Homework 6

Reading assignment: Chapters 15 and 18 in the textbook.

Homework problems

1. Exercise A8.6. Julia users can download the file `circlefit.jl` and use the command `include("circlefit.jl")`.

2. Exercise A9.4. Julia users will need the packages `FFTW`, `ImageView`, and `MAT`. The code

   ```
   using MAT, ImageView
   f = matopen("deblur.mat");
   Y = read(f, "Y");
   B = read(f, "B");
   imshow(Y)
   ```

   imports the matrices Y, B 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.

3. Exercise A9.5.

   An application is the regularized data fitting problem of lecture 10, page 7. Excluding the constant feature from the regularization term (the first least squares problem in the assignment) is equivalent to a least squares with the centered data matrix and a regularization term on all parameters (the second problem in the assignment).