



BIOMETRICS SECURITY

Activity 1. Image processing using Matlab: Basic operations on images (Read, display, convert ...)

- 1) Load the image “cameraman.tif” in Matlab. What is the size of the the image?

Use `im = imread('cameraman.tif')` to read and load the image in Matlab. Now `im` is the variable where your image is stored. You can find out the size of the image by using the command `size(im)` or to look at the Matlab workspace.

- 2) Display the loaded image using the command `imshow(im)`
- 3) What are the values of pixels `cameraman(29, 33)`. You can use the command `im(29, 33)`
- 4) Convert the image to grayscale using the function `rgb2gray(im)`. Display the result.
- 5) Convert the grayscale image to the binary level using `im2bw(im)`. Display the result.

Activity 2. Face recognition using -Neurotechnology-

1. Go to <http://www.neurotechnology.com/verilook.html> and download demo application (it's free).
2. Unzip the downloaded file and run “FacesAlgorithmDemo”.
3. Put your face right in front of the camera and click on “Enroll” to store your face image in the database. The system will ask you then to enter an Id that will be associated to the captured image. Use your name.
4. Repeat this process with several students.
5. To identify yourself, again get in front of the camera and scan your face. The system will identify based on the Id you have used (you will get the highest score of the match between the actual face image and the one stored previously in the Database).

Activity 3. Fingerprint recognition using -Neurotechnology-

1. In the same Folder run “FingersAlgorithmDemo”.
2. Click on “Enroll” and scan your fingerprint using the fingerprint scanner. The system will ask you then to enter an Id that will be associated to the scanned fingerprint. Use your name.
3. Repeat this process with several students.
4. Explain the difference before verification and Identification processes.
5. For verification, scan your fingerprint and enter your ID. The system will perform a 1*1 match, and either accept you as the person you are claiming to be or rejects you.
6. For identification, again scan your fingerprint but there will be no need this time to provide your ID. The system will identify you by performing a 1*N match (you will get the highest score of the match between the actual fingerprint image and the one stored previously in the Database).

