No Cameras Today!!

2025

FIVS 210 Forensic Photography

Lab 7: Digital Enhancements

Aritra Bhattacharya
(Graduate teaching assistant)
Ecoevoaritra23@tamu.edu

Shaifer Goalen
(Undergraduate learning assistant)
Shaif_goal_7@tamu.edu

AGENDA

01 START HISTORY LOG

02 RESIZE TWO IMAGES - PART 1

03 SHADOW ADJUST USING HISTOGRAM TWO IMAGES - PART 2

04 SHADOW ADJUST USING CURVES TWO IMAGES - PART 3

1. Split into groups of 3-4 people
2. One person in each group get up to get a computer from the closet.
3. Connect the computer to wifi BEFORE LOGGING IN
4. One person Log In using tamu credentials.
5. Create a File folder on the desktop → Name it **Lab 7**
6. Save the originals of each photo to the File folder → Label them Original 1, Original 2, etc
7. Everytime you ENHANCE a photo you will resave the photo to this folder labeled accordingly.
   (Resized Image 1, Resized Image 2, etc.)
   (Histogram Image 1, Histogram Image 2, etc.)
   (Curves Image 1, Curves Image 2, etc.)


Adobe
Photosh...
Adobe
Photosh...

8. Create a File folder on the desktop → Name it **Lab 7**

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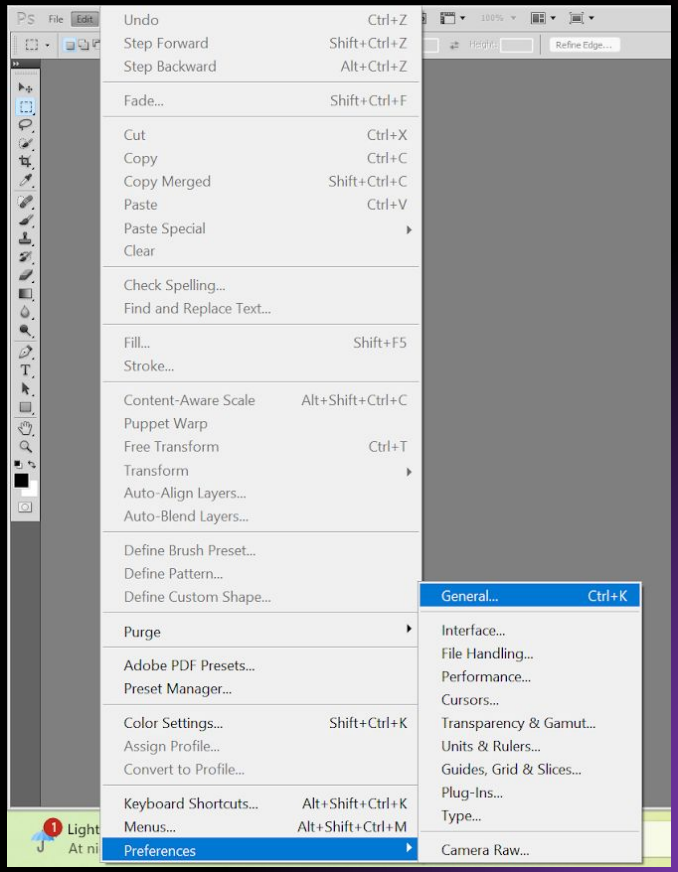
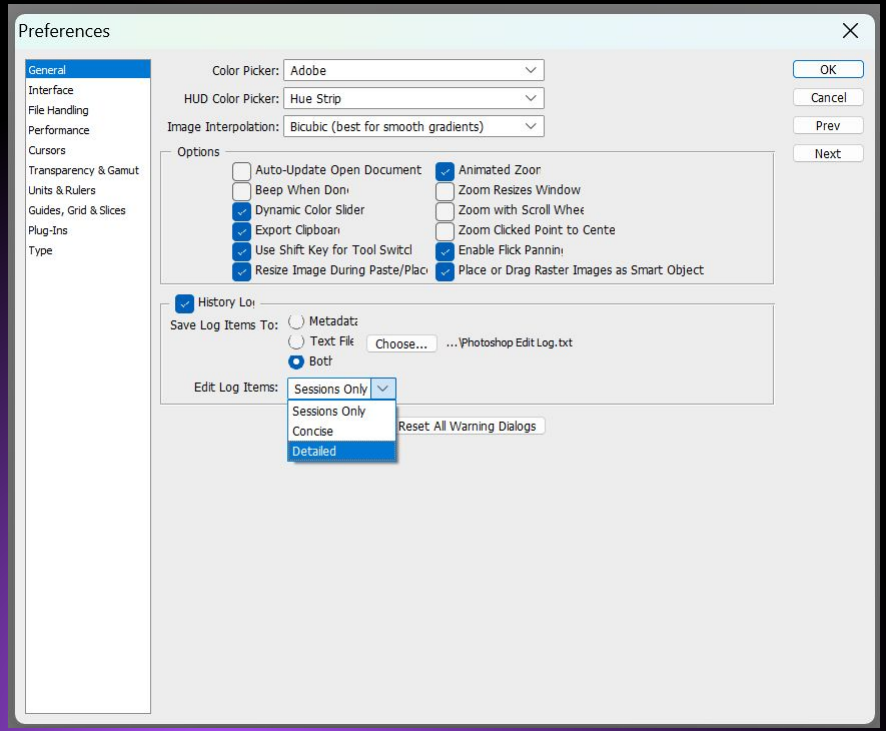
    (Resized Image 1, Resized Image 2, etc.)
    (Histogram Image 1, Histogram Image 2, etc.)
    (Curves Image 1, Curves Image 2, etc.)

BEFORE WE START

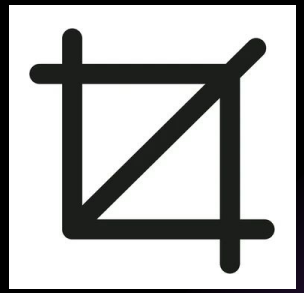
Opening up a History Log:

-Open Photoshop CS5 (No History Log Available in Photoshop Elements)
-Go to Edit, Preferences, General
-Check History Log Box
(Save Log Items to: "Both" a Metadata File and a Text File. Make a "Photoshop Edit Log" folder in the "Digital Image Analysis Exercise #7" folder or somewhere else if you prefer).
-Change "Edit Log Items" – to "Detailed"





PART 1



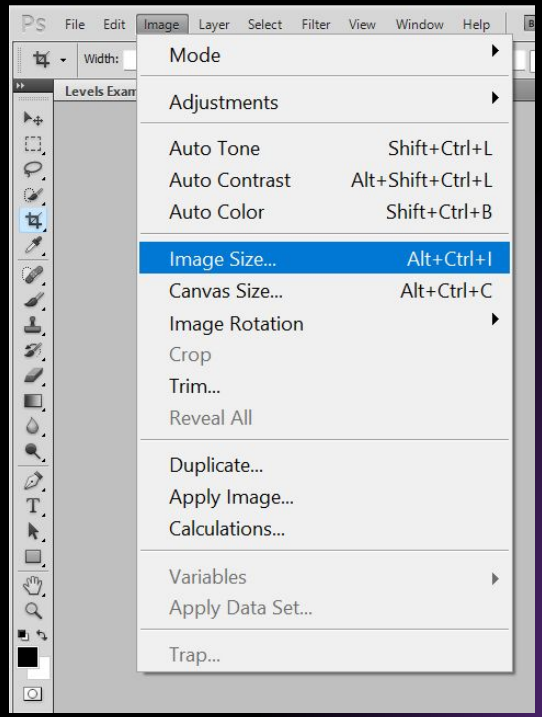
Crop tool

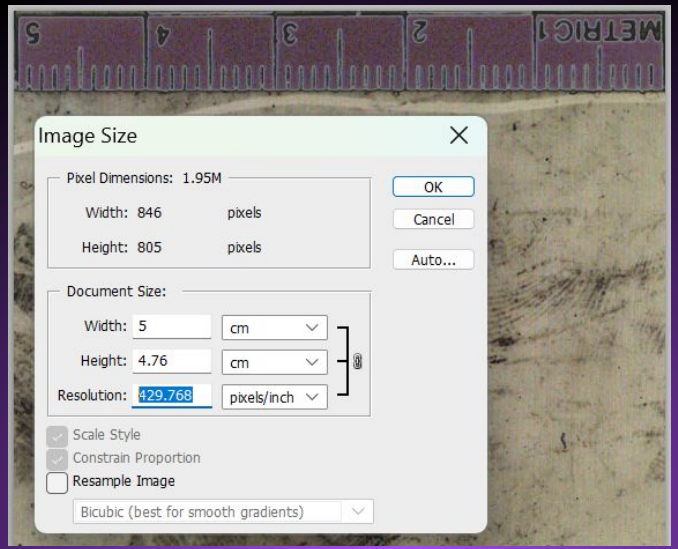
1. In *Adobe Photoshop/Elements*, *Open* an image (that you have captured earlier, your image should contain a scale in the frame).
2. Zoom in (Ctrl +), to make reading the lines of the scale (in the image), easy. This will make our next step (cropping) as accurate as possible.
3. Select the crop tool from the toolbox (*Image>Crop*)
   Crop an actual known distance (read from the scale in the image). Try to use as much of the scale as possible and be careful lining up the edges of your cropped box with the scale lines used (try to go from the center of one line to the center of the second line). It may be necessary to rotate the crop box, allowing the width (or height), depending on whether the scale is horizontal (or vertical). If necessary, rotate the crop box by holding the cursor outside the box until it turns into curved arrows, then click and drag the box into position. Hit *Enter* to commit to the crop. You now have a small, cropped version of your image. Do not be concerned that you have cut out some essential image information; the image will not be left this way.

PART 1

4. Go to image size dialogue box (*Image>Resize>Image Size*):
   Make sure that *Resample Image* box is unchecked. We can now change what the actual width (or height) of this cropped image is (read this measurement right off of the scale in the image that you cropped). Enter this new width (in inches or mm), and the height and resolution (pixels per inch or pixels per centimeter) will change automatically. Select and *Copy* this new value (in the resolution box) (ppi). Click *Cancel.* The resolution known to make this image 1:1 has now been copied for next step.
5. Go to *Edit* and *Undo* (*Ctrl Z* for PC, *Command Z* for Mac). This undoes the crop and takes us back to the full image.

6. Go to the Image Size dialogue box once again (*Image>Resize>Image Size*):
   Make sure that resample box is unchecked. Enter the new resolution value for pixels per inch (or pixels/centimeter). Click *OK*. This image is now calibrated 1:1 using the scale contained within the image. Remember that this is dependent on that scale being both on the same plane as the fingerprint (footwear, bite mark, or tool mark, etc.), and that your subject and your scale are 90 degrees to the camera back.
7. Repeat this whole *Resizing* process with a second image.
8. Save your originals and resized images to your Google Drive folder
   (You should have two "original" images, and those same two images now "resized or calibrated 1:1").

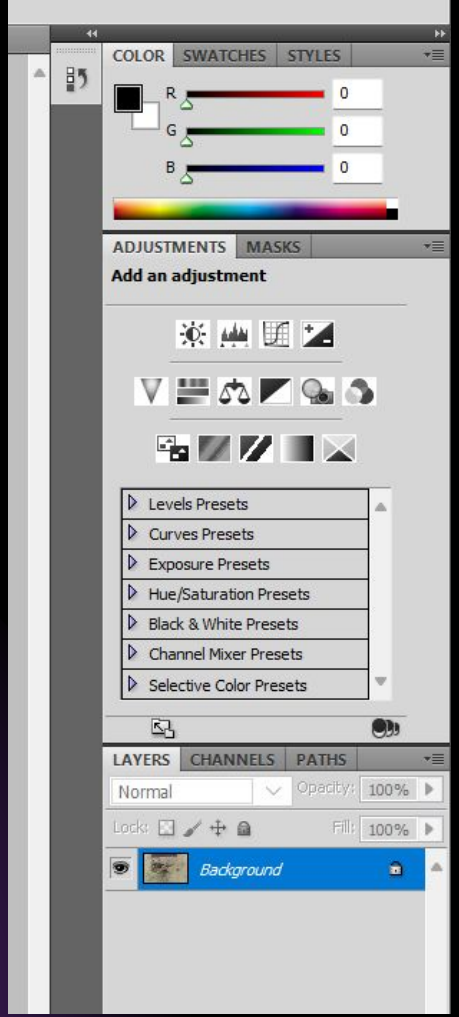




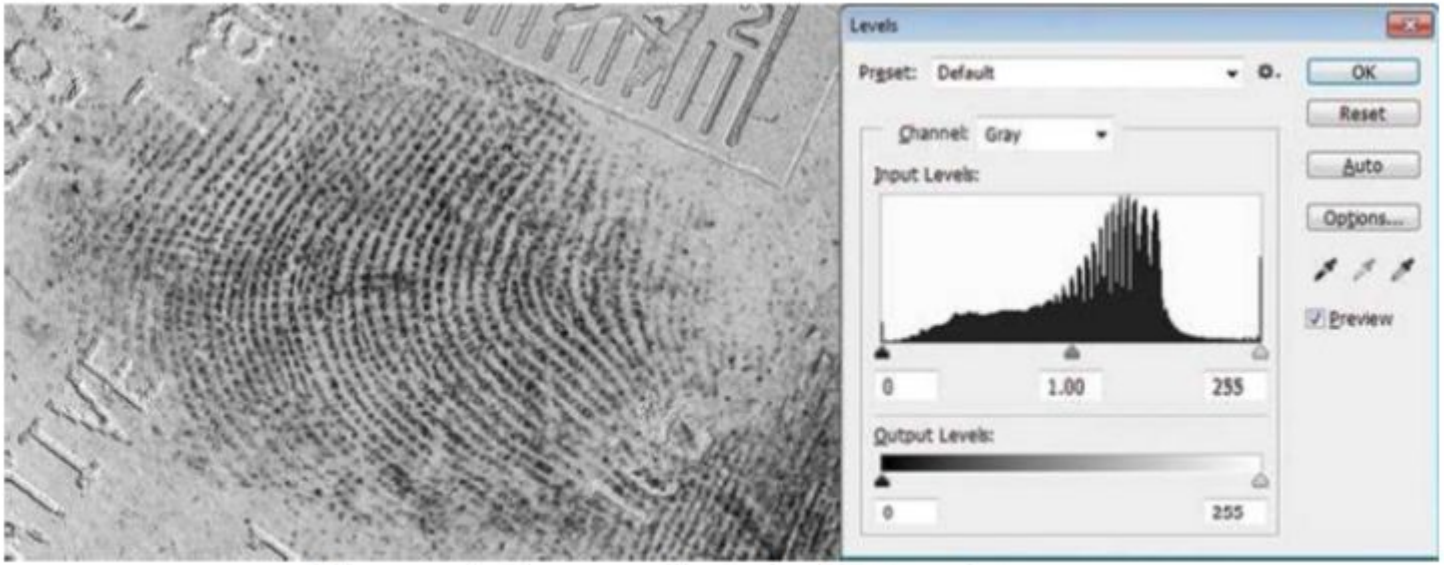
REPEAT FOR A SECOND IMAGE!!!

PART 2

1. In Adobe Photoshop/Elements, *Open* an image that you captured earlier (preferably a fingerprint image that could use some contrast enhancement).
2. Select the *Levels* dialogue box from the *Enhance* menu bar. (*Enhance>Adjust Lighting>Levels*). Evaluate the *Levels* Histogram and utilize the triangular-shaped sliders (directly under the histogram) to make the appropriate tonal adjustments. Remember any pixel values that fall between the new black point and 0 will be "clipped" (permanently lost), and any values that fall between the new white point and 255 will be "clipped", as well.
3. Once the black and white points in the histogram are set, all other brightness values are redistributed or *stretched* between them. As these brightness values are stretched, gaps appear along the histogram where there is no brightness representation; overstretching may then result in noticeable posterization of the image, with ugly patches of tonal values clumping together in blocks rather than a tonal gradation of shading. For this reason, Levels is a great tool for tweaking the contrast to a modest degree, while saving the more robust contrast adjustments for other tools such as Curves and Shadows/Highlights.
4. Save your original and your "contrast adjusted" images to your Google Drive folder.



PART 2



(Fingerprint image adjusted with Levels)
(Courtesy of Andrew Cholmondeley, York Regional Police)

Beware of Clipping an image, which is the crossing of extreme white with extreme black causing over enhancement

PART 2

5. Repeat this whole "*Contrast Adjusted-Utilizing Level's Histogram*" process with a second image.
6. Save your originals and contrast adjusted images to your Google Drive folder
   (You should have two "original" images, and those same two images now "contrast adjusted" utilizing "Levels").

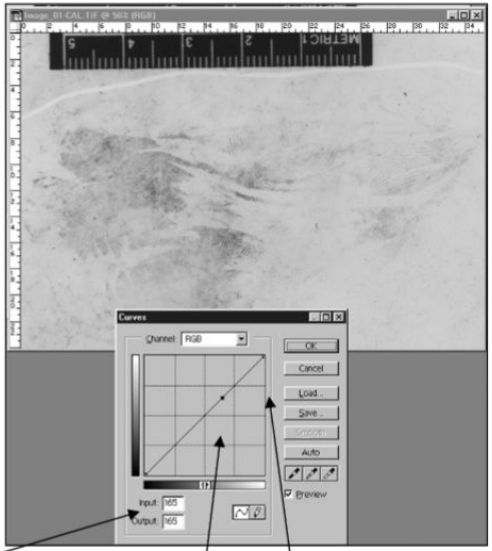
REPEAT FOR A SECOND IMAGE!!!

PART 3

Open Image.
Got to Curves Dialog Box.

NOTE:
The curves dialog box shows the plot for the pixel code values from 0 to 255.

The curve is a direct reflection of image contrast and changes in proportion to a change in the position of the plot points.



1
"0" is equivalent to pure black.

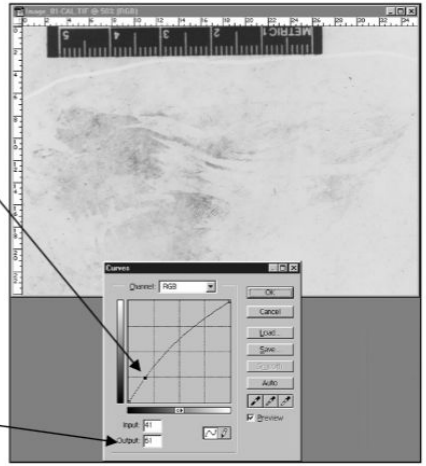
2
"255" is equivalent to pure white.

3
A plot point is established where you click on the curve (straight line).

PART 3

1
Establish (click) a plot point at approximately a code value of 41 on the straight line.

Notice the code value appears in the input window.



2
Drag the plot point up until a code value of 61 appears in the output window.

NOTE:
All code values of 41 in the image are adjusted------

Increase the code value and the tones get lighter. Decrease the code value and the tones get darker.

3
Hold the ALT key -- Click the reset button to return the curve to its original state.

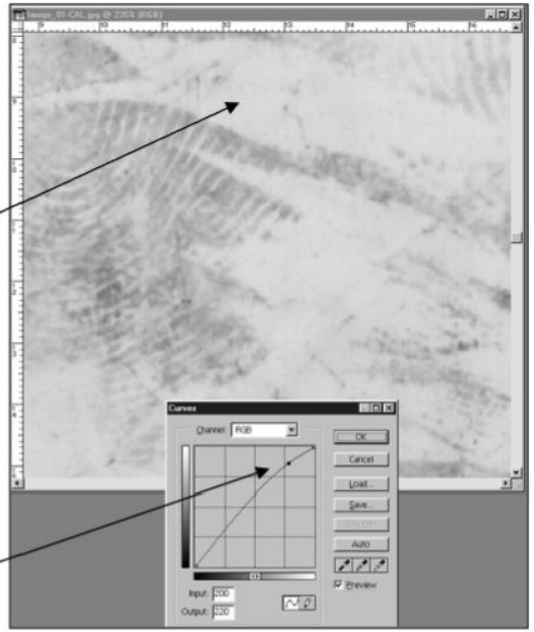
PART 3

1
Zoom in on the image so you can see the ridges and valleys

2
Move the cursor (eyedropper) over the light area (valleys) of the image

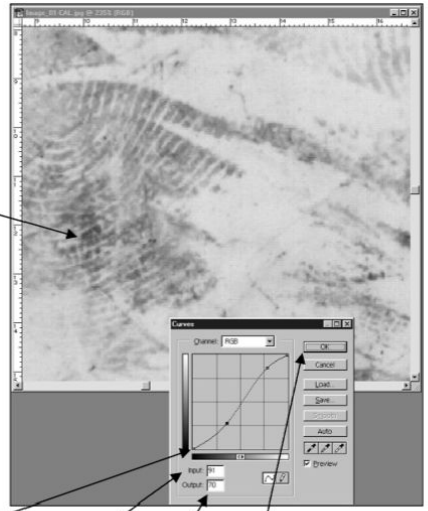
Click to sample the image -- notice the value in the input box. It should be about 200.

3
Move the cursor over the curve at the precise code value that appeared in the input value.
Drag it up to lighten these tonal values -- approximately 220.



NOTE:
All tonal values of 200 should have been lightened.

PART 3



1
Move the cursor over a ridge (dark area) of the fingerprint.

Click to sample the tonal value -- notice the value in the input box --should be approximately 90.

2
Move the cursor over the curve and find the same tonal value.

Click and drag the curve down -- notice the value in the input box.

3
Maintain the input value.

Change the output value to approximately 70.

4
Click OK to apply the changes.

NOTE:
This technique causes an increase in contrast by adjusting the exact tones of the image without affecting the rest of the image.

WHAT YOU TURN IN TO LAB 7 GOOGLE DRIVE FOLDER

PICK 2 ENHANCED PHOTOS FROM TODAY FOR YOUR DIGITAL PORTFOLIOS

1. 4 ORIGINAL PHOTOS
2. TWO RESIZED IMAGES
3. TWO HISTOGRAM IMAGES
4. TWO CURVED IMAGES
5. ONE HISTORY LOG (PDF)