

MM811F17 Course Project Description [DE-noising]

Objective:

In this project, you will have an opportunity to apply and **enhance** existing De-noising Algorithms on natural images as well as on synthetic images. You can choose any toolbox/library/framework and programming language that you prefer to use for this project. **Feel free to use code for existing algorithms published online, as long as you understand what the code does. You are awarded bonus marks if you can further improve the algorithm which gives best results.** You are given a selected set of natural and synthetic images. Test each algorithm you use on both the natural and synthetic images. Compare the results using standard metrics. Finally, submit a report together with your code.

GROUP: Form groups of 3 students.

Make sure you read this entire document before taking up the project and forming groups.

Overview:

We investigate the performance of de-noising algorithms on real (natural) and synthetic images. De-noising performance should be assessed both qualitatively and quantitatively. In qualitative measurement, we look at the de-noised results and try to see whether the visual quality of the de-noised results is good. For example, if the de-noised image makes the edges blurry, then no matter how good it performs on other image areas, the algorithm is not of much use. For quantitative measurement, we use MSE.

Evaluation:

Each group (of 3) needs to generate your results on test dataset provided in the link below:
<https://drive.google.com/drive/folders/0B1gHSGhShLxPaldqQmJxSTd3Uzg?usp=sharing>

This dataset has 30 clean natural images and distorted versions of those images. By “distortion” we mean AWGN noise level 5, and similarly for simulated images. However, note that the file type for simulated images (both clean and noisy) are not the regular image file types, but rather, they are numpy arrays saved as files, and thus have a numpy extension (.npy). You will find all these files in the above link under appropriate folders.

Group project proposal	5%
Group project presentation to earn the marks)	15% + 10% (Q&A Demo - individual members need to be present
Group project final report	15%
+ 35% project participation (individual project assessment report with reference to the Project Proposal)	

Group Bonus marks are credited based on the successful demonstration and explanation of techniques used during group project presentation

Improve results of existing algorithm (not simple parameter tuning): 20%