USC University of Southern California

USC Viterbi School of Engineering
Alfred E. Mann Department of Biomedical Engineering

USC Viterbi School of Engineering
BME Department
BME 527: Integration of Medical Imaging Systems
Brent J. Liu, Ph.D.

October 31st, 2023

Instructions for all homework

- No more than 2 pages/Question.
- Please write neatly or type (preferred).
- Put your name and date of the assignment on each page.
- State the problem clearly, what are the assumptions, methods, results, and summary.
- ABSOLUTELY NO LATE HW ACCEPTED!

Homework 5

Due date: November 14th @ 5PM

Instructions:

1. Take the same image as you selected for doing the FFT and the Cosine Transform for previous homework, select a radius of your own choice in the frequency domain:
    a. Display the image.
    b. Perform the Cosine Transform & display it.
    c. Pick a radius value & delete all frequency components outside of the radius & display it.
    d. Compute the inverse transform & display it.
    e. Please comment on the results.
    f. Delete all frequency components inside the radius & display it.
    g. Compute the inverse transform & display it.
    h. Please comment on the results.

i. Give a general short discussion on what you learned from this question.

2. Take the same image as above. Extract the DICOM header. List all the Tag Names and the associated Tag Data (eg, Patient Name: John Doe, etc.)
3. You should submit one .doc or .pdf format file along with your code and images through DEN.
4. You should paste the image in your doc. file and comment on what you have observed of displayed images (characteristics, differences, reasons).
5. For the DICOM header, you should list all components and corresponding data.

   [filename] [xxxx]

   [filedate] [xx/xx/xxxx]
6. The name of your homework should be like:
   a. HW5_name_student ID.pdf (.txt)
   b. Original_image.jpg (.bmp .png. tiff)
   c. DCT_outer_image.jpg (.bmp .png. tiff)
   d. IDCT_inner_image.jpg (.bmp .png. tiff), etc.
7. If you prefer to submit the homework in person, you could write or print out and hand it in before the class.
8. If you are not satisfied with the initial grade, you can still have chance to regrade.