Assignment Guidelines

- Write a short report to illustrate your work. Explore and include interesting results (necessary to achieve $> 90\%$) and use full sentences to explain your reasoning.
- Reports may be handed in during the lecture on the due date.
- Feel free to discuss the work amongst one another, but write your own report and code.
- Working code has to be provided via e-mail, as an archive on the web or in an online code repository such as GitHub or BitBucket. You may use any open source language, such as Python, Octave, C#, etc.

Linear, space-invariant degradations

(a) Implement motion blur as shown in the text-book and discussed in class. Allow specification of the following variables:

T Exposure time

a Translation (as a fraction of image width) in the x-direction

b Translation (as a fraction of image height) in the y-direction

Remember to pad filters in the time-domain, since circular convolution is not acceptable.

(b) Given the blurred image and parameters T, a and b, recover an approximation of the input image using

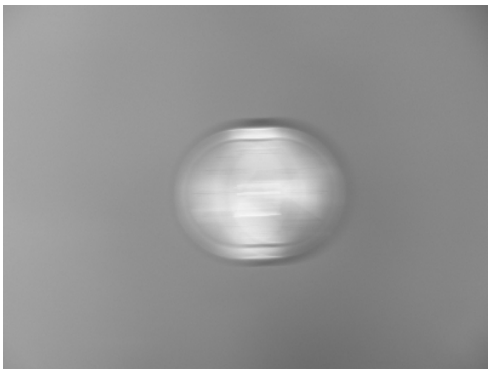
(i) The standard inverse filter, $1/H$.

(ii) The minimum mean-squared-error (Wiener) filter for different values of K.

(iii) Any other inverse filter of your choice.

(iv) Explore how these filters respond to noise (i.e., add different levels of noise to the degraded image and attempt their restoration).

(c) Recover the time shown on the wall-clock below, by reversing the motion blur present.



You may use spatial filters to further clean up your results.