Exercise 2, IR-camera

Q1. What are the sizes of both RGB and the belonging IR images? Are they the same? They should be when choosing Extract full photo.

Yes the RGB and IR images of FLIR0097.jpg is 432 KB.

Q2. What does Emissivity mean?

Emissivity is the measure of an object's ability to emit infrared energy. Emitted energy indicates the temperature of the object. Emissivity can have a value from 0 (shiny mirror) to 1.0 (blackbody). Most organic, painted, or oxidized surfaces have emissivity values close to 0.95.

Source - https://www.flukeprocessinstruments.com/en-us/service-and-support/knowledge-center/infrared-technology/what-is-emissivity

Q3. What is the reflectance temperature?

Reflected temperature (also known as background temperature) is any thermal radiation originating from other objects that reflects off the target you are measuring.
For higher emissivity objects, reflected temperature has less influence. For lower emissivity objects, however, it's a critical factor that must be understood carefully. As emissivity decreases, what you are measuring (and seeing thermally) is coming more from the surfaces of surrounding objects (including the camera and operator), not the target you are inspecting.

Source - http://irinformir.blogspot.com/2012/02/thermographic-measurement-techniques.html

Q4. What do values in the csv file represent?
It represents the reflectance temperature in degree Farenheits.

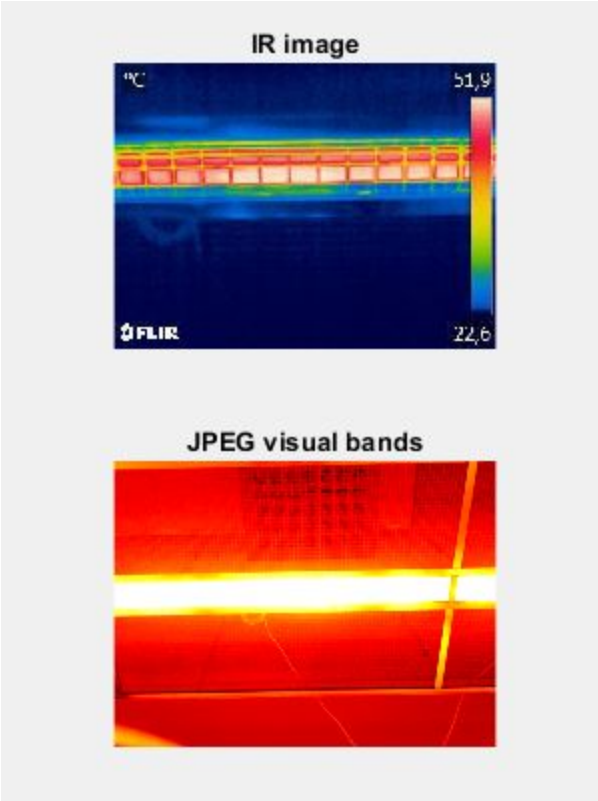
Q5. What are the min and max values of the csv file?
The minimum value is 72.4590 and the maximum value is 126.1610

Q6. Why is this mapped image in grayscale?
Mapped image is in grayscale because we used the Matlab function 'mat2gray' to convert the temperature matrix to a grayscale image.

Q7. What values in the mapped image correspond to the min and max temperatures?
In the mapped image, min temperature corresponds to 0.0200 and max temperature corresponds to 0.1200.

13. Open the folder where you have saved the IR-images. You'll see that each IR-image has its visual band representation (same scene in RGB). Display both jpeg-visual bands and the IR-image in matlab.

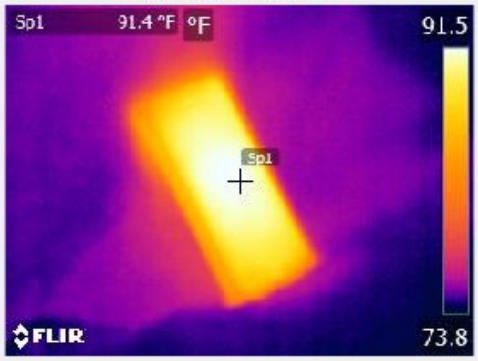
See matlab file *'jpeg_visual.m'* for the code which gives below jpeg-visual bands.



14. Back in FLIR tools, double select some other IR-image and then choose to show it in some other color palette. Transform at least one more image to.csv and export them into the image format. Study the temperature values and note the warm and cold zones.

See matlab file *'color_palette_plus_csv_format.m'* for the code which gives below results.

Color palette Iron



Example - Warm zone: Temp 87F, pixel value (115,364) & Coldzone: Temp 15F, pixel value (305,438)