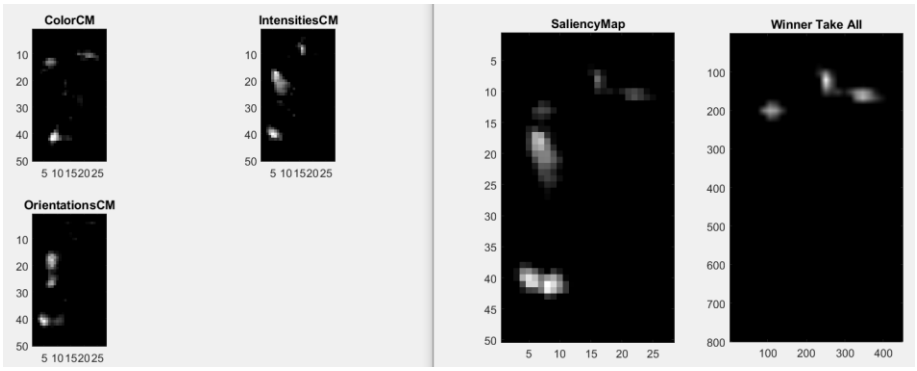


Saliency Map for the distorted image (in the areas of saliency):



Distorted Image's Areas of Saliency (Image 3):

Saliency Map for the distorted image (area of non-saliency):



Measurements for PSNR and MSE:

```
>> Homework5
PSNR for Comparison 1: 12.6735
MSE for Comparison 1: 3513.4496
PSNR for Comparison 2: 17.8473
MSE for Comparison 2: 1067.4542
```

Measurements for SSIM:

```
>> Homework5
PSNR for Comparison 1: 12.6735
MSE for Comparison 1: 3513.4496
PSNR for Comparison 2: 17.8473
MSE for Comparison 2: 1067.4542
SSIM for Comparison 1: 0.73976
SSIM for Comparison 2: 0.917
```

Discussion:

For the Saliency Maps, it seems like the image quality maintains its quality if the areas of salience are not distorted. As seen in Image 3, when the non-salient area is distorted, its saliency map remains almost identical to image 1. In contrast, Image 2—the one where the areas of salience are covered—has a very different saliency map. It tracks new points of salience, not similar to its other versions at all.

I was able to achieve these results by following the instructions for SaliencyTool2 on the assignment requirements page.

For the MSE and PSNR comparisons, it went as expected. The first comparison (between Image 1 and Image 2) had a larger MSE—which in turn, resulted in a lower PSNR. This is most likely due to me distorting three salient areas as compared to one. This is more apparent in the second comparison (between Image 1 and Image 3), where the MSE is only a third of the first comparison's. Most likely because I only distorted one area instead of three. But the second comparison also yielded a lower MSE and a higher PSNR because it was more similar to the original image.

When I performed the SSIM comparison, I expected that the first comparison would have a worse SSIM than the second comparison. My expectations were true, where the second comparison was above a 0.9, but the first one had a score of 0.7; again, this is probably because I had more distortions on the first image; but if I had only one distortion for the first comparison—and the distortions were exactly the same—I think the SSIM for both comparisons would be identical.