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[CISC490] – Project 1

Q1: The kind of noise affecting the photo of the Hogback bridge is Salt and Pepper noise. I came to that conclusion because of the massive amounts of white and black pixels covering the image. The image literally looks like salt and pepper was spilt onto the image. In addition, by applying the Median filter onto the image it created the best results, and the Median filter has better effectiveness with Salt and Pepper noise.

Q2: The Roseman bridge is affected by Gaussian noise. When the image looks like a static television that is the usual indicated, other words, grainier.

Q3: The Extra.jpg looks like a mixture of both the Gaussian noise and Salt and Pepper noise. The grainier texture is what makes me believe Gaussian noise is present. In addition, as I zoom into the picture, I can see lots of black and white thoughts mixed throughout the image. Leaving me to believe that Extra.jpg also has Salt and Pepper noise.

Q4: a) The median filter worked best for removing the noise

b) The filter worked best because the white and black pixels were surrounded by the real picture for the most part. The mean filter wouldn't have worked because the amount of Salt and Pepper noise would have thrown off the average pixel color, making the image overall very blurry.

c) A kernel size of 3x3 caused the least blur, while still removing the noise

d) A very miniscule amount of noise was left for only a small amount of blur that isn't too bad. For example, the bridge's name could still be read, whereas before, that wasn't the case.

Q5: a) Mean filter was the best filter for this kind of noise.

b) The reason why Mean filter worked better than Salt and Pepper is that the image wasn't having heavy differences between pixel values. If anything, the pixels that were grainy were close to the color around it, so you are better off taking the average of the kernel than median.

c) A kernel size of 3x3 worked best, anymore and the Mean filter would have made the image too blurry.

d) There is only a small amount of blur left, and that is only around the borders, when applied the mean filter, there are less values on the border so its less accurate than what the pixel color could be.

Q6: a) Yes, the Median filter removed most of the noise.

b) If I had to say no my only argument would be because both the noise of Gaussian and Salt and Pepper noise is present in the image. In conclusion, removing one would still leave the other, however, Salt and Pepper is more noticeable in my opinion.

c) First dealt with the Salt and Pepper by using the Median filter. I did this because the pixel values are far from what's close to the "original", it would have thrown off the average too

much. After applying the Median filter, the Mean filter was then applied to remove the Gaussian noise.

d) It looks like both filters worked best with a kernel size of 3x3.

e) Very minimal noise, only occurring sometimes in the border pixels, but even then, it is minimal. A bit of detail was lost in the blue however, like the boards on the bridge got a little blurry.