Concordia University

Department of Computer Science and Software Engineering

COMP 6341 - Computer Vision

Winter 2020

Assignment - 1

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Observed Visual Difference between Original Image and Reconstructed Image :-

1) Original Image :-

After Demosaicing :-

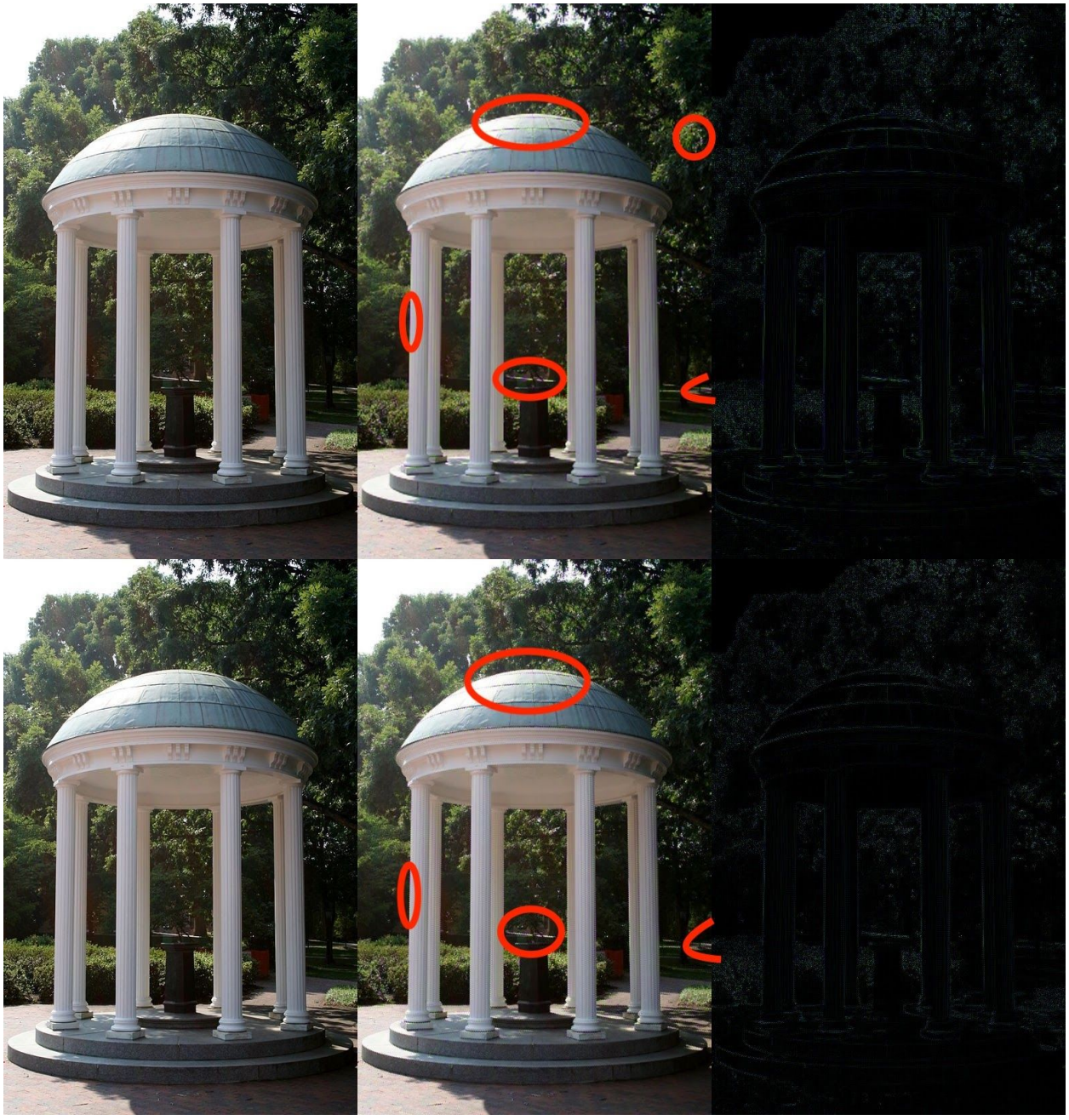

Figure :- Showing original image, part_a, absolute difference and original image, part_b, absolute difference

The red oval annotation represent the region where the reconstructed image differ visually from the original given image.

Reason for the difference :-

After forming the bayer's pattern, the given image will have missing pixel values in different channel. In order to fill these missing values, I mainly depend on the neighbour pixels which having a value. This kind of interpolation of missing pixel value works pretty well in case of same color region. If there are missing pixel values in the edges of the image, those are calculated by using neighbour pixels from the two regions, which interprets the missing pixel values incorrectly.

I believe, the visible difference between the given mosaic image and original image is due to the above mentioned reason.

Improvement in the result after part-b :-

After applying part-b to the output of part-a, there is a slight improvement in the absolute difference of original image and improved mosaic image compared to mosaic image(part-a). As the blue and green channels are sampled at a lower rate than red channel, the calculated missing values of green and blue channels are not accurate compared to calculated missing values of red channel. We try to use the information of interpreted red channel values to update the interpreted blue and green channels.

Software :-

- Language :- Python
- Libraries :- opencv, numpy

Assignment References :-

1. https://opencv.org
2. https://stackoverflow.com