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Github: https://github.com/jawadefaj/CSE_264_CV

Part 1:

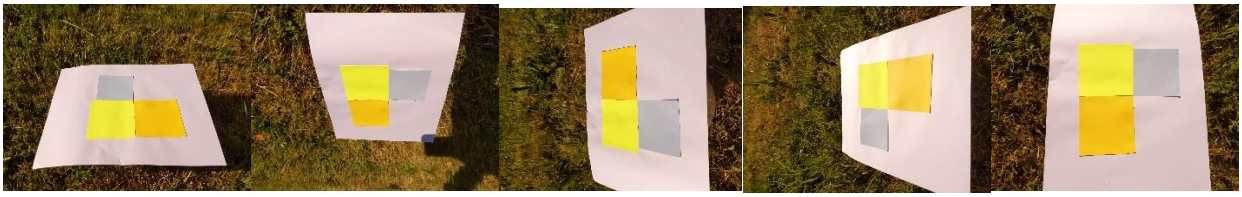
All the graphs are in data.xlsx file sheet 1. I have used excels regression on my data. Blue channel is in odd shape. That is because I think the paper, I used has bluish effect and not proper Lambertian. You will find corresponding image in the folder named above the sheet. I used pixel 3A and the light source is bright light. I used cloudy mode for white balancing.

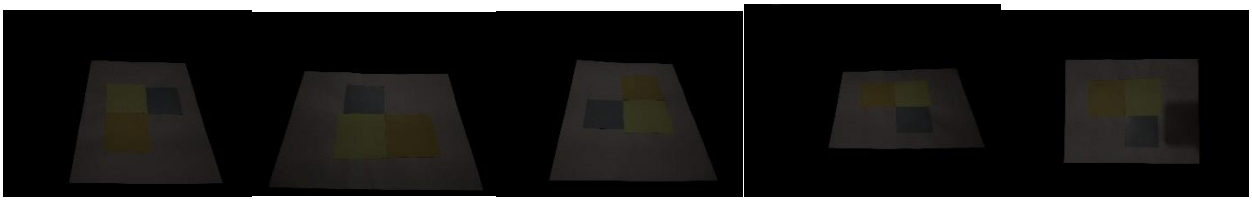
Part 2:

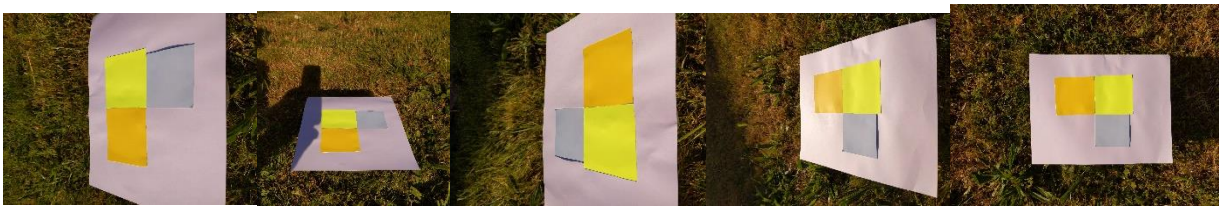
The photos are organized as follows: (all the images are properly annotated in the data file). Each row is for different illuminant. First 15, WB = 0, last 15, WB = 1.

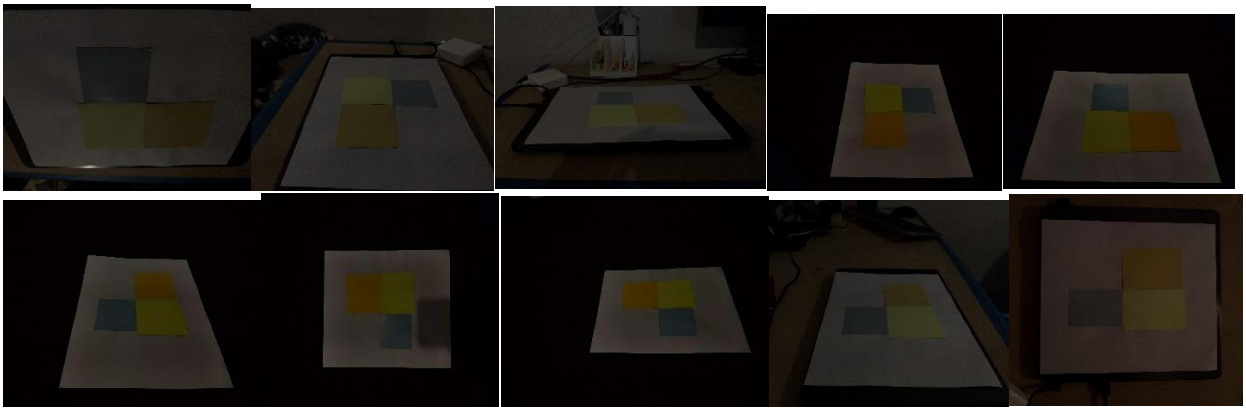
Light sources:

- sunlight
- fluorescent
- tungsten bulb



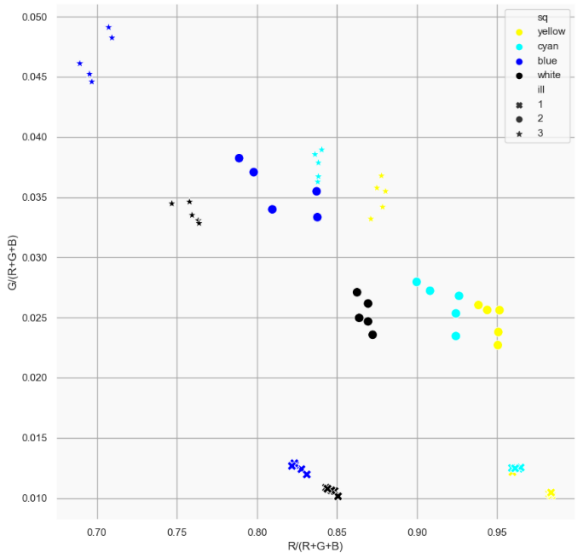


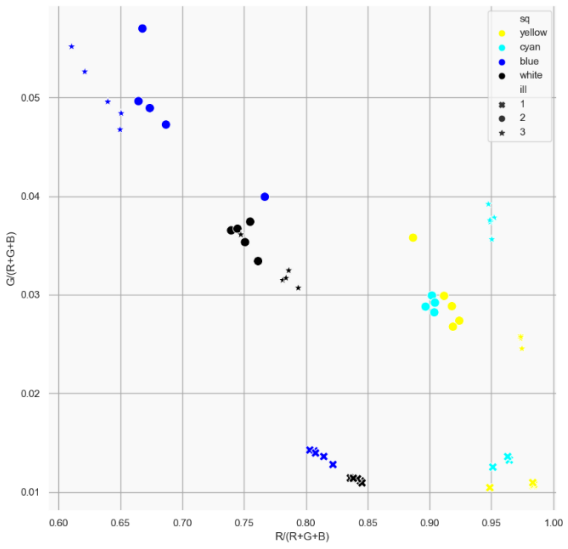




Part 3:

Python file for generating the graph is in folder Task3 named plot.py. First image without white balance. Second on with white balance.



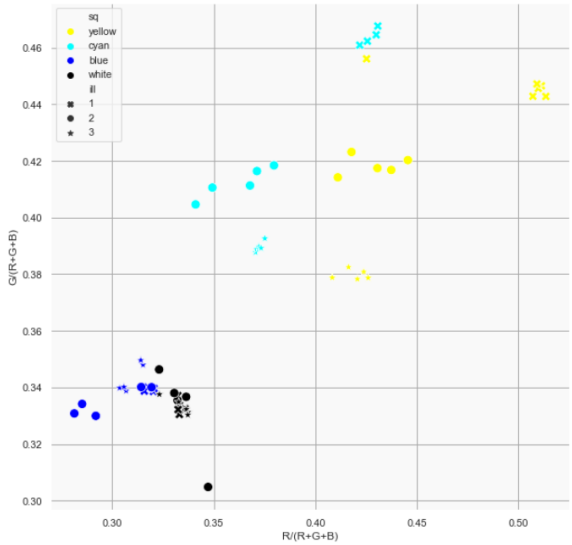


I cut those colored surfaces from a magazine and those were glossy (more than white paper). It is the reason why those points are dispersed. Some point for different illuminant overlapped. This is because I have used close color. (Yellow, Neon(Brightest yellow), white(bluish), sky blue). Besides elevation changed and due to the glossiness of the paper, the points are sparse.

Part 4:

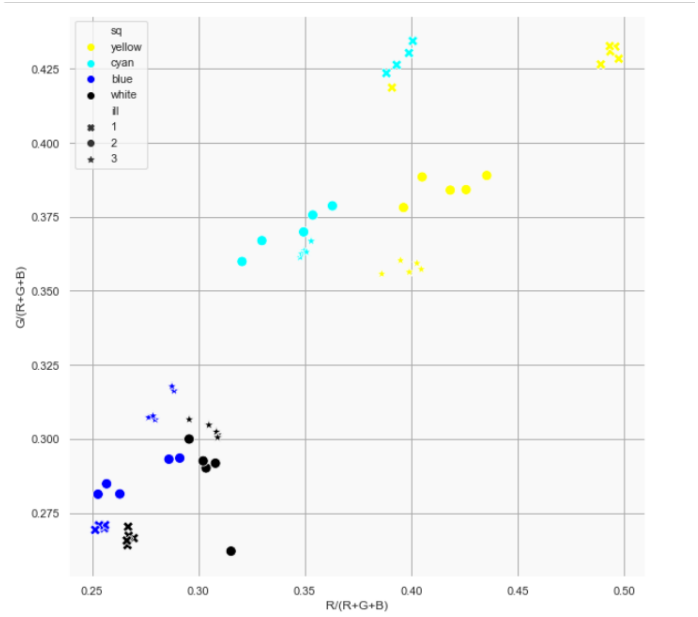
Python file for this part is named plotpart4.py.

White patch method:



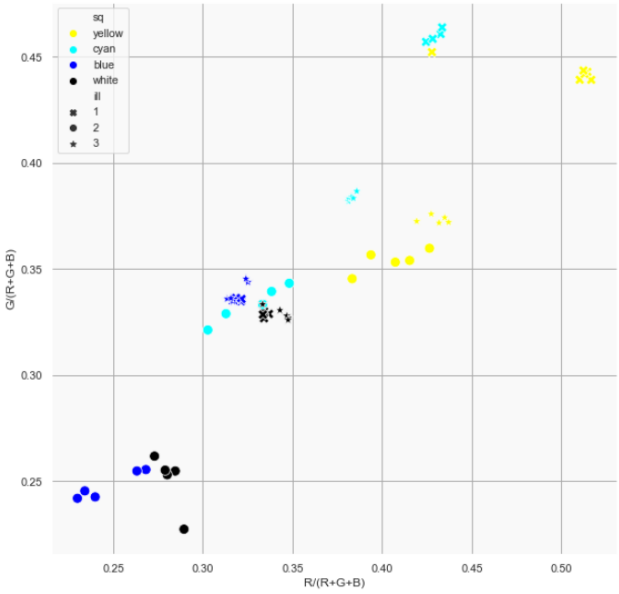
- Due to the whiteness of the chosen color, all points after the white patch method are diagonally dense.
- For illuminant 2, values for R channel decreased highly. That is because of the tungsten light.

Gray world method:



- Other patches remained almost same as white patch method except the white patch itself. Clusters are more sparse than the white patch method.

White world method:



- White world gives better result overall. I think that is because of the color similarity of the patch.
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Overall, the points are scattered for the following reason:

- Color similarity of the patch
- Glossiness (due to paper type)
- Ambient light during third light source.
- Elevation change while taking photos in sunlight.