Research Methodology for Data Science CS4125

Assignment C

Part 1 (Implementations)

The first part of this assignment is concerned with implementations in Matlab of methods that were discussed in the lectures. Tips on how to implement the methods and hints on useful Matlab functions were provided in the lectures and can be found in the lecture slides on Blackboard.

Task 1: *Gradient-based Image Sharpening*
Implement the method for *Gradient-based Image Sharpening* that was discussed in Lecture 8. The input is an image and parameters c_s and $c_{\bar{U}}$ that control the scaling of the gradients and the term that penalizes the deviation from the input image. The output is the sharpened image.

Task 2: *Gradient-based Image Blending*
Implement the method for *Gradient-based Image Blending* discussed in Lecture 8. The input are one or more source images and selections in the images and a destination image in which the sources are blended. You can implement the method with soft or hard constraints for preserving the pixels of the destination image.

Part 2 (Report)

Task 3: Write a short report (not more than 4 pages) that discusses your implementations of the methods, shows results you obtained, and summarizes your experiences, difficulties you faced and how you solved them. In addition, you can report on the division of labor amongst the group members.

Required deliverables on Blackboard:

- For Tasks 1 and 2, provide the Matlab notebooks (.m files) and example images. Pack all the files in one ZIP archive.
- The report should be one PDF file

Deadlines:

- March 27, midnight: First versions of required documents must be uploaded
- March 29, 8:00-11:00h: 10-minutes oral examination of each group (5 min. presentation of results and 5 min. for questions)
- April 4, midnight: Final versions of required documents must be uploaded