



#### #1

### **Extracting pixel values from grayscale images**

i. Write a function v=pixVal4e(f,r,c), where f is a grayscale image and r and c are scalars corresponding respectively to a row and column number in f. Output v is the pixel value f(r,c).







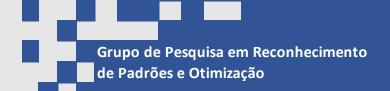


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ii. Test your function by reading the image *girl.jpg* and obtaining the pixel values at the origin and at the middle of the image. Display the values on the screen (the image need not be displayed);





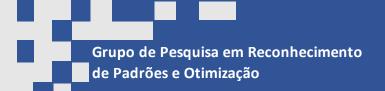






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- iii. Write a function [r,c,v]=cursorValues4e(f) that displays image f, displays a mouse-controlled cursor over it and, when the mouse left button is clicked, outputs the row/column coordinates (r,c) and the value v of the pixel at those coordinates.
- The function should close the display of f. The file of image f and any previously opened displays should not be closed by this function.







### **MAIN SCRIPT**

- iv. Write a main script that call and execute the two functions and additionally:
  - Display the size (M,N) of the input image;
  - Display the mean gray level of the input image;
  - Display the bit depth;
  - Save the input image in .tif format.





### HINTs:

Extracting pixel values from grayscale images → Use the function from (a) to obtain the pixel value and, if you are using MATLAB, you can use the function *ginput* to display the cursor and get its coordinates.





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### **HINTs:**

- floor → Round towards minus infinity. floor(X) rounds the elements of X to the nearest integers towards minus infinity.
- disp(X) → displays array X without printing the array name or additional description information such as the size and class name.
- [c, r] = *ginput(N)* gets N points from the current axes and returns the c- and r-coordinates in length N vectors c and r. The cursor can be positioned using a mouse. Data points are entered by pressing a mouse button or any key on the keyboard except carriage return, which terminates the input before N points are entered; Note that *c* and *r* are output as floating point numbers
- $\rightarrow$  rounds towards nearest decimal or integer. round(X) rounds each element of X to the nearest integer.





# #1

# **HINTs:**

- close(H) → closes the window with handle H. close, by itself, closes the current figure window.
- $\blacksquare$  gcf  $\rightarrow$  Get handle to current figure. H = gcf returns the handle of the current figure.
- The current figure is the window into which graphics commands like PLOT, IMSHOW, TITLE, SURF, etc. will draw.





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#### What to deliver?

- The m (commented) file;
- The image file in .tif format;
- report according to model (including the print the values / images requested in the project);