

# Akdeniz University

## 2018-2019, Spring

### CSE366 Introduction to Image Processing

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## Homework 3- Some Noises

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The following should be completed and submitted by the due date and time specified in google classroom homework instructions. Submissions received after the deadline will be subject to the late policy.

For homework 1 we will be doing basic image operations.

- You can use any programming language you prefer.
- You can use built in functions to load and save the images but for asked operations you need to do the work. You can use the functions you developed during the previous homeworks.
- You can pick any image you like.
- You can submit your work( in which your function outputs must be included) by google classroom or github.
- Example functions are just for an idea, you can constrict your functions the way you like.

-Write a function that adds salt and pepper noise to image.

-Write a function that removes salt and pepper noise from image.



a)original image



b) Same image with salt and pepper noise

-Write a function that adds gaussian noise to image.

-Write a function that removes gaussian noise from image.



a) Original Image



b) Same image with gaussian noise

-Write a function that adds periodic noise to image.

-Write a function that removes periodic noise from image.

This one is bit tricky and makes this homework two week worthy you need to implement fast fourier transform and inverse fast fourier transform methods! But don't worry internet filled with examples. Other challenge with this task is removal of the noise with filtering amplitude of the image. Periodic noises can be in many forms implement the noise the way you like.(or you can pick a cool image from internet if you don't want to implement the method.) Removal of the noises won't be perfect as expected but depending on performance of your filters you may get bonus points. Early bird gets the worm!



(a)



(b)



You need to return something like FFT of Lena Image from Lena image when you implement your fast fourier method and you need to be able to return Lena image from FFT of Lena image when you implement your inverse fast fourier transform method.

[Who is original image?](#)

[What is salt and pepper noise?](#)

[What is gaussian noise?](#)

[Periodic noise removal examples](#)

[A good read for people who enjoy reading.](#)