Middle East Technical University Department of Computer Engineering

CENG 466

Fundamentals of Image Processing

Spring 2017-2018

Assignment 1

Due date: April 2 2018, Monday, 23:55

Part I - Adding Noise

1. Add
   (a) salt & pepper noise
   (b) Gaussian noise

   to an image of your choice.
2. For each noise type generate 16 noisy images.
3. Take the average of N images, $N \in \{4, 16\}$.
4. For each noise type, include
   - one noisy image,
   - one averaged ($N = 4$) image,
   - one averaged ($N = 16$) image

   in the first part of your reports. Report your observations.

Part II - Averaging

For each noise type pick one of the 16 images and apply

(a) averaging,

(b) weighted averaging.

Include the results in the second part of your reports. Report your observations.

Part III - Discussion

1. Compare & contrast your results from Part-I and Part-II,
2. Compare & contrast your results for two noise types,
3. Identify and make a list of
   (a) which procedures do work,
   (b) which procedures do not work,
   (c) limitations,
   (d) suggestions, etc.
4. For each noise type suggest an alternative noise reduction procedure for the case which failed the most.

Regulations

1. In your reports, please avoid repetitive statements. If you feel like you are being asked what you have already discussed, refer to your earlier discussion, rather than repeating it.
2. You can expand your report's content as much as you like, provided it makes sense as a whole.
3. **Late Submission:** Not allowed.
4. **Cheating:** You are free to obtain information from any source. However, if what you are doing feels like cheating, it is probably better if you stopped doing it.
5. **Updates & Announces:** Please follow **odtuclass** for discussions and possible updates.

Submission

Submissions will be done via **odtuclass**.
Submit a single compressed file (could be ".tar.gz", ".rar", etc.) that includes a ".pdf" file along with your code (and a Makefile, if needed).