

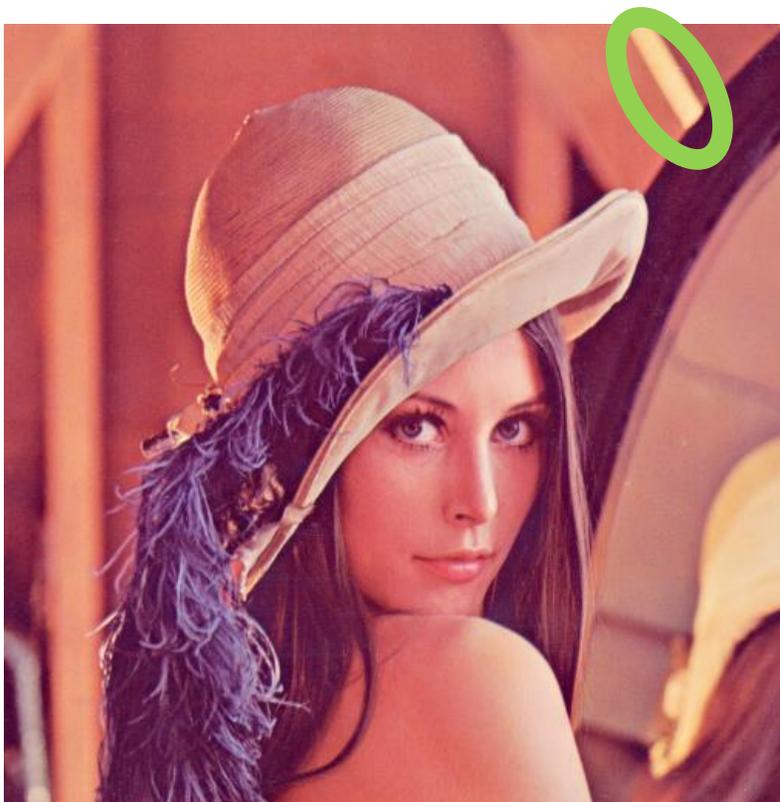
1) Thresholding and measurements

(A) Manipulate sample Image "dot_blot" to obtain segmented image and corresponding statistics.

(B) Present your data in a bar graph with one bar for each dot and add error bars representing the +/- standard deviation within each dot.

2) White balance

Recolour this image so the highlighted part in the green oval is white. This file is called "Lena" and can be found in sample images.

**3) Background correction**

(A) Using the image located [here](#): try to do the best background correction possible using 4 methods:

- do a "math" correction to make light parts on left and right of object of interest close to white
- use background subtract from process menu (vary rolling ball radius)

-use band pass filter from process / FFT menu (vary value for “filter larger structures down to ... pixels”

-mathematically subtract a t=0 image (use [this image](#))

Show the best image you could get using each method. Explain the process that you used to optimize the process for each method and the final values you used to get the best results for each case. Which optimized method did you get best results for?

(B)

-Follow [these instructions](#) to calibrate your ImageJ to a known optical density using (this [OD target](#)). After calibration, do a line profile across the object of interest in your best background subtracted image from 3A and plot the resulting optical density vs. position.

4) Videos

(A) Make a series of images that features 5 objects that move slowly from one side of the screen to the other. Bit-resolution of each image should be 8-bit, monochrome. Each object should have a different average pixel intensity. The video should be comprised of at least 20 individual frames. Set the time between each image to be 1 second. Calibrate the image scaling and add a static scale bar to the bottom right corner of each image. Compile all images into a stack and then a video and save as .avi file.

There are 2 recommended approaches to making your video:

- (i) Use MS excel to make a text image for this. Read chapter 5 of [this textbook](#) to understand text images better.
- (ii) Use a modified macro as discussed in class.

(B) Use MTrackJ to create tracks that follow the features in time. Make a plot that shows the x-position of each feature in time.

Notes :

1) For answers to all questions use the following headings to organize your answers :

- (i) Background : here you write a few sentences that explain why this question is important.
- (ii) Goal : here you explain the goal of the question
- (iii) Methodology: Here you explain how you solved the problem
- (iv) Results : here you show images, and explain the results in words.

2) Pour toutes les questions, faire un petit rapport avec un ou des figures qui sont préparé par le plugin [« FigureJ »](#)