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Question 1 **: What is the effect of using the wrong sign when filtering with the contra harmonic mean filter?**

When R<0 Salt noise will be removed.
When R>0 Pepper noise will be removed.

Question 2: **Why do you think the median filter works on salt and pepper noise but not Gaussian noise?**

Salt noise is basically pixel values nearing 255 and Pepper noise are near to 0. When median filter is applied the pixel value at the middle has more chances of being the median but on the other hand gaussian noise is random value can be any number between 0 to 255 so it's hard to predict the effectiveness of median filter on gaussian noise.

Arithmetic Mean Filter

Works good on Gaussian and speckle noise and almost has no effect on the others.

arithmaticmean on guassiannoise

arithmaticmean on poissonnoise

arithmaticmean on saltnoise

arithmaticmean on peppernoise

arithmaticmean on specklenoise

arithmaticmean on salt n pepper noise

Max Filter

Max on guassiannoise

Max on poissonnoise

Max on saltnoise

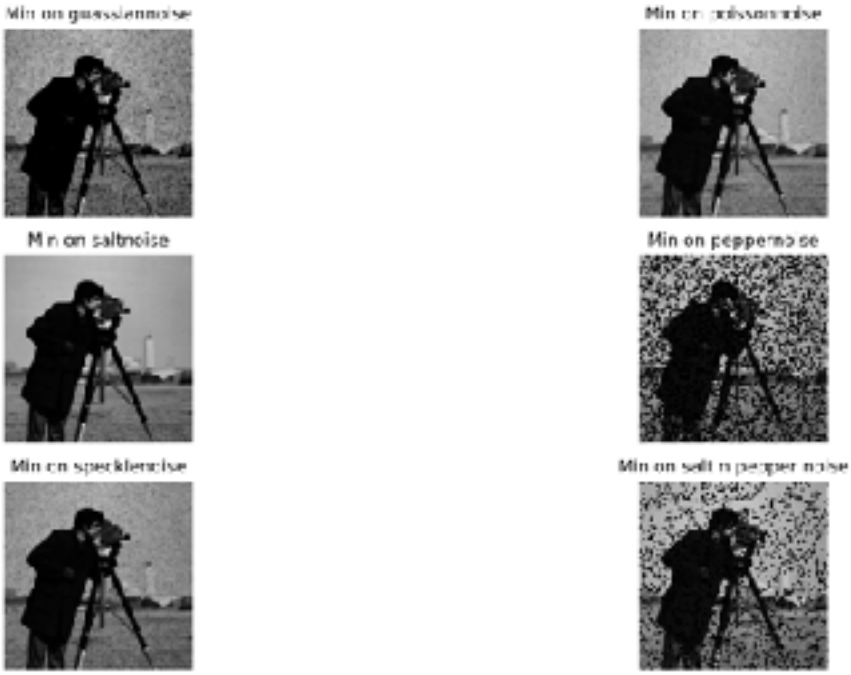
Max on peppernoise

Max on specklenoise

Max on salt n pepper noise

Works better at pepper noise but doesn’t give good results on other type of noise.Performs worst at pepper noise.

Min Filter



Works better at salt noise but doesn’t give good results on other type of noise. Performs worst at pepper noise.

Median Filter

Median on gaussiannoise

Median on poissonnoise

Median on saltnoise

Median on peppernoise

Median on speckle noise

Median on salt n pepper noise

Works better at both salt noise and pepper noise but doesn't give good results on other type of noise and has worst results at Gaussian noise.

Geometric Mean Filter

geometric on guasslannoise

geometric on poissonnoise

geometric on saltnoise

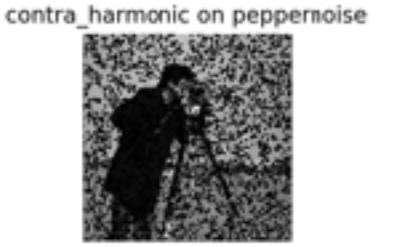
geometric on peppernoise

geometric on speckienoise

geometric on salt n pepper noise

Performs Worst at pepper noise and cleans the salt noise but the traces of it still remain. Not any notable effect on the other Noises.

Contra Harmonic Mean Filter (R<0) -0.5 used



Performs Worst at pepper noise and good at removing the salt noise but the traces of it still remain. Not any notable effect on the other Noises.

Contra Harmonic Mean Filter (R>0) 0.5 used

contra_harmonic on guassiannoise

contra_harmonic on poissonnoise

contra_harmonic on saltnoise

contra_harmonic on peppernoise

contra_harmonic on specklenoise

contra_harmonic on salt n pepper noise

Performs Worst at Salt noise and best at removing the pepper noise. Not any notable effect on the other Noises.

Harmonic Mean Filter

harmonic on guassiannoise

harmonic on poissonroise

harmonic on saltnoise

harmonic on peppernoise

harmonic on specklenoise

harmonic on salt n pepper noise

Performs Worst at pepper noise and good at removing the salt noise but the traces of it still remain.Not any notable effect on the other Noises.