IMAGE PROCESSING (RRY025)

Studio Exercises

Image Enhancement IV: Fourier domain methods

EX. 1

- Load the `cameraman.tif` image, and display it.
- Filter this image in the frequency domain using an ideal low-pass filter with cutoff frequency equal to one-eighth of the maximum frequency along each axis, without zero-padding. HELP: In the matlab files for the course, there is a file `raduv.m`. Look at this file. What can it be used for? And how? Use this function!
- Display the filtered image in the spatial domain. Apart from excessive smoothing, there is ringing. Why? HELP: Display the filter in the spatial domain!
- Now filter the original image using an ideal high-pass filter ....

EX. 2

- Same as EX. 1, but using Butterworth filters. What do we learn?

EX. 3

- Same as EX. 2, but using Gaussian filters. What do we learn?

EX. 4

- Same as EX. 3, but filtering *correctly* in the frequency domain ...!