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1. MATLAB Version: 9.13.0.2126072 (R2022b) Update 3  
MATLAB License Number: 364896

2.



#### HISTOGRAM EQUALISATION USING RED CHANNEL

I tried all the channels - **Red**, **Green**, **Blue**, **Grayscale** - and found the red channel to give the best desired result. The next best channel was grayscale with blue channel a close third and green channel giving the worst result out of all.

3. Using '**imfinfo**' on Matilda's photo:
  - a. The picture was taken '**06-Sep-2022 19:05:40**'.
  - b. Aperture value is 5.3750.
  - c. ISO speed is 3200.
  - d. The function returns the value 'truecolor', which means the image has RGB channels.
  - e. We can check for the flash using 'info.DigitalCamera.Flash'. We get the following output: "Flash fired, no strobe return detection function, compulsory

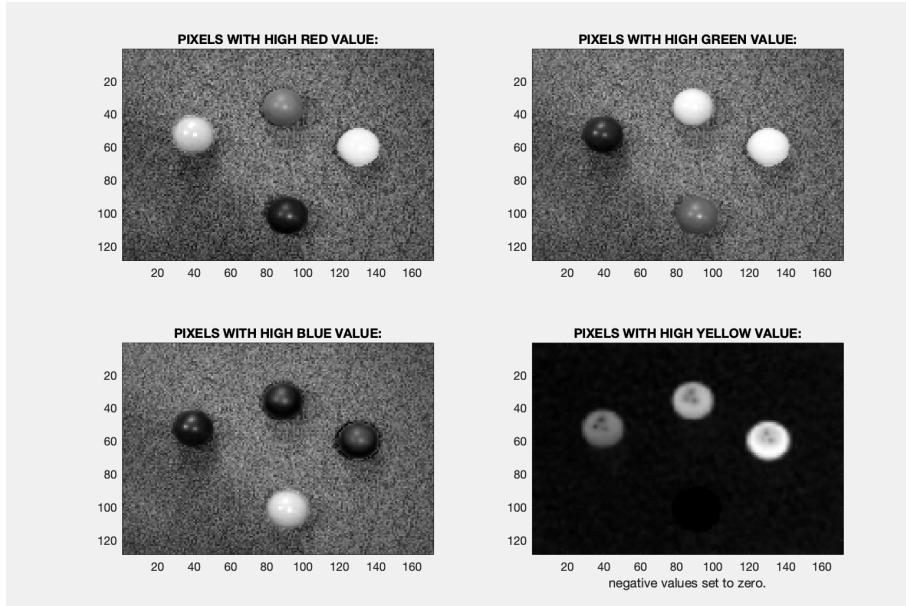
flash firing, flash function present, no red-eye reduction mode or unknown.”  
Thus, a flash was used for this picture.

- f. The lens was focused at a distance of 51 mm.
4. Stroop Effect refers to the phenomenon that a person has difficulty naming the color of a printed word's ink when the word is the name of a different color. For eg: **Red**, **Blue**, **Green**.

Here, we can see that the words on Matilda's top that would cause Stroop Effect, if someone tries to read them.

It can complicate things if we try to read the words, especially in grayscale. Our brains may assume/expect that the actual color of the words (in RGB) was the same as the word itself, which would be incorrect.

## 5. COLOR SEPARATIONS:



## **6. CONCLUSION:**

Being able to separate and manipulate different channels provides even more control while processing any image as desired. Using ‘iminfo’ on an image allows us to access the metadata about the image, which may make it easier to work with images.

Yes, we can use ‘histeq’ and ‘imadjust’ on separate channels without any color shifts. They can both be used to enhance the contrast of each color channel in the image separately. **However**, it may not always result in accurate color separation as it does not take into account the relative relationship between those color channels, and there is more information about an image stored between the channels (and not just in the channels). To be able to do that, we should use other colormaps such as LAB or HSL.

Getting the yellow channel using existing channels caused some values to go below zero (negative). It was a little challenging as it took me a few tries to fix that. Another tricky thing was that the plot was darker when I used ‘imshow’ as compared to using ‘imagesc’. As I read more, I realized that both these functions use different default color maps, which was the cause of the difference in brightness. Finally, I used ‘imagesc’ as it matched with the desired output in the homework.