Digital images in Matlab

Exercises

1. Open, visualize and save the image *chestxray.tif*.
   See the pixel values with `impixelinfo`.
   Use `imshow(f,[])` to get better range of intensities. Use `imwrite` to save the image.
   `Clear` – clears your workspace, deletes variables and functions from memory.

2. Define two 3x3 matrices and multiply them:
   1) element by element;
   2) using standard matrix multiplication.

3. Flip horizontally the image *chestxray.tif*: change the order of columns. Crop this image. Subsample it with factor 2.
   Use `figure` to open a new figure window;
   `title('Some text')` – to name the figures.

4. Intensity transformations and spatial filtering:
   1) visualize the image *MRI_snapshot.jpg* (use `rgb2gray` to obtain a 2D matrix containing this image);
   2) perform histogram equalization on this image, visualize the resulting image and the histograms before and after the equalization (`histeq, imhist`);
   3) filter the image obtained in the previous step using
      - 3x3 and 7x7 average filter;
      - 3x3 and 7x7 median filter.

5. Answer the following questions.
   How does the mask neighborhood size influence the result?
   What is the difference between average and median filters concerning the edges of the objects on the image?
   How would you characterize the smoothing properties of these filters?