

Homework 6

Due: Tuesday 11/20/2018.

Reading assignment: Chapters 15, 16, 17 in the textbook.

Homework problems

1. Exercise A9.4.

Julia users will need the packages `FFTW`, `ImageView`, and `DelimitedFiles`, and should download the files `deblur_Y.txt` and `deblur_B.txt` on the course website. The code

```
Using DelimitedFiles, ImageView
Y = readldm("deblur_Y.txt")
B = readldm("deblur_B.txt")
imshow(Y)
```

imports the data and displays the blurred image Y .

The 2-dimensional DFT and inverse DFT are computed using the functions `fft` and `ifft` in the `FFTW` package, *i.e.*, the same functions as for the 1-dimensional DFT and inverse DFT (see homework 4). When applied to a matrix, `fft` and `ifft` compute the 2-dimensional DFT and inverse DFT.

2. Exercise A10.1 (a,b,c). The remark at the end of the problem only applies to MATLAB. In Octave or Julia, the least norm solution of $Cx = d$ can be computed as $\mathbf{x} = \mathbf{C} \setminus \mathbf{d}$.
3. Exercise A10.14. The remark at the end of exercise T16.15 describes an application of this result.