Numerical Methods for Visual Computing
M. Möller, University of Siegen
Winter Semester 17/18

Weekly Exercises 7

To be discussed on Friday, 08.12.2017, 10:15-11:45, in room H-C 6336
Submission deadline: Tuesday, 05.11.2017, in the lecture

Programming

Exercise 1 (4 points). Implement a power method that is able to find eigenvectors corresponding to the two eigenvalues of largest magnitude by assuring the second vector remains orthogonal to the first. Test your program on the exemplary matrix from the previous exercise sheet.

Exercise 2 (4 points). Download the file *spectralClustering.zip* from the course's website. Unzip it, run, and study the file *spectralClustering.m*. Replace Matlab's method for computing the eigenvectors to the two largest eigenvalues by your code from exercise 1. Does it still work? (You might have to rescale the image and make it smaller in order to have a reasonable runtime).

Find some interesting color image, e.g. from www.pixabay.com. Are you able to segment an image based on colors by modifying the code?