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CMSC465 HW 4

#### Part B Discussion:

In terms of increasing the image size it looks to me that the bicubic method really outshines the others here. I used a picture of a guitar as my example and the differences are very apparent on the 3.0x slide.

With the nearest neighbor example the image of the guitar is much darker in certain regions, specifically around the pickup selector switch on the right hand side of the image. Also one can observe the “staircase” jaggedness in the image too. Look at the strings and it is pretty easy to spot.

The bilinear method does a good job of preserving the highlights in the image but the edges of the image are still a little soft. Again the strings are an easy place to look to find an example of this.

Out of the three the bicubic I think is the best. The strings are crisp without the jagged artifacts introduced by the nearest neighbor method. Contrast between light and dark is also preserved well.

#### Part C Discussion

My number image for this part was 600 x 600 so in the first part of this section I needed to translate the image a lot more than (5, -8) in order to see an effect. I provided plots of both (5, -8) and (500, -800) to study the effects. I did not observe any significant differences in the output from the three methods.

With the image rotations the differences in the methods could be observed. The edges of the number were observably jagged in the nearest neighbor method, whereas the other two methods produced clean edges. The bicubic method performed the best at the rotations.

I did not see any appreciable differences with the shearing examples. In the part c examples I came to the conclusion that the extra time and effort needed with the bicubic and linear methods really was not needed. The results were not significantly different enough to warrant the costs of the more powerful methods. In contrast, I do think the extra expense of the methods was worth it when working with a real image, such as the guitar in part b.