1.a

ps2-1-a-1.png

ps2-1-a-2.png

2. a

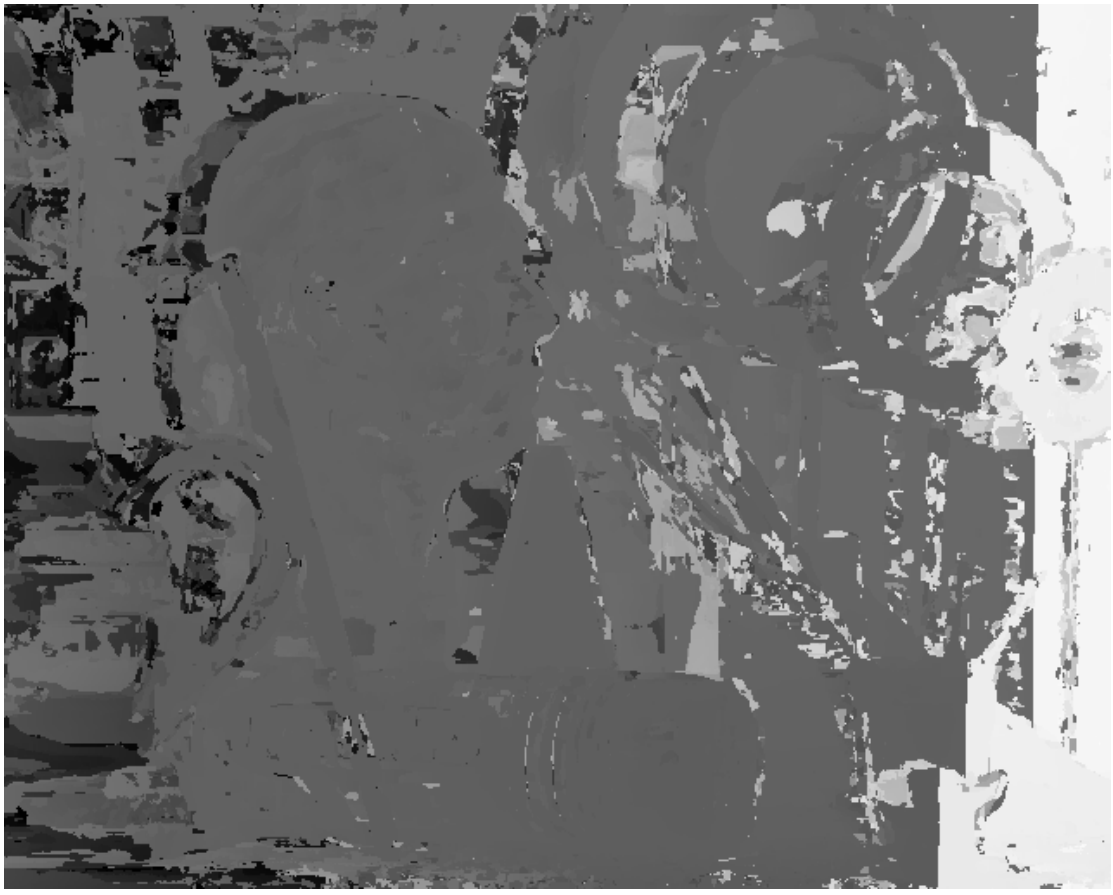

Figure 1 ps2-2-a-1.png

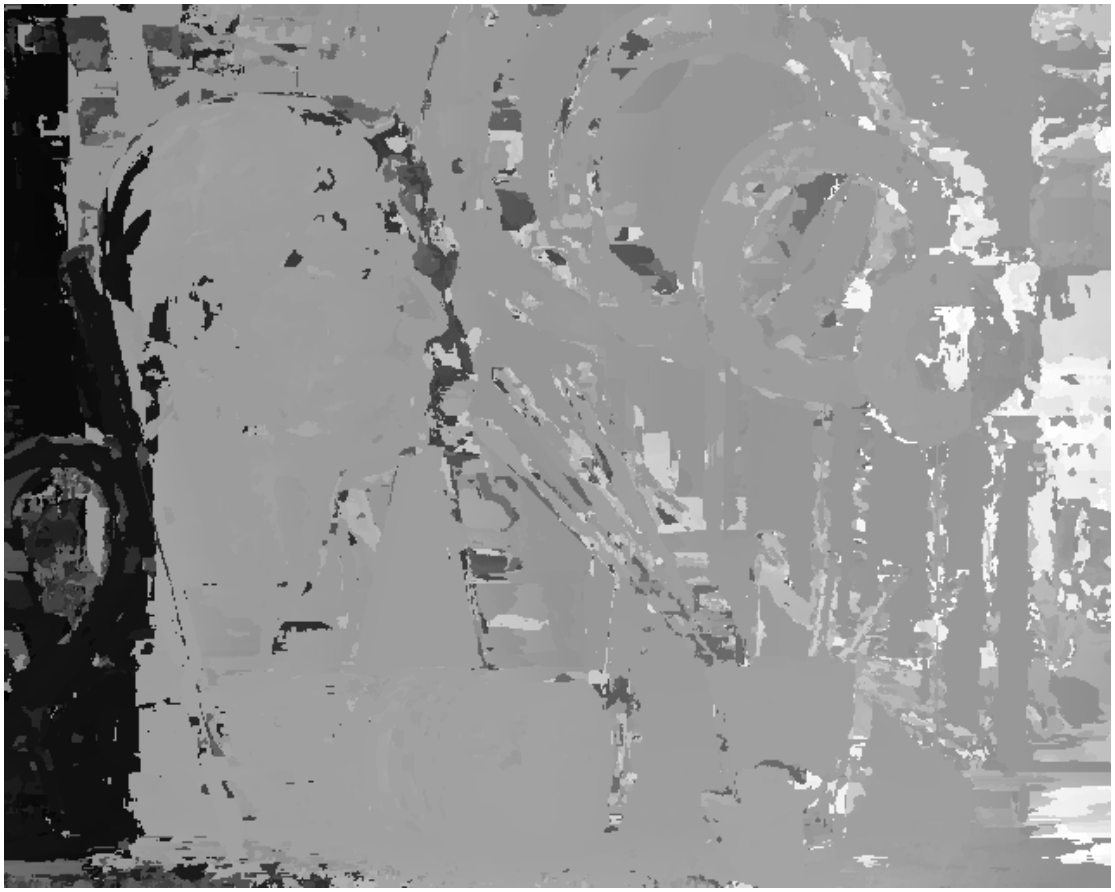

Figure 2 ps2-2-a-2.png

Text response: Compared to go ground truth, the two outputs appear to have extremes on both sides of their images. This is due to the problem of occlusion. Occlusion is caused by having pixels that show parts of an image on picture that are not shown in the other the pictures. What appears to be more occlusion also is shown on the sculptor as well. This could be due to the fact that the sculptor is round and hides a bit of it surface from the camera. The two output images appear to not give a similar coloring for the objects. The left image appears to show the objects as darker than the right. This seems counter intuitive, as the pixels should show similar disparity from one image to the other.

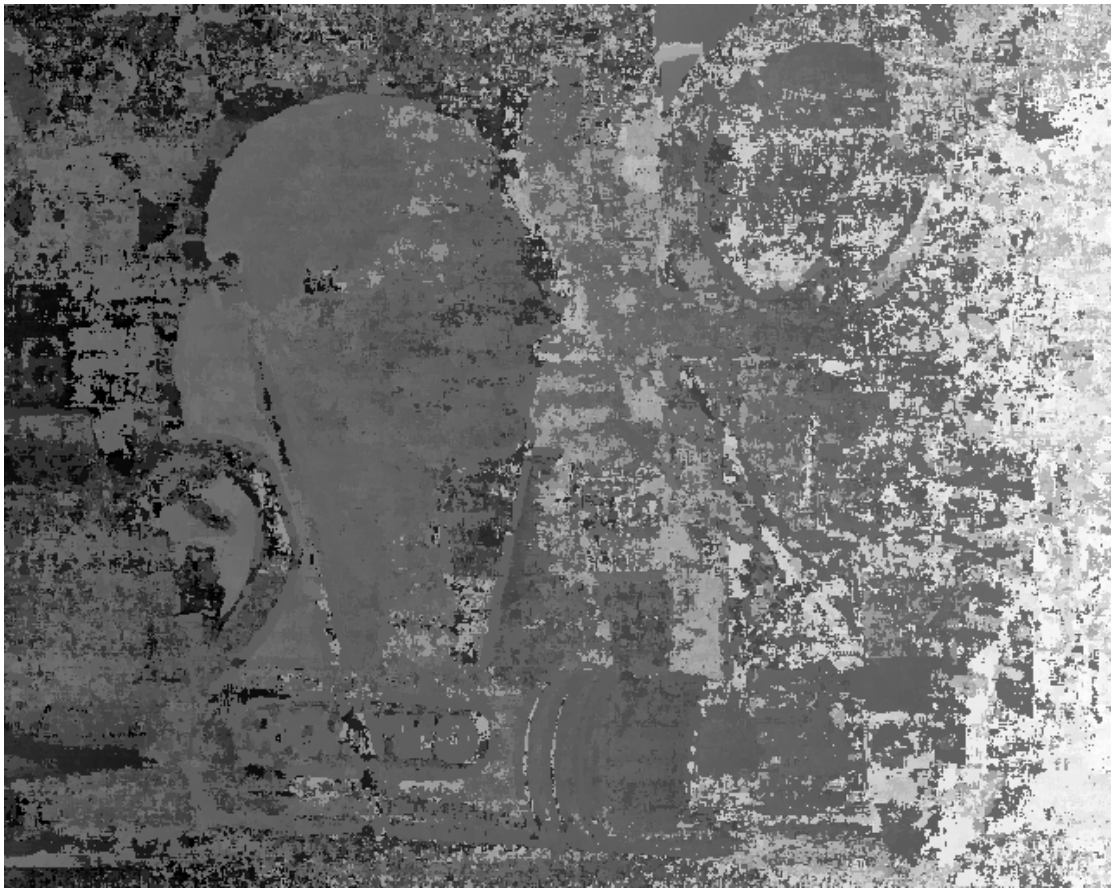

Figure 3 ps2-3-a-1.png

Figure 4 ps2-3-a-1.png

Text response: compared to the ‘unnoisy’ output, these results seem to express that the SSD algorithm cannot handle the inconsistencies given by the noise. This is especially apparent around the rings in the image. The only object that appears in the images, is the cup, but only in the left image, and does seem to show a sense of depth in the image. It’s hard to state why this would be, but perhaps this is due to the darker pixels of the cup, and therefor the noise did not affect the SSD errors so much.

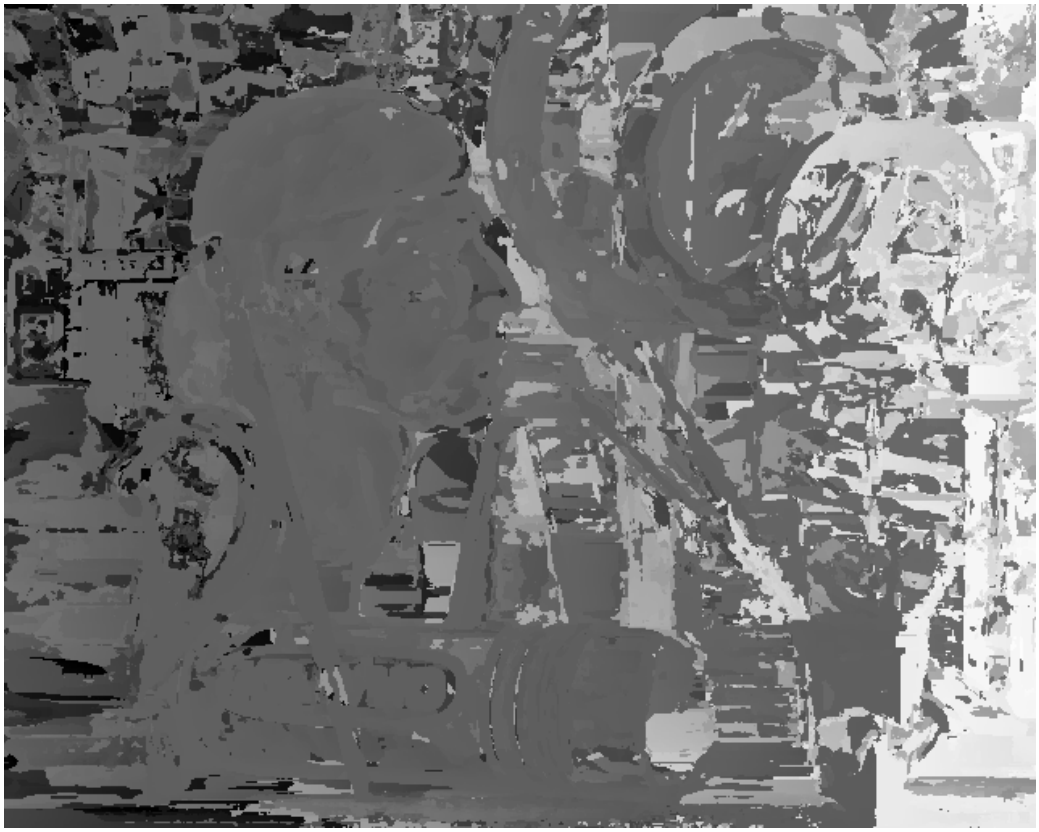

Figure 5 ps2-3-b-1.png

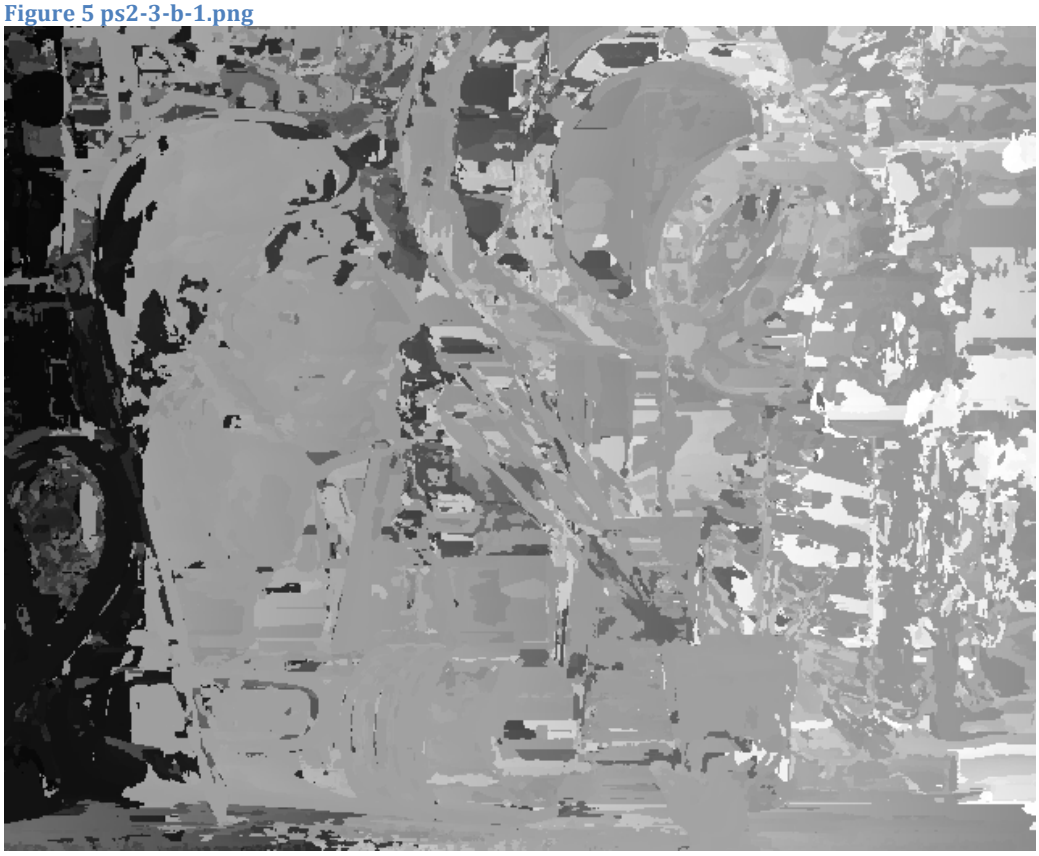

Figure 6 ps2-3-b-2.png

Text response: In this problem, the left image's contrast was increased. The images give a blotchy result compared to the original outputs. Comparatively, while not returning terrible results, these output do not give us the smoothness of the original output, although it does show depth for the sculptor object.

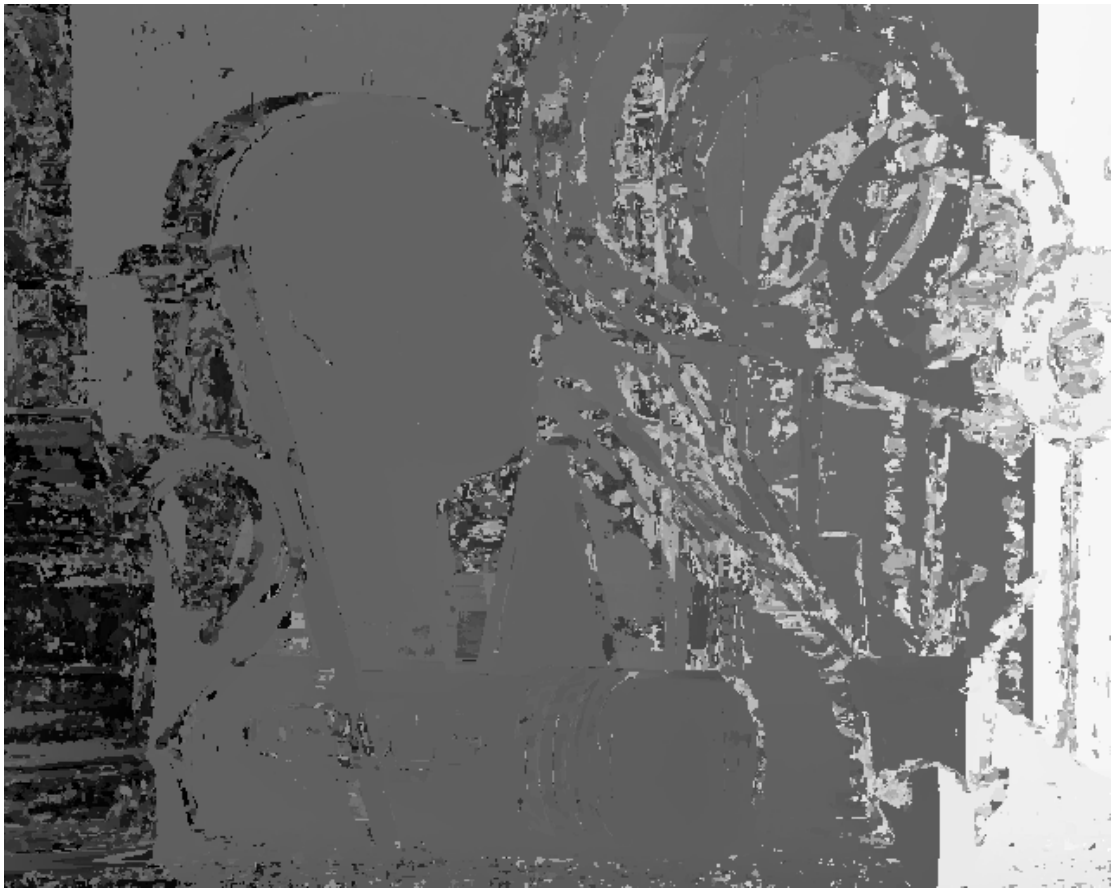

Figure 7 ps2-4-a-1.png

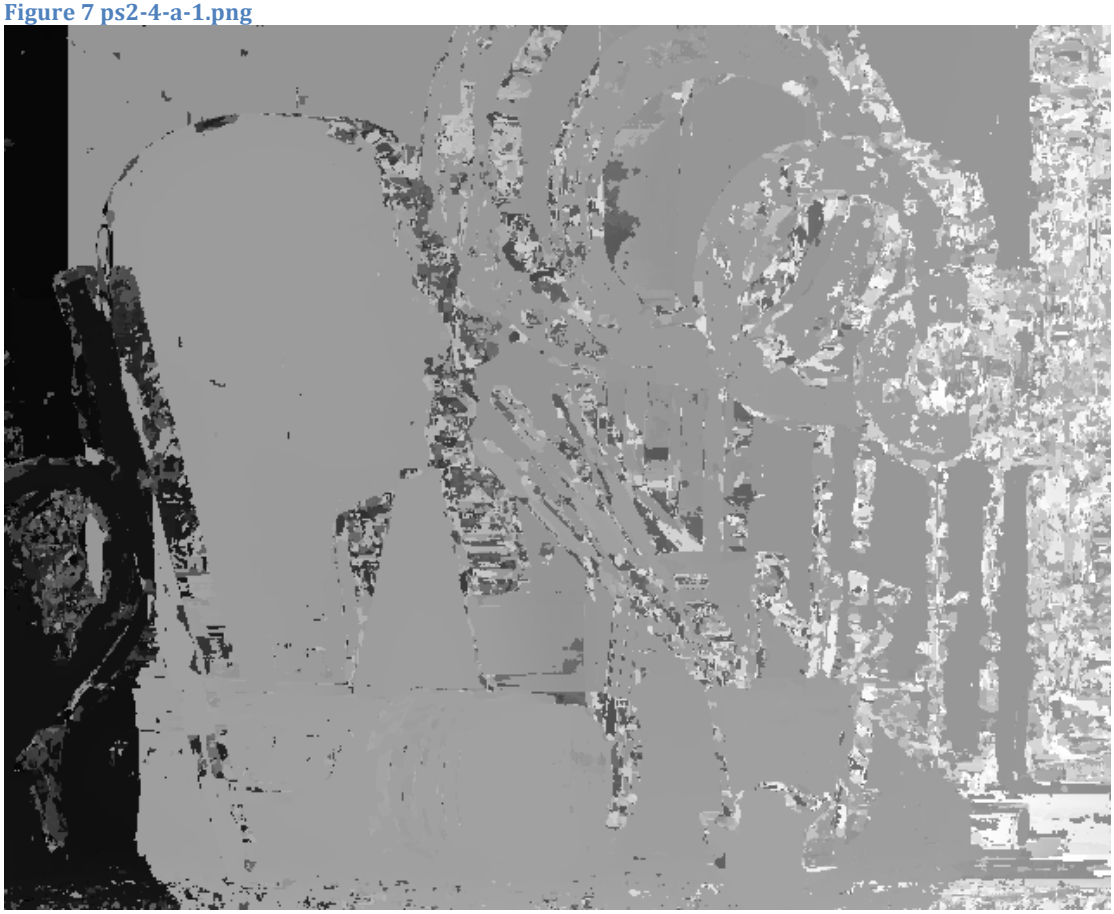

Figure 8 ps2-4-a-2

Text response: Compared to the SSD images, the normalized correlation pictures appear to give better results. The objects appear to be more solidified. But around the areas where the objects moved, there appears to be noise. This is especially apparent with the sculpture. The pixels of the object are being replaced with the background pixels and the box size of the filter is not big enough to find the best spot for the disparity. When the box size of the filter was increased, it was more difficult to distinguish the object from each other, as it gave a smoother result, but the background pixel problem was decreased.

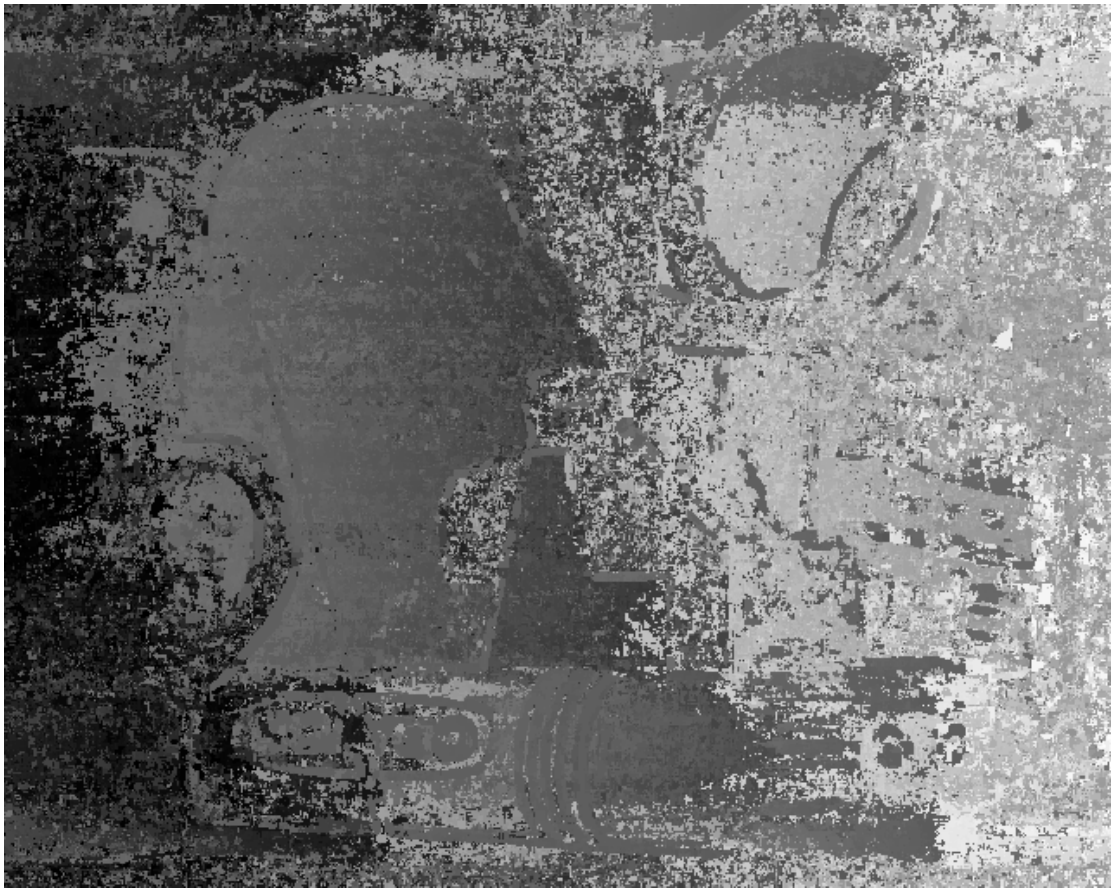

Figure 9 ps2-4-b-1.png

Figure 10 ps2-4-b-2.png

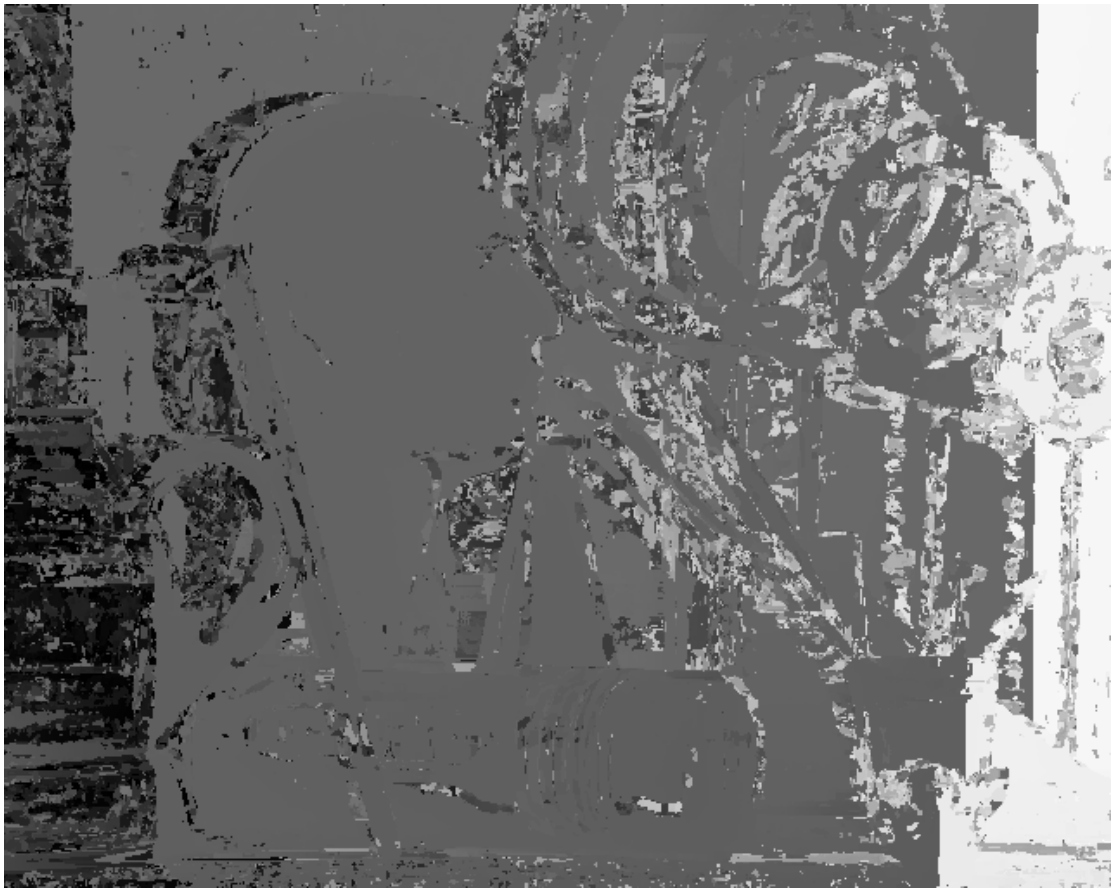

Figure 11 ps2-4-b-3.png

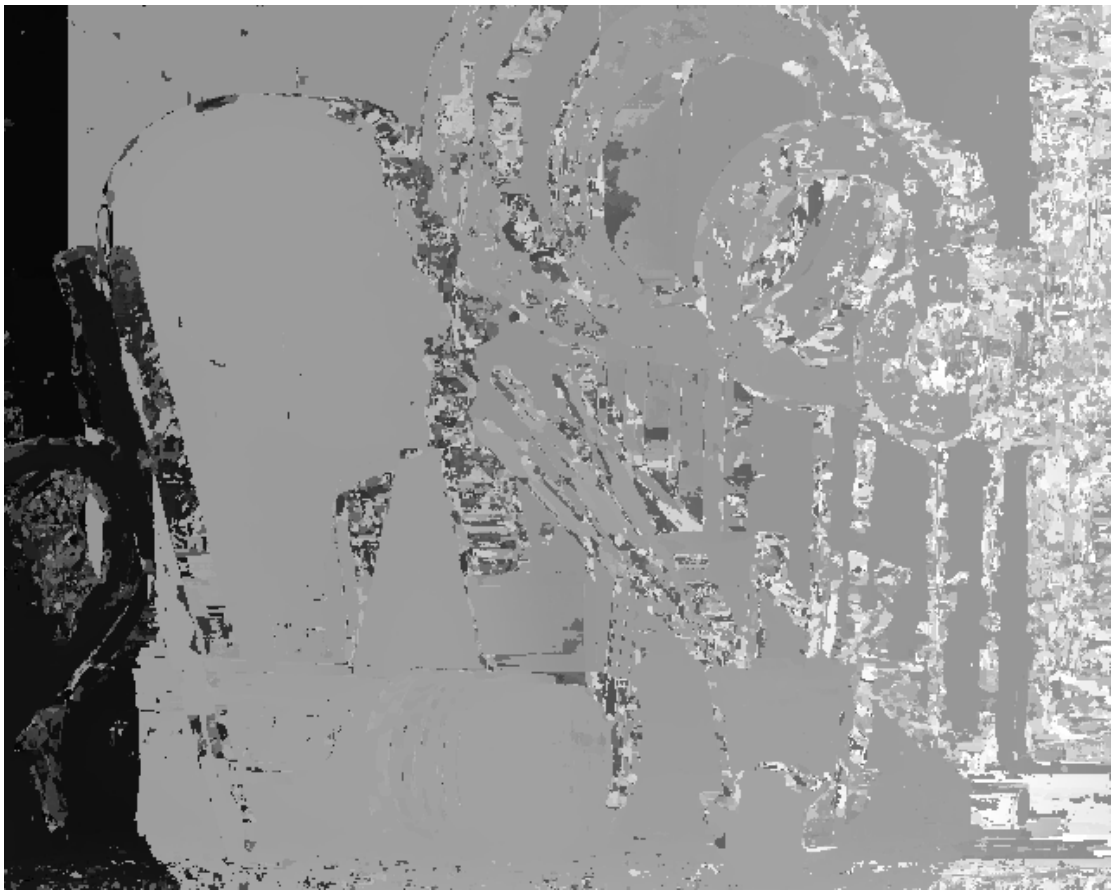

Figure 12 ps2-4-b-4.png

Text response: The results of the noise outputs appear to show bad results, but are not as bad as the SSD ‘noisy’ outputs. The results seem to capture that the noise is granulated and does to return such random disparity that the noisy SSD outputs did. This is probably due to the SSD algorithm creating more error because the differences in the noise is so great that the algorithm doesn’t know what point to pick, where as the normalized correlated algorithm has a arbitrary easier time trying to pick since the noise will be correlated with everything around it.

The contrasted results appear to be slightly worse than the original outputs. In fact, the results of the altered contrasted images seem to exemplify the areas of the images that had noisy returns. Much like how altering contrast exemplifies the brighter and darker regions of a picture. This is apparent especially around the cone object.

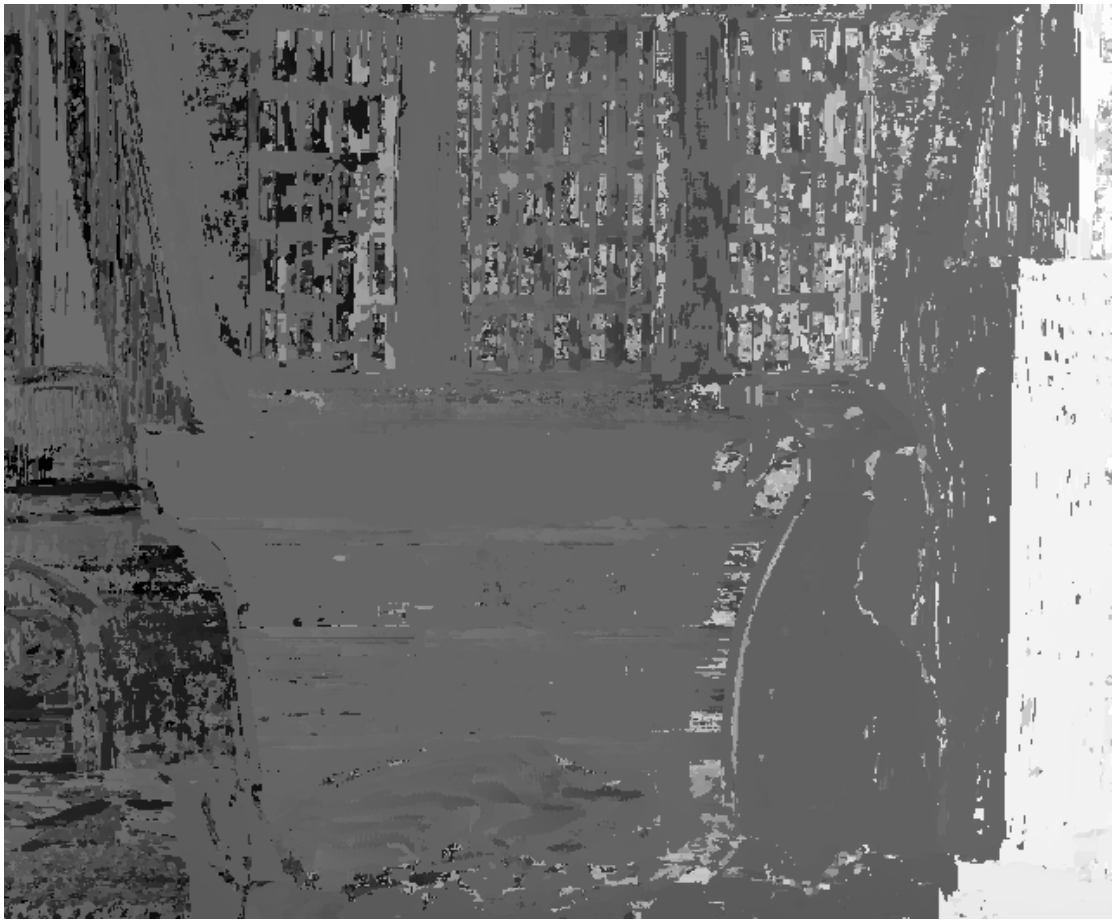

Figure 14 ps2-5-a-1.png

Text response: Best results were given by creating extra parameters for the SSD and norm corr algorithms that could manipulate the scanning direction and scanning size. Not only did this create faster results, but also the algorithms returned better images, as noise was less likely to give different results. This is slightly improved if a little bit of smoothness was added. Interestingly, if too much smoothness was added, the occlusion was not seen, but the objects were blotchier and did not retain the smooth surfaces like the images shown now do. A box size was needed to be small but at least size of 3 to show any reasonable output. If the box size was any bigger than 15, the outputs showed blotchy, overly saturated results that did not distinguish the objects.